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Revisiting Emotions:
An Analysis of Contemporary Perceptions of Facial Expression

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Dissertation submitted to the Department of Linguistics

in fulfilment of the requirement for a Master of Arts Degree in Humanities

Under the supervision of

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The University of the Witwatersrand

School of Literature, Language and Media

March 2022

Plagiarism Declaration

This thesis is my own work. All primary and secondary sources have been appropriately acknowledged. This thesis has not been submitted to any other institution as part of an academic qualification.

This thesis is prepared in fulfilment of the requirement of the degree of Master of Arts in Linguistics, at the University of Witwatersrand, Johannesburg, South Africa



Matthew Joseph Jenner (820959)

Date: 15 March 2022

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Abstract

Language is more than just words, and the human face has demonstrated immense communicatory significance as a mode of non-verbal communication, particularly in terms of the expression of different emotional states. This research is inspired by the following question: are facial expressions universal, or shaped by our environment?

This study addresses two competing schools of thought that have aimed to answer this question around non-verbal communication. The Universality Theory proposes that facial expressions of emotion are formed from the same innate emotional mechanism and are thus recognizable by all populations, regardless of cultural background. The Culturally Conditioned Theory proposes that cultural upbringing has an indelible part in mediating certain facial expressions and that each population group will convey unique expressions that are mostly understood throughout that culture. It also investigated these principles from the perspective of the modern use of emotion through digital communication, namely emoji, which has developed into one of the most widespread forms of contemporary global communication.

To investigate this question, we have conducted a form of qualitative research, inspired by the work of Ekman and Friesen (1969; 1971), whereby participants from three different regions of South Africa took part in a survey where they were shown various pictures, each depicting either one of the six basic emotions (happiness, sadness, fear, surprise, anger or disgust) and asked to provide their interpretations of the emotions being expressed. Participants also interpreted various emoji to bring this study into the contemporary space by looking at emotions in the digital realm. Additionally, due to requirements associated with the present COVID-19 pandemic guidelines, research surrounding the impact of health masks that cover the lower half of the face was included in order to determine the extent to which these masks impact the perception and interpretation of facial expressions of emotion.

This study aimed to determine whether the recognition of facial expressions of emotion (both human and emoji) are the result of some emotional mechanism or are culturally conditioned to specific populations. This study is the first from a purely South African perspective.

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Chapter 1: Introduction

The primary focus of the present study is the communicatory function of facial expressions, and the ways in which different basic emotions, as manifested through movements and different muscular configurations of the face, are perceived non-verbally across different populations, aiming to explore the extent to which facial expressions can be considered either universal or conditioned by culture.

Language is more than just words. Kita (2009) refers to speech and gesture as "tightly-linked systems" (p. 3), demonstrating that we cannot look at language as only the words produced by speakers, but rather as a complex combination of different elements that all work towards conveying a more complete and cohesive message. Language consists of a variety of verbal and non-verbal signals that work concurrently in order to transmit certain meanings, often being interrelated and manifesting as a product of underlying cognitive processes used in communication, rarely being restricted to a single modality. Albert (2019) states that non-verbal communication has numerous functions, such as to "provide information, regulate interaction, express intimacy, exercise social control, facilitate service or task goals" (p. 455).

Therefore, modern research has placed significant emphasis on looking at communication as not simply being restricted to spoken language, but rather as entailing a broader range of modalities that often work concurrently to enrich a particular sentiment and strengthen interlocution between individuals. The current view is that an effective analysis of communication can only be derived from the acknowledgement of language as an inherently multimodal phenomenon, entailing complex interplay between verbal and paralinguistic signals, which play a pivotal role in the effective transmission of messages. Wagner (2014) suggests that a multidimensional analysis of language can be beneficial to understanding the intricacies of speech and general interaction, as "accounting for verbal or textual information only does not suffice to provide a full picture of human communication" (p. 209).

As remarked by Price (2016), there has been a long-held belief, dating back over a century to the earliest days of evolutionary theory, that facial expressions of emotion are biologically hardwired responses to certain phenomena and can thus be universally recognized. As a result of such beliefs, facial expressions are considered the most significant means of accurately discerning an emotional state, superseding other forms of non-verbal communication associated with expressivity such as tone of voice (Tarnowski, Kołodziej, Majkowski and Rak, 2017) or vocal bursts, which Tracy, Randle and Steckler (2015) define as "distinct

vocalizations" (p. 25) of emotion, such as laughing or screaming. This is heavily supported by Hans and Hans (2015), who state that "our faces are the most expressive parts of our body and can communicate an array of different emotions" (p. 48), and Fridja and Tcherkassof (1997), who remark that "facial expressions are relational activities, social signals, activation manifestations, and inhibitions, all of which flow from a state of readiness to maintain or change the relationship with the environment" (p. 95), to which they assert emotions are inextricably connected. Therefore, the current study took its cue from widespread previous research into this field of communication to determine whether there is reliability and consistency in the recognition and subsequent interpretation of facial expressions across several groups, suggesting either a possible innate mechanism derived from a theory of evolutionary biology, or a more regular system of cultural conditioning.

Emotions form a pivotal area of human interaction, particularly when considering them as forms of non-verbal communication. The methods in which emotions are used and understood within society is an area of considerable cross-disciplinary interest, as it does not only bear relevance to psychological and anthropological investigations, but to other academic fields as well. There is evidence that this research is venturing into realms outside of the humanities, with investigations into the role of facial expression being conducted in the fields of artificial intelligence, computer science, technology and the commercial sector, all of which prove the veracity of previous psychological studies that found insightful correlations between human behaviour and the underlying cognitive states.

An understanding of the ways in which emotions function, both cognitively and socially, is imperative to developing future insights into various forms of human behaviour. This is particularly useful in a modern context, whereby technology and social media have facilitated widespread globalization and allowed channels of communication between individuals of different cultures to become exponentially wider. This entails considering the classical views of emotion in conjunction with more recent developments in the field, such as online representations of expressions (such as the steadily growing popularity of emoji over social media), or recent global events that have changed the way we perceive emotions (such as the COVID-19 pandemic requiring the mandatory wearing of face masks), all of which are areas in which this study will be focused on exploring.

1.1. Facial Expressions as Non-Verbal Communication

Emotions have numerous uses, interpretations and meanings, particularly through their physiological manifestations in the form of facial expressions, which operate as a way of conveying underlying emotional states, as well as being a social tool to convey certain voluntary and involuntary messages. Ekman (2009) suggests that "facial expression has been found to be the richest source of information about emotion" (p. 3449). Furthermore, Mandal and Ambady (2004) posit that human beings rely extensively on non-verbal communication to convey emotional states, as the verbal channel in isolation is a "relatively poor medium for expressing the quality, intensity and nuancing of emotion" (p. 23). This further emphasises the relevance of looking at non-verbal signals such as emotional expressions, and their importance in working in conjunction with verbal communication in moments of interaction.

In this regard, the area that the present study focused on was that of facial expressions, and their communicatory relevance on a cultural level, particularly in terms of the function of expressions as a form of non-verbal communication that enriches, supplements and possibly replaces the verbal channel. Wagner (2014) refers to "semiotic versatility" (p. 209), which she defines as being the tendency for certain modalities to be more suitable for the communication of certain messages than others. The author suggests that the face is universally considered the most appropriate means of communication for the transmission of emotional and attitudinal signals across all cultures and has come to be the primary source of discerning information to an individual's emotional state. Facial expressions have been found to be present in all cultures, as stated by Brown (2004), who cites them as being one of the "human universals" (p. 1) that can be found across all groups.

Kita (2009) indicates that while the presence of speech-accompanying gestures is indeed universal, the precise production and meaning of specific forms of non-verbal communication differs between populations, which various theorists have asserted onto the production and perception of facial expressions. Gestures and facial expressions have been shown to work alongside concurrent speech in most languages, with the meaning and use of various gestures and expressions differing according to each individual culture. Non-verbal language is similar to spoken language insofar as it is often considered to be culturally conditioned, and each culture has different ways of conveying certain messages non-verbally, with these signals often being unrecognizable to outsiders. However, much like spoken language, non-verbal communication has been shown to spread between societies as a result of cultural contact. This

has incited investigations into the exact roots of these non-verbal signals, whereby theorists have questioned whether there are non-verbal gestures, in particular facial expressions, that can be considered universal, or if similarities are just the result of increasing globalization that has facilitated indelible influence between cultures in their perceptions of non-verbal signals.

1.2. Two Conflicting Theories of Emotional Expression

The debate at the heart of the research pertains to whether facial expressions can be considered to be the subject of universal recognition, or if each individual culture conditions their own uses for emotional expressions, developing their own emotional 'languages' through these non-verbal cues.

To examine this contentious issue, this study was first focused on investigating pre-existing literature, which often aligned with either of the two main schools of thought that are often considered cornerstones of this debate, based around opposing viewpoints on the production and perception of emotional expression, and their communicatory origins. Both theories are concerned with examining a central question that has been at the basis of this form of psychophysiological inquiry since the outset: are facial expressions innate or learned?

As mentioned above, and supported by Nelson and Russell (2013), proponents of both conflicting theories agree upon the fact that the face is of immense importance in deriving information on emotion – but it is the specific origins of these expressions that have frequently divided theorists. Capocasa, McCuen, Venier and Rufo (2016) comment on this debate being centred around the perpetual question of "which came first: nature or culture?" (p. 34), which they state has been the impetus for research on both sides of the theoretical divide, in both this particular area and in the entire discipline of psychology.

The **universality theory**, initially provoked by Darwin (1890), who proposed that facial expressions are innate, being remnants of evolutionary biology and are universal traits that are observable in all populations. Scholars aligned with this viewpoint have developed this theory by proposing the possibility that there are a set of universal facial expressions that are unanimously recognized and understood as representing specific emotions, regardless of cultural or geographical context. Sauter and LeGuen (2011) refer to this as the belief in emotions being the result of "language-independent, biologically-driven affect programs" (p. 1479), which bind all groups, regardless of culturally specific nuances. Jack, Garrod, Yu, Caldara and Schyns (2012) propose the standpoint that "all humans communicate six basic internal emotional states (happiness, surprise, fear, disgust, anger, and sadness) using the same

facial movements by virtue of their biological and evolutionary origins″ (p. 7241), a theory derived from the work of Ekman and Friesen (1969; 1971) and their concept of 'basic' emotions.

The opposing viewpoint, the **culturally conditioned theory**, is concerned with providing evidence that facial expressions vary cross-culturally, and that different populations convey and perceive emotions differently, as well as featuring facial expressions unique to that culture. This is derived from the work of theorists such as Klineberg (1938), who insists that all facial expressions are "to some extent patterned by social factors" (p. 517) based on cultural standards and beliefs. Various other theorists support this position by providing findings that propose that facial expressions are not the result of some inborn mechanism, but rather formed through constant conditioning by an individual's unique background, with different social-cultural practices being used to determine the specific facial configurations employed to express particular cognitive states.

Thus, the theoretical perspective of this dissertation was to consider both contending philosophies and their approach to resolving the conflict between universality and cultural conditioning in terms of facial expressions of emotion. The question of whether emotional expressions are innate or learned has persisted since being proposed by Darwin (1890) and continues to be a contentious issue. Theorists remain polarized on the question of whether there are expressions that are universally recognized as being indicative of a shared mechanism of emotional expression, or if they are separated by cultural factors.

1.3. Problem Statement

This central problem that was under investigation in the present study has been the basis of this field of psychophysiological inquiry since the outset, being an area of considerable conflict based on the two opposing viewpoints mentioned above: are facial expressions innate and thus observable in all populations (which would align the results with the Universality Theory), or learned through social mediation (and provide credence to the theory of Cultural Conditioning)? As the forthcoming literature review will demonstrate, there is evidence to support both academic positions, and this dissertation aimed to consider both concepts and their approach to resolving the theoretical incongruency present between them. This was done through applying empirical data to determine the theory which is more favoured in the perception of emotion from a South African perspective, through conducting a study that made

use of conventional and digital images to discern the extent to which the theories of emotional perception can be applied to a local and contemporary context.

1.4. Rationale

The current study was propelled by two areas that were determined to be in need of reassessment from a contemporary perspective, namely the geographical and cultural contexts in which previous studies were conducted, and the theoretical methods employed to investigate these theories in the previous research.

1.4.1. Cultural and Geographical Context

As will be outlined in the forthcoming review of existing literature, there has been a wealth of research into this subject, mostly derived from research done in the 1960s, a period in which the conflict between nativism and behaviourism was an enormously polarizing area in psychology and other disciples intent on measuring human development and communication. However, while many detailed studies provide insights into both sides of the debate, there is a shortage of insight into this issue from a local point of view. Africa has been relatively overlooked in these studies, with the vast majority of work entailing attempts to provide insights into perceptions of emotion from numerous other cultural groups, normally from a western perspective. Only a few studies look at this issue through an African lens, albeit often being focused on African immigrants in other parts of the world, rather than taking place on the continent itself and acquiring insights into these theoretical issues from the multitude of cultures across Africa. Figure 1 indicates the three geographical regions within South Africa in which the present study was conducted.

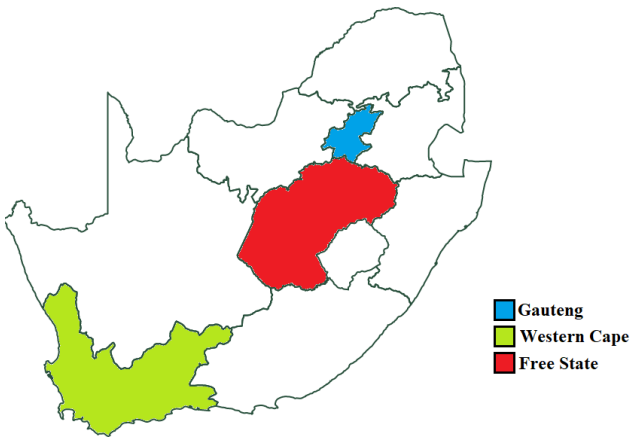


Figure 1: Geographical Regions of the Present Study

It was determined that reassessing these theories from a local, under-explored context would make for a potentially astute study on the perception of facial expressions, which would be the first from a purely African perspective.

1.4.2. Updating the Methodological Approach

As a field of inquiry, emotional expressions have often utilized photographs as a means to gather data about how different individuals perceive expressions. As noted by Tcherkassof, Bollon, Dubois, Pansu and Adam (2007), there has been considerable evidence that emotions are widely and readily recognized in photographs similarly to how they are in real-life scenarios. However, the methodological approach taken by classical theorists has also been altered for the sake of updating the style of data collection, bringing this older area of inquiry into a more modern space.

This was mainly done through the implementation of research into emoji, one of the most widespread forms of non-verbal communication, as a result of their use through social media. Informal conversations with friends and colleagues provided intriguing insights into the use and interpretation of emoji, particularly those that are used less frequently, or are perceived to have more flexible meanings. Some photographs also elicited various interpretations. These different perceptions of photographs and emoji provided this study with further insights on how the understanding of facial expressions of emotion is not as simple and universal as the theories posit. Moreover, to situate this research within a contemporary framework, the study also made use of images of individuals wearing face masks, as the COVID-19 pandemic required the use of such protection that covered most of the face, and which we determined could potentially yield interesting insights into emotional expression.

Through applying the central tenets of these conflicting theories derived from the classical view of emotion to a new geographical context, in this case South Africa, as well as from a more contemporary methodological perspective, this study endeavoured to contribute to this robust debate on how humans perceive emotions through updating the central structure and intentions of these theoretical concepts.

1.5. Aims and Objectives

This study aimed to explore perceptions of facial expressions from a distinctly South African context, whereby the existing research formed by the classical view of emotion, which questioned whether there are facial expressions that can be considered recognizable across all

cultures, would be remodelled to the meet the specific requirements of the present research. The questions established by the theoretical framework were repurposed to encompass a new set of inclusive data as a means of determining the extent to which perceptions of emotions can be either universal or culturally conditioned. The basic theories embedded in two schools of thought were applied to a more contemporary framework (including through the introduction of emotions in the digital space, in the form of emoji) to investigate the central differences in the perception of facial expressions and provide a more comprehensive and contemporary view of how facial expression are understood, based on geographical location. This was done to contribute to a decades-long debate, and to offer insights into these views through engaging with a more contemporary, local approach to these theories.

1.6. Research Questions

The present study considered existing literature concerned with the perceptions of emotional expressions from a cultural standpoint and extracted a theoretical framework that was determined to require an update to meet both modern and local standards. Through conducting an analysis of various interpretations of emotional expression, it sought to answer the following questions, which were derived from the need to rectify the tendency of pre-existing research to overlook the African continent and their potential contributions to the contentious study of emotional expression:

1. Is the perception of emotional expressions influenced by diversity in geographical location?
    a. What emotions are commonly perceived amongst the target population, and which are perceived differently?
    b. How do facial health masks that cover the lower half of the face (a requirement of the recent COVID-19 pandemic) impact the perception of emotions?
2. Is there a universal trend in the recognition of emotions in the contemporary digital space?
    a. Which emoji are commonly perceived amongst the target population, and which are perceived differently?

1.7. Chapter Outline

This dissertation will follow the below-mentioned structure:

1.7.1. Introduction

This chapter includes an outline of the general tenets that inspired this research, in particular drawing attention to well-regarded theories around the importance of the face as a tool of significant communicatory relevance. It provides brief context in order to situate this research in a modern and local space, indicating the new approach taken to update older research methods in order to contribute to the contentious around these theoretical issues, as stated in the research questions, as well as the aims and objectives of the study.

1.7.2. Literature Review

This chapter outlines the pre-existing research around present knowledge of the face as a tool of communication. This includes a brief history of emotions, particularly in how previous theorists classified them into distinct categories. It also includes a discussion on the two fundamental theories that govern this research, universality and cultural conditioning. It concludes with a summary of the present knowledge surrounding emoji, indicating the relevance of looking at them as robust sources of emotional expression.

1.7.3. Methodology

The methods used in collecting the data were outlined in this chapter, including indicating how this study deviated from prior investigations, particularly in the research design, with a thorough description of the materials used in conducting the study.

1.7.4. Data Analysis

This chapter presents the in-depth analysis of the responses to the questionnaire distributed to participants across three different regions of South Africa, structured as a qualitative analysis of the responses received.

1.7.5. Discussion and Conclusion

The final chapter of this dissertation interprets the findings from the previous section and critically discusses the trends and deviances that can be found as a result of the analysis, drawing attention to the most significant results.

Chapter 2: Literature Review

Nonverbal communication is a vital channel for understanding human behaviour and conveying certain messages. Russell (1994) refers to the theory of *physiognomy*, which he attributes to Aristotle, defining it as the theory that proposes that "a person's physical appearance, especially in the face, reveals deeper characteristics" (p. 102), a belief that has inspired countless studies into the cognitive value of facial expressions and how they bear particular meanings. This is also succinctly summarized by Frijda and Tcherkassof (1997), who simply state that "expressions contain information" (p. 85) and are therefore an area of immense interest in terms of the psychological and behavioural roots of communication.

Mauss (1934) was an early proponent of looking at the body as a means of transmitting particular forms of non-verbal communication, with the author referring to the human body as "man's first and most natural instrument" (p. 74). His theories encompassed all forms of movement and bodily configurations, including facial expressions. The author indicates the relevance of looking at gestures and expressions not merely as arbitrary movements or muscular configurations, but as forms of deeper cognitive communication, remarking that "we are everywhere faced with physio-psycho-sociological assemblages of series of actions. These actions are more or less habitual and more or less ancient in the life of the individual and the history of the society" (p. 85) and are inextricably linked to the concept of emotion.

This is reinforced by Tcherkassof, Ballon, Dubois, Pansu and Adam (2007), who refer to "complex action patterns" (p. 1326), which are the outward and natural representation of emotions, which consist of the direction of the gaze, physical gestures and most notably, facial movements. Foolen (2012) contrasts the abstract, intangible nature of emotion with their outward manifestations on the face and body, which he claims allows the emotional state to become "perceivable by the senses" (p. 357), and that emotions manifest either verbally (through the direct expression of speech, interjections and metaphors) and non-verbally (through gesture, posture and facial expression). The latter is the subject of extensive debate and is the area that this literature review will consider in detail.

2.1. The Communicatory Significance of Emotional Expression

Smith and Lazarus (1990), citing Drever (1952), provide a useful working definition of emotion that indicates both the psychological and biological basis of emotion, stating:

> "[an emotion] is a complex state of the organism, involving bodily changes of a widespread character-in breathing, pulse, gland secretion, etc.-and, on the mental side, a state of excitement or perturbation, marked by strong feeling, and usually an impulse toward a definitive form of behaviour. If the emotion is intense there is some disturbance of the intellectual functions, a measure of dissociation, and a tendency towards action..." (Drever, 1952, pp. 80 – 81).

Hess and Thibault (2009) define emotions in a more contemporary view as "relatively short-duration intentional states that entrain changes in motor behaviour, physiological changes, and cognitions" (p. 120). When extended to facial expressions, we are therefore tasked with looking at certain physiological and psychological nuances, such as the classification of emotion, and the source of these different emotional expressions, with many recent theorists indicating that facial expressions are amongst the most essential modalities in human communication (Yeasin and Sharma, 2004), and have some form of biological basis.

As noted by Dupré, Dubois, Tcherkassof and Pizelle (2012), human behaviour is shaped by our interactions with our environment, with different forms of the same objects inducing different perceptions and reactions, both internally and externally. In this regard, the face can be considered a malleable communicative object, used to convey different messages through shifting configurations of muscles, each of which portrays varying emotional states. The authors note that it is widely understood that regardless of the origins of emotional expressions, they do carry communicatory significance, and play a part in determining behaviour between interlocutors, triggering different responses based on whether the emotion depicted is positive or negative. Smith, Cottrell, Gosselin and Schyns (2005) support this by remarking that due to their prevalence in supplementing and supporting the verbal channel, facial expressions have developed in such a way that they are able to convey information that spoken language is unable to and are crucial for interpersonal connection.

Jack, Sun, Delis, Garrod and Schyns (2016) support this by indicating that through its anatomical structure of dozens of muscles, the face is capable of generating a "myriad of intricate dynamic patterns" (p. 708) that contain an immense amount of communicative information when interacting with one another. Yu (2001) specifies the importance of

considering facial expressions in communication, stating that the face is "on the interactive side, the front, of our body" (p. 1), and plays a pivotal role in communication and interpersonal relationships, as it is responsible for portraying our states of mind and whether intentionally or not, demonstrates our emotional experiences. They also provide insights into aspects of our personality and various emotional traits that have evolved over the course of our individual development, which are not always found to be expressed verbally (Keltner, 1996), but rather manifest physically through the face in interpersonal situations.

Emotions and language are inextricably linked, with Foolen (2012) remarking that "language reflects conceptualization of emotion *and* expresses emotion" (p. 350), indicating the importance of looking at the intersections between these two different modes of communication, and how they are intertwined in conveying more complex messages, especially when working alongside cognition. The author indicates that we often use language to conceive our own emotions, and cognition to conceptualize the emotions of others. These insights into the multimodal nature of emotional expression have evoked a debate that has launched two opposing theories – one claiming the existence of an inborn emotional mechanism (the Universality Theory) and the other proposing that facial expressions, like language, are socially-mediated and differ between cultures (the Cultural Conditioning Theory). This section will investigate some of the notable theories surrounding these concepts, as well as considering more modern approaches to the expression of emotion and its relationship to interpersonal communication. This will entail looking into the expression of emotions in the digital realm, where the rising popularity of social media has influenced the manner in which individuals communicate, particularly in regard to emotional expression, supporting the claim by Cambria, Livingstone and Hussain (2011) that facial expressions are "coordinates in a multi-dimensional space" (p. 146).

2.2. Defining and Classifying Emotion

Emotions constitute an area of psychological inquiry that has been given widespread attention over the past century, especially in determining the cognitive and social relevance of emotional expression. Previously, it was thought that facial expressions were the emotions themselves, as indicated by the cross-cultural analysis undertaken by Labarre (1947), an archaic view that has since been entirely rebuked. Contemporary studies have shown that unlike other forms of communication, emotions are not fully tangible themselves, but are rather abstract and observable through the physiological manifestations of the body, most predominantly in facial

expressions, with Russell and Fernández-Dols (1997) remarking on the symbiotic nature of facial expression, stating "the face is the key to understanding emotion, and emotion is the key to understanding the face" (p. 3), proving the intertwining nature of the cognitive processes of experiencing emotion and the physical realization of it in relation to human behaviour. Considering this view, it is evident through previous research into this issue that facial expressions are not just spontaneous movements, but rather physical indicators of cognitive processing. The communication of emotion pertains strongly to investigations of human behaviour, serving to "bond social groups" (Waller, Cray and Burrows, 2008, p. 435), and thus necessitate further research, much like other forms of non-verbal communication.

The most succinct definition relating to the cognitive basis of emotion is "the consequences rather than antecedents of peripheral physiological changes brought about by some stimulus" (Cacioppo, Bernston, Larsen, Poehlmann and Ito, 2008, p. 174). Thus, whether manifesting spontaneously or through voluntary means, all emotions are provoked by a particular cognitive impetus, which normally manifests as an outward portrayal of that specific emotion. Subsequent studies suggest that there is a deeper psychological basis to what is just expressed physically, findings proving that facial expressions are not merely results of an internal process. Buck, Miller, Savin and Caul (1972) propose that expressions are not just secondary reactions to a stimulus, but also serve a pivotal communicatory function, positing that "many have suspected that a person's ability to accurately 'send' and 'receive' such non-verbal messages may be an important factor in his ability to communicate with others" (p. 362) and is imperative in understanding human behaviour and the role of emotional expression in interpersonal communication, as well as more complex cognitive processing.

Previous researchers into this subject have established a set of parameters upon which to base their research and facilitate observation. Emotional classification is a critical method that has been widely employed by theorists, as it provides cohesion to an otherwise extensive field of research. The literature indicates three broad categories of emotion – (a) basic emotions, (b) complex emotions and (c) compound emotions, all of which will be discussed in the following section. Classification is pivotal to all studies of emotional expression, as it is probable that these supposed basic emotions will be the most likely indicator of universal emotional expressions, while more specific emotions may be more infrequent.

2.2.1. Basic Emotions

The first category, cited by Ortony and Turner (1990), are 'basic' emotions, which are used to refer to the most common or distinct emotions that are supposedly universally understood without much deviation other than in the specific lexical terms used to describe these emotional concepts. These are also often referred to as 'primary' or 'fundamental' emotions in some literature, indicating the general belief that these are the most essential components of emotional analysis. According to Sauter and LeGuen (2011), these emotions are considered to be universal due to evolving from primordial instincts that had a biological function and are the most innate form of emotional signalling, rather than being blends of other mental processes, and are thus "categorically distinct" (p. 1479). Ortony and Turner (1990) indicate that the precise number of emotions cited in these categorical studies does tend to vary – they remark that some theorists, such as Watson (1930) and Mowrer (1960) define this category of emotions as only consisting of about two or three main emotional states, whereas others, such as Frijda (1986), theorise of the existence of up to eighteen basic emotions. As will be demonstrated, this study will align itself with the most widely accepted and contemporary view, utilising a set of parameters that consists of six basic emotions, as this is most analogous to modern research.

2.2.1.1. Ancient Perceptions of Basic Emotions – Sanskrit and Traditional Chinese Emotional Theory

Two ancient texts propose a principle of basic emotions. The first is the earliest known occurrence of the classification of basic emotions is an ancient Sanskrit religious text, which defines eight core principles, or *sthayi-bhava*, that are congruent with more contemporary views of what constitutes the basic emotions employed by modern researchers. Shweder, Haidt, Horton and Joseph (1993) list the eight principles contained in this text as *rati* (passion, love or delight), *hasa* (amusement or laughter), *soka* (sorrow), *krodha* (anger), *bhaya* (fear or terror), *utsaha* (perseverance, energy, heroism), *jugupsa* (disgust or disillusionment) and *vismaya* (wonder, astonishment and amazement), which were believed to be the cornerstones of these ancient cultural beliefs.

The Sanskrit writings can be contrasted with the historical classification mentioned by Russell (1991), who cites the traditional Chinese text known as the *Liji*, or *The Book of Rites*, which is believed to have been compiled as early as 500BC by the ancient Chinese philosopher and scholar Confucius, intended to be used for social and cultural guidance, and carries credence

in comparing older social traditions with more modern perceptions of human behaviour. Russell (1991) indicates one passage in the text that is particularly pertinent to the study of basic emotions, noting "what are the feelings of men? They are joy, anger, sadness, fear, love, disliking and liking. These seven feelings belong to men without their learning them" (p. 426). This indicates a form of innate emotional interpretation that is separate from socially mediated behaviours and remains relevant in looking at more modern classifications of emotion, which often cite these ancient texts as exemplifications of the existence of basic emotions.

2.2.1.2. Basic Emotion Theory – A Modern Classification

We can compare two ancient texts from Sanskrit and Traditional Chinese culture to a more contemporary view of fundamental emotions to determine the extent to which these early views were relevant in comparison to later perspectives. Schechner (1988) contrasts these principles with the classification provided by Ekman and Friesen (1969; 1971), who cite the basic emotions as consisting of **happiness**, **anger**, **sadness**, **disgust**, **fear** and **surprise**, which is often referred to as Basic Emotion Theory. Ekman (1992) refers to the earlier belief that **interest** was also considered a basic emotion, but later findings rendered this redundant, with later theorists, including the author himself, expressing doubt that it could be considered an emotion, amending his original position to be more reflective of its more likely qualification as a psychological state, rather than an individual emotion on its own.

Along with interest, Ekman and Friesen (1986) and Ekman (1989) also explored the possibility of **contempt** as a basic emotion, which they investigated in a later study but were unable to find conclusive evidence to support a differentiation between disgust and anger, of which it is commonly considered a variation. This issue was later revised by Baron-Cohen, Riviere, Fukushima, French, Hadwin, Cross, Bryant and Sotillo (1996), who cited that the concepts of *interest*, *contempt* and *deception*, amongst others, were not necessarily emotions, but rather cognitive states that only manifest through micro-expressions, and cannot be considered aligned with basic emotions, even if they are commonly perceived in some way across all cultures. Ultimately, the central intention of this categorization is to lend support to a theory of a set of pancultural expressions, with the authors observing that the emotions they categorize as being fundamental are experienced by every culture, only differing in the specific lexical terms used to describe the emotions. This highly influential classification of six basic emotions became the basis for the majority of subsequent studies into emotional expression.

There are examples of the older principles sharing some qualities with the contemporary classification, with certain emotions occurring in both the original Sanskrit text and the more modern view of basic emotions. This provides some cultural significance, as despite the difference in cultural, geographical and temporal bases, there are similarities in the core emotions proposed. A pertinent example is mentioned by Shweder, Haidt, Horton and Joseph (1993), who compared these literary and theoretical works, and ultimately found three emotions as being common between the texts – anger, fear and sadness (or sorrow). The Sanskrit *hasa* (amusement or laughter) can be compared to Ekman and Friesen's (1969) classification of happiness, but according to the authors, there is a slight difference in the perception of *hasa* as opposed to the western view of joy or happiness.

Moreover, not only is this comparison historically resonant and supportive of a theory that purports the existence of the same set of emotions in every culture, but it also bears relevance to geographical issues of emotional expression, with the older texts being representative of Eastern culture, whereas the later studies were taken from a Western perspective, yet considerable similarities can be found in both that extend beyond simple issues of translation. This distinction is important when considering the cultural basis of this study, particularly when venturing into looking at slightly more deviant perceptions of emotion, as well as the relationship between different emotional states.

2.2.1.3. Facial Expression Programme

A theory that is related to the Basic Emotion Theory by Ekman and Friesen (1969; 1971) is the Facial Expression Programme, proposed by Russell and Fernández-Dols (1997), who define it as "a network of assumptions, theories and methods" (p. 11) that are related to facial expressions and their relationship to emotions. The basic principle of this theory is that there is an existence of a finite set of facial expressions (the authors propose seven basic emotions, but do indicate that the precise number is malleable, with there being a possibility that there are slightly more or less than their projected set of emotions). Their theory is that these emotions are not considered basic due to their widespread recognition across cultures, but rather because they have their origins in genetics, creating a fundamental database of intrinsic emotions that can be produced and interpreted by all individuals, regardless of social background, making them resistant to cultural conditioning.

They base the Facial Expression Programme on the theory that biologically, humans are born with a mechanism that 'encodes' and 'decodes' specific signals that are carried on the face,

which is present from birth, citing their findings that even infants are able to extrapolate information conveyed from their caregivers, with Gosselin and Larocque (2000) indicating that this emotional development is present, albeit rudimentary, from birth, and steadily progresses throughout the child's development, reaching its apex around the age of ten. Tracy, Randles and Steckler (2015) cite this as being derived from the evolutionary principle of "approach or avoid" (p. 26), whereby an observer can discern a particular situation from non-verbal signals, and whether there is an impending threat afforded to them by approaching a conspecific, which they indicate as being ingrained in motor development early in childhood, and eventually develop into more conscious behaviours later on in life.

Gosselin and Larocque (2000) indicate that the only deviation in these basic emotions is in how different cultures refer to these basic emotions, proposing that regardless of the different lexical items used to differentiate between them, the basic mental categories remain the same, only being labelled differently according to the nuances of specific cultural groups. While many theorists do tend to gravitate towards accepting a view of emotional classification as consisting of only a few basic emotions, it is necessary to account for the fact that these supposed 'basic' emotions are only a small sample of the panoply of possible emotions expressed by individuals, as this is not always sufficient in providing evidence for either the universality or culturally-conditioned of emotional expression, and further research has been pursued to provide insights into the perception of more advanced emotions.

2.2.2. Complex Emotions

Ortony and Turner (1990) cite the second category as 'complex' emotions, which are defined as being more culturally specific and thus scarcer in terms of studies that seek to provide evidence to an innate theory of emotional expression, often being considered amplifications of the elementary principles of the basic emotion theory, often working in conjunction with the view of a rudimentary set of emotional states to add nuance to the theory in favour of a universal set of emotions and their physical manifestations.

Further studies on the concept of emotional classification, such as the aforementioned work done by Ekman (1989), have seen investigations into more complex emotions, such as *pride*, *confusion*, *contempt*, *shame* and *interest*, which are common emotions that fall outside the confines of the basic classification, as they are perceived as being more difficult to discern physically, as well as being subject to higher and more frequent ambiguity. Several complex emotions are often considered to be quite similar and are usually grouped together, normally

in terms of the context in which they occur, with instances of some emotions being considered synonymous with others due to their similarities. Often referred to in the literature as being indicative of more 'specialized' emotions, they are nonetheless imperative in an investigation of cultural perceptions of emotion, as they logically cannot be restricted to only six basic terms.

Another view is one mentioned by Ekman (2009), who refers to a theory by Darwin (1890), whereby it was previously believed that certain emotions constitute what is referred to as an 'emotion family', where similar psychological states are grouped together by virtue of existing in a similar context, such as *anger* and *contempt* often being considered similar, but not necessarily the same emotion, as they have different psychological origins. This is subjected to further emphasis by Ekman (1999), who remarks that the extent to which different emotions are related are often dependent on culturally specific perceptions, and further claims that these groups of related emotions "constitute a theme [characteristics unique to that family] and variations [individual differences, and the differences in the specific occasion where that emotion will occur]" (p. 55). His theory posits that the thematic groupings of emotion are the result of innate development that evokes different emotional states in various contexts based on similarity in how they are perceived, while variation is the result of social mediation, where a specific culture will condition appropriate reactions in certain instances and indicate situations in which various categories of emotion are to be used.

This investigation towards whether or not different states are separate entities or just variations of the same emotion is supported by the study by Keltner and Buswell (1996), who focused on *embarrassment*, *shame* and *guilt*, which are three complex emotions that are often considered to be comparable. The authors endeavour to determine whether they are thought to be identical emotions, or if there is some underlying difference attached to these emotions depending on specific situations. The findings indicated that despite being commonly associated through their relationship to transgression or wrongdoing of some form, participants were able to distinguish between them, albeit in specific contextual instances. When not presented with a context, there was synonymy in how these emotions were perceived.

Moreover, Russell (1991) brings up a hypothesis of different cultures experiencing different emotions, due entirely to his belief that certain emotional terms in various cultures resist translation and are thus inextricably linked to this particular language or culture. Examples of this include the German term *schadenfreude* (the sensation of deriving joy or pleasure from the misfortune of another) or the Portuguese term *saudades* (the immense feeling of longing for a

particular person, place or time), which are not normally found to be translatable into other languages. The author comments on a theory that not only do complex emotions exist on their own, but also that certain cultures could possibly experience different emotions altogether.

However, Russell (1991) does account for the likely possibility that this is merely a case of lexical originality, whereby a particular term is resistant to translation, rather than being restricted to a specific culture, as the limitation of diverse terms for these emotions in other languages does not restrict them to being felt by those in other cultures. Wierzbicka (1986) acknowledges that lexical diversity must be taken into account, as the fact a language lacks a unique word for a particular emotion does not preclude it from being experienced by speakers of other languages. This indicates the relevance of looking at the role lexical diversity plays in the classification of emotions, with the author noting that there is an inextricable link between the specific words and categories used to organize and describe certain emotions.

When focusing solely on dialects of English, Russell (1991) indicates the presence of over 2000 words to describe different emotions, with less than a tenth of them being found in the layman's working vocabulary. In studies of emotional expression, the tendency for languages to differentiate between different emotions in different ways needs to be somewhat considered. The author refers to examples of *terror, horror, dread, apprehension* and *timidity* in English, which he cites as all having different contexts and meanings in English across different contexts. Many of these terms would not be directly translated into other languages, which may not differentiate between emotions in situations that would evoke different emotions in English, and where a single word in one language may suffice in describing a broad range of contexts in another (such as in the case of the Ugandan word *okusunguwala*, which refers to both *anger* and *sadness*), with the inverse being just as common.

2.2.3. Compound Emotions

Finally, the third categorization employs elements of both the theories, utilizing the parameters of basic emotions and complex emotions to describe another set of emotional concepts. Du, Tao and Martinez (2013) propose the concept of 'compound' emotions, which they cite as being blends of two or more emotions, whether basic or complex. As will be seen, classification is key to investigations in this field, as the majority of studies make use of the different levels of emotional categorization, particularly basic emotions, and while most studies do make use of the same small set of principal emotions, a contemporary investigation cannot be entirely restricted to only these six emotions.

Less common emotions should also be considered, especially in studies that facilitate original responses, where it is likely to observe some deviation from the established response parameters. Russell and Fernández-Dols (1997) propose that "any state lacking a facial expression is not a basic emotion" (p. 11), referring to the theory that these simple emotional states manifest on the face, and that other cognitive states are the result of numerous emotions working in tandem, or are indicative of psychological processing separate from mere emotional expression. They exemplify this theory by proposing *anxiety* as not a fundamental emotion on its own, but rather a more complex cognitive state that arises through the intersections of *fear*, *sadness* and *anger*. Unfortunately, compound emotions are an area of research that has not received the immense focus as basic and complex emotion theory, with many theorists using it solely as a means of classifying emotions that do not fit into the parameters of either of the other two categories. However, compound emotions are of interest due to the lexical and semantic associations with the terms that are normally classified, and while it may be somewhat undervalued psychologically, it is relevant to an exploration of the language used to describe emotional expressions, and how they can differ cross-culturally.

2.3. The Universality View

The central tenets of the universality hypothesis are succinctly provided by Mandal and Ambady (2004), who argue that "facial expressions of emotion are uniformly understood, expressed or experienced across cultures" (p. 28) and that they are displayed through the same "specific configurations of facial muscles" (Hassin, Aviezer and Bentin, 2013, p. 60). Matsumoto and Willingham (2009) indicate that anatomical studies have found the face consists of around 4000 individual muscles, which results in a large number of possible facial expressions. However, of this seemingly infinite set of expressions, evidence has shown that "a small number of specific facial configurations are universally and discretely produced when emotions are elicited" (p. 1). This is the crucial thesis of those aligned with the theory that facial expressions of emotions are universal.

According to Matsumoto and Willingham (2009), the Universality Theory has two different potential sources. The first claims the existence of a universal process of "culture-constant learning" (p. 1), whereby facial expressions are learned through social modelling, and developed in individuals in the same way language is acquired, through a process of observation, imitation and reinforcement, with the same basic emotions persisting throughout all cultures. However, this theory does not take into account remote cultures, which requires

further proof for the second source, that of an "evolved-response system" (p. 1), which claims that emotional expressions are the result of a response system that does not entail learning, but are rather the product of an inborn emotional mechanism, whereby the process of emotional interaction requires understanding between the transmitter (the face) which encodes the emotion, and the receiver (the brain), which interprets this non-verbal signal, a seemingly innate process (Smith, Cottrell, Gosselin and Schyns, 2005). This has proven to be the most heavily favoured argument in support of the Universality Theory, as the forthcoming literature will demonstrate.

2.3.1. Roots of the Universality Theory

The earliest known occurrence of work in the view that would eventually come to be seen as indicating universality in emotional expression is cited by Fernández-Dols and Crivelli (2015), who refer to Charles LeBrun, a seventeenth-century artist whose work is proposed as being an early forerunner of the Universality Hypothesis. LeBrun proposed a set of guidelines to describe and reproduce certain "passions" (p. 25). According to Tissari (2017), 'passions' were used to refer to several fundamental cognitive states practised by everyone, while 'emotion' itself was defined as "movement; disturbance, perturbation; an instance of this" (p. 86), and only came to be associated with more internal sensations in later years, after the decline in deity-centric policy, and where "the person experiencing the emotion was more central than the outside forces affecting him or her" (p. 86). LeBrun established a rudimentary categorization of these 'passions', which correlate to the aforementioned basic emotions, such as *joy* and *laughter* (the basic emotion of *happiness*), *wonder* (the basic emotion of *surprise*), *horror* and *terror* (the basic emotion of *fear*), *sorrow*, *weeping* and *despair* (the basic emotion of *sadness*) and *scorn* and *rage* (the basic emotion of *anger* and possibly *disgust*). This indicates early support for a theory of universal emotions, as LeBrun drew upon religious doctrine to indicate that these were all commonly experienced by all individuals, regardless of their cultural background.

However, the earliest research that directly correlates to the Universality Theory in considering the cognitive basis of emotion came about in the early nineteenth century. According to Ekman (2009), Victorian-era psychology was often focused on looking at facial features, extracting information around the intelligence and personality traits of their subjects, with the dominant belief being that the face harbours an immense amount of information about the characteristics of individuals. This was further explored with the publication of *The Expression of Emotions*

in Man and Animals by Darwin (1890), which approached the subject of discerning information from facial expressions. Ekman (1996) argues that Darwin was insistent on promoting his theory of universality since it provided strong support for his broader theories of evolution and gave credence to his belief that "human beings had descended from a common progenitor" (p. 366). The author based his research on similar concepts but focused on a theory that combined anatomical form and the emotions normally attributed to them. He referred to these as "visible but temporary changes in appearance" (p. 3449), which are not merely just by-products of cognition but have the use of signalling certain messages to members of the same species (D'Andrade, 1981), indicating a deeper biological basis to these facial configurations.

Previously, theorists would only refer to these facial changes by their form, using terms such as 'smile' or 'frown', with Darwin (1890) being a pioneer in the theory that there was a biological and psychological basis to facial movements. He supports this assertion by linking it to his findings that emotional expressions are not unique to humans, and that they are also found in other species. He comments on the view of human-exclusive expressivity as being the result of his contemporaries having "never looked at a monkey" (p. 3450). This correlates with the findings of more recent studies, which indicate that anatomical studies on non-human primates found significant similarities to the muscular structures normally used by humans in the production of facial expressions (Hwang and Matsumoto, 2015).

This relates to the revolutionary work the author would do in looking at the roots of emotional expression, most notably suggesting a radical theory that emotional expressions do not only have a biological basis, but that these facial movements that signal emotions are also universal. Smith and Lazarus (1990) emphasize the importance of considering situational factors in the evocation of different emotional expressions, which they term as being "transactions or relationships between the person and the environment" (p. 632). Subsequent theorists have explored the cognitive roots of emotion by looking towards our biological composition and evolutionary history to determine the extent to which we have evolved to respond to various situations differently.

2.3.2. The Evolutionary Basis of Emotional Expression

The view of the biological roots of emotion by Darwin (1890) is supported by his evolutionary theories, which find correlations between human and animal expression and support a belief in shared biological history that developed from the beginning of human existence and has remained consistent over time. The core of this theory is that facial expressions had biological

functions, even predating other forms of communication. They are considered a result of evolutionary necessity, with our genetic ancestors adapting to certain facial movements as a means of survival. Smith and Lazarus (1990) claim that emotions have their root in natural selection, whereby our genetic ancestors developed mechanisms for survival. In this instance, that mechanism was rooted in a cognitive ability to appraise certain situations as being beneficial or harmful, and subsequently providing a certain reaction that can be considered to initially be innate reflexes that aid in survival, and later came to form the psychological patterns that are now classified as emotion.

Proponents of this view refer to examples of these "evolved adaptations that are biologically basic in their form and function" (Barrett, 2011, p. 400), such as the raising of the eyebrows to express surprise or shock, which is considered a remnant of an earlier trait to improve vision in specific circumstances that required swift escape, an ingrained natural response to dangerous situations. Etcoff (1986) reiterates this view by stating that the development of eyebrows on our ancestors was an evolutionary characteristic that bolstered communication, and which was remained an anatomical feature in modern humans. A further example is one provided by Darwin (1890) on the expression of anger, which he found often manifests in the individual raising their upper lip, which he asserts is an evolutionary trait derived from our ancestors' inclination to respond to the threat of a predator by showing their canines in self-defence.

The theory of our ancestors being biologically designed to express certain emotions as a response to perilous situations is supported by an experiment conducted by Ekman, Levenson and Friesen (1983), who focused on the automatic nervous system (ANS). Respondents were presented with various emotional stimuli and their responses were subsequently measured, with findings showing that there are distinct ANS patterns for the emotions of anger, fear, sadness and disgust, and that these patterns are seemingly universal. The authors assert that these emotions have distinct ANS patterns due to their evolutionary basis, as they would be necessary for our ancestors to survive. This is supported by the findings of Fox, Lester, Russo, Bowles, Pichler and Dutton (2000), who propose that the ability to recognise and respond to faces of anger, fear and sadness are evolutionary traits and are biologically hard-wired from our preventative instincts in moments of danger, and our innate detection of threats. This correlates to the opinion that facial expressions serve a primarily communicative function in conveying certain messages to conspecifics, based on a particular cognitive state, with disgust and fear being the most prominent of the early emotional expressions.

The evolutionary basis of emotional expression persists as an area in which many theorists are still actively engaged. In considering the origins of emotions, Fernández-Dols and Crivelli (2015) propose two hypotheses which, despite being seemingly incompatible, still contribute to the discussion of the origins of facial expression. Their first hypothesis posits that emotional expressions are primitive evolutionary remnants, and are shared with our primate relatives, going back up to six million years ago, while the second theorizes that these facial expressions have specific meanings, a "precise correspondence with some concepts of emotion and the words that refer to these concepts" (p. 22), necessitating a form of spoken language, which was less-likely to exist at the time of our earliest ancestors. The authors reconcile these two theories by stating that the origins of these primitive emotions were through simple communication of basic messages, rather than having a clearly defined meaning, and that through the gradual rise of social interaction, facial expression co-evolved alongside language, and came to have a more sophisticated and precise definition.

The work by Darwin (1890) would prove to be highly influential for proponents of the Universality Theory going forward, with Hwang and Matsumoto (2015) remarking on the impact of this view by stating "Darwin insisted that emotions exist panculturally and that all humans possess the ability to express emotions in the same ways through their faces and other non-verbal channels such as voice" (p. 42), and thus indicating the relevance of his view in determining the origins of emotional expression as not being arbitrary occurrences, but rather the result of the intersections between cognition and biology.

Thomas (1991) argues for the "similarities between the bodily movements which humans and animals employ to express hostility, dominance, or territoriality and they point to the near-universality of some facial expressions of emotion which, like laughing, weeping, yawning or blushing, seem to cross-linguistic and national boundaries" (p. 3), lending support to the theory that emotional expressions have their basis in biology, and when presented with these expressions, an individual (regardless of their cultural or social background) will understand the message being conveyed, making use of an inborn mechanism to interpret facial expressions and discern the underlying communicative signals, and react accordingly. This theory served as the catalyst for numerous subsequent studies that have investigated various social and cultural groups in order to provide evidence for these theories and prove the existence of the collective recognition of facial expressions across all cultures.

2.3.3. Applications of the Universality Theory

Hwang and Matsumoto (2015) indicate that despite being an area that was highly contentious at the outset, there were only seven published studies that were conducted globally into this theory between the work done by Darwin (1890) and the 1960s, all of which were inconclusive to providing further evidence towards universality. Ekman (1992) indicates that in the period between 1920 and 1960, the vast majority of theorists adopted a position that facial expressions, like gestures, were culturally conditioned. The theoretical concepts surrounding a possibility of universality were revived by various theorists after this period, likely informed by the rise in the debate between behaviourism and nativism that was prominent in psychology at this time, whereby psychologists investigated the possibility of inborn behaviours. This revitalization of the discussion surrounding the origins of facial expression saw many subsequent theorists making use of the framework proposed by Darwin (1890) in their endeavour to explore the possibility that facial expressions are innate and not purely arbitrary occurrences, with the subsequent studies by Ekman and Friesen (1969; 1971) being considered cornerstone contributions to the contentious debate.

2.3.3.1. Ekman and Friesen's Theory of Universality

Ekman (1992) indicates his alignment with this particular view by remarking that the Universality Theory is derived from the assumption that "emotions are a product of our evolution, with some biological givens" (p. 550). A pioneer of this theory, he conducted a notable study (Ekman and Friesen, 1969; 1971), whereby the authors undertook an influential experiment that saw respondents from different cultures being presented with still images and asked to associate each expression to a label from a pre-determined list of options, correlating to the aforementioned basic emotions. This method was derived from what Darwin (1890) founded as the 'judgment study', which employed a similar principle of presenting subjects with images and determining which emotions are most commonly attributed to each.

This is similar to the theoretical principles proposed by Wagner (1997), who refers to it as the "objective coding system" approach (p. 33), which emphasized description as a legitimate means of garnering insights into the perception of facial expressions, and further elaborates on the two methods including the *category judgment method* of classifying emotions, and the *rating method*, whereby participants assess the intensity of a particular expression. He contrasts this with the significantly more neurologically accurate, but disparagingly intrusive, method of electromyography (EMG), which utilized electrodes as a measurement tool. The survey method

employed by Ekman and Friesen (1969; 1971) is highly favoured due to being non-invasive to participants, and more likely to evoke results more consistent with their own perception, emphasizing description and analysis as a legitimate means of garnering insights into the interpretation of facial expressions.

The authors undertook this study amongst certain groups, with their most prominent and theoretically notable endeavour being the research conducted in Papua New Guinea. The authors immersed themselves amongst isolated tribal populations, which they refer to as "preliterate" (p. 124), as they did not have a known writing system, and communicated almost entirely through the verbal channel. They were entirely separated from other populations, therefore any contact between other cultures outside of their respective regions was highly unlikely. The experiment utilized the same data as a similar study conducted amongst American participants. The findings of the studies garnered satisfactory results in support of universality, in which both groups of participants (Papua New Guinean and American) were able to produce and interpret facial expressions with remarkable correlation to each other, with the results aligning in a way that allowed the authors to indicate the presence of some form of universality. As noted by Frijda and Tcherkassof (1997), even when there were responses that deviated from the established emotion (the authors refer to the tendency for many participants to mistake *surprise* with *fear*, as there are structural similarities in the appearance of these emotions), the "non-negligible proportion" (p. 83) of these inconsistencies returned intriguing findings that contribute to the evidence of universality.

The authors conclude that these results are supportive of a universal theory of emotional expressions, as the tribal participants had very little interaction with Western populations through either contact or the media, and thus their ability to recognise and demonstrate mostly similar expressions lends support to an innateness theory. The only difference in the findings indicated by Ekman and Friesen (1971) is that the New Guineans had difficulty discriminating between surprise and fear, which they cite as a possible culturally-conditioned occurrence as "fear faces may not have been distinguished from surprise faces, because in this culture fearful events are almost always also surprising" (p. 129), signifying a learned concept superseding a universal trait, which the authors attribute to a culture-specific exception rather than a negation of the innateness theory.

The studies by Ekman and Friesen (1969; 1971) would prove to be highly influential, with theorists aligned with both theories utilising the framework of this groundbreaking research in

further examination of emotions. Etcoff (1986) refers back to the importance of this research by noting that "the particular facial muscles recruited for the signalling of each of these emotional states is the same whether the emotion is displayed by a member of a preliterate tribe in a remote area of New Guinea or by a resident of San Francisco" (p. 128), and that regardless of cultural background, there was some relevance to the theory that facial expressions did harbour certain innate elements.

2.3.4. Further Evidence in Support of the Universality Theory

We can see a similar approach in a subsequent study by Boucher and Carlson (1980), who conducted a series of three experiments that utilize a limited-response model (whereby participants had to choose between a set of options, as per previous conventions) as well as introducing a new model of free-response (where participants were allowed to give responses other than those provided), looking at emotional recognition between Malaysian and American participants, chosen as they constitute different cultures without any notable shared historical background. Their results confirmed the existence of "display rules" (p. 278), which are defined by Ekman and Friesen (1969) as culturally-specific facial behaviours (rather than fully-formed expressions) that convey an underlying emotional state, but also that there were distinctive patterns in the findings of their experiments to suggest that facial expressions are universal, as the recognition between these different cultures correlated enough to lend support to the view of biological emotional expression.

As a form of non-verbal communication, facial expressions are often compared to bodily gestures by theorists, who attempt to draw correlations between expressions and the wider process of non-verbal communication. Darwin (1890) established a basis for this line of investigation by asserting that while facial expressions are universal, the majority of bodily gestures produced are culturally specific, mediated with certain meanings but different groups that are often extremely different in certain cultural contexts. One gesture will carry one particular meaning within one group, and mean something completely different in another, which Ekman (2009) remarks often leads to misunderstanding when a specific gesture is used by an individual without the knowledge that it can be considered vulgar or insulting to those of another cultural background. This form of non-verbal cultural misunderstanding has yet to be found in terms of facial expressions, lending credence to the belief that facial expressions may have similarities to bodily gesture insofar as being potent forms of non-verbal

communication, but are the product of some innate mechanism, rather than derived from culture-specific conditioning.

Other theorists have proposed that not only have emotional expressions evolved to be universally understood, there are certain cognitive processes relating to emotions that are innate and may have also evolved alongside the facial expressions. Tomkins (1962) claimed that the biological basis of emotions can be seen in his theory of facial affect programs, whereby the face is imperative for experiencing emotion, as not only does it inform others of our emotional state, but also provides feedback to the self, which is pivotal to how an individual perceives emotion, with this process being demonstrated as another innate trait of emotional expression.

Moreover, Etcoff (1986) focuses on the specific configurations of facial muscles in the production of expressions, and relates it to her view on neuropsychology, stating her belief that if there is an evolved universality in the external muscles used to convey certain emotions, then there should also be a cognitive evolutionary trait that aids in the reception of these physiological signals, concluding that there is an inextricable link between cognition and body language that cannot be culturally-mediated. She further proposes that emotional expression is lateralized to the right hemisphere, which she notes is the region responsible for interpreting and recognizing faces, providing evidence to studies that found patients with some form of damage to the right hemisphere of the brain struggled with recognizing emotional expressions.

2.3.5. Current Perspectives and Future Directions of the Universality Theory

As made evident by the prior discussion, the Universality Theory has been an area of great contention for over half a century. However, there has been more recent research into the subject that provides further insights into the possibility of a series of universal emotions expressed through facial expressions, with many venturing into neurological studies to provide evidence to the role of underlying cognitive processes in the production and perception of facial expressions. This section considers some of the more notable research being done recently, indicating the relevance of the Universality Theory as a current aspect of research into emotional expression.

Capocasa, McCuen, Venier and Rufo (2016) indicate their firm belief that the debate between whether emotional expressions have evolutionary origins or are the product of social constructions is far from resolved, and that modern theorists should continue to push forward in investigating the relationships that exist between "nature and socio-cultural learning" (p. 37), which will likely lead to further insights into human psychology. This included venturing

further into studying emotion from the perspective of the neurosciences, with technological innovation allowing us to enrich our understanding of brain function. The authors also coin the term "neuroanthrolopogy" (p. 39), which they cite as being a new but revolutionary area of study focused around "cultural phenomena and brain activity" (p. 39).

2.3.5.1. "False" Emotions

Porter and ten Brinke (2008) suggest that as our cognitive skills developed through evolutionary change, so did the ability to intentionally manipulate expression to convey disingenuous emotions, which can complicate innate emotional interpretational techniques. The authors suggest that we have developed another innate mechanism, the recognition of "microexpressions" (p. 509), which are subtle and mostly unconscious facial movements which cannot be intentionally manipulated and can indicate the authenticity of the expression. These findings contribute to the wealth of research that posits the existence of an innate emotional mechanism, whereby not only do we have an innate capacity to produce the same emotional expressions, but also the universal capability to interpret them in the same way.

The ability for the intentional manipulation of emotional expression as a means of deception has been an area that many contemporary theorists have considered, with Porter, ten Brinke, Baker and Wallace (2011) looking at the intentional use of facial expressions as a tool of misleading receivers. This can usually take the form of masking authentic emotion with an expression that reflects the opposite, such as in the case of a smile intentionally being used to cover sadness. Thibault, Levesque, Gosselin and Hess (2012) state that the smile is "the most ubiquitous and the most confusing" (p. 215) facial expression, as it is not only used to express emotion, but often to represent politeness in an uncomfortable situation or disguise a more negative emotional expression, particularly in cultures where expressions of anger or sadness are not acceptable in certain social situations. Another common method of masking emotion is in situations of forced neutrality, where an expressionless face conceals another emotion, either positive or negative - this is often referred to as the proverbial 'poker face' in modern culture.

However, Thibault et al. (2012) remark that even through the growing ability of humans to manipulate emotion, there are inborn recognition mechanisms that assist in determining the veracity of certain emotions. They exemplify this with a reference to 'Duchenne smiles', which Schmidt and Cohn (2001) define as being a smile that involves the use of both the orbicularis oculi (lateral corners of the eye) and zygomaticus major (corners of the mouth) and are therefore considered to be the most accurate representations of true smiles. Extensive research

into these smiles has found that, while it is possible to intentionally reproduce the mouth movements, the orbicularis oculi is far more difficult to reproduce. The conclusion is that Duchenne smiles are almost always genuine, while those that do not reproduce the same two movements are forced or inauthentic, supporting the theory of microexpressions.

Porter, ten Brinke, Baker and Wallace (2011) contrast this with more recent findings, which they claim prove the hypothesis that "emotional leakage" (p. 133) is incredibly rare, and that the ability to authentically mask emotions without triggering the innate detector in the receiver is indicative of either a higher-than-average emotional intelligence, or psychopathy. However, Crivelli, Carrera and Fernández-Dols (2015) contend that Duchenne smiles are not always present in moments of happiness, remarking on findings that indicate they mostly manifest in social interactions. This continues to be an area of considerable interest, with many contemporary theorists still actively looking into the links between cognitive functioning and the production and manipulation of emotional expressions. This bolsters the view by Darwin (1890) that certain facial muscles cannot be falsely activated, nor suppressed, with modern research frequently investigating the human tendency to mask emotion, and the varying abilities of receivers to determine the veracity of these expressions.

2.3.5.2.Imitation

Hwang and Matsumoto (2015) indicate that a dominant belief held by dissidents of the Universality Theory claimed that emotional expressions were the result of imitation, with individuals learning to produce certain expressions in a similar process to how infants acquire language. They refer to findings done involving individuals with congenital blindness (visual impairment present from birth), which found considerable similarities between the emotional expressions of blind and seeing individuals, suggesting some element of universality in the production of expression. An early but influential finding was by Eibl-Eibesfeldt (1983), who discovered a case of a young child, who despite having been blind from birth, clearly expressed happiness through smiling. Unlike their seeing counterparts, the visually impaired participants in these studies were not afforded the opportunity to imitate facial expressions during their upbringing, so the presence of similar facial movements between the two groups indicates the relevance of an innate viewpoint.

Moreover, the authors indicate the findings from similar studies conducted throughout different cultures, which garnered very similar results, with cross-cultural investigations into emotional expressions of both seeing and congenitally blind individuals returning results that are

sufficient in providing "strong evidence for a biologically-based emotion-expression linkage that is universal to people of all cultures" (p. 45). Matsumoto and Willingham (2009) found that there were broad similarities in the spontaneous production of facial expressions between blind and sighted participants, but when asked to deliberately produce a certain expression, there was far less correlation, as visually impaired participants are notably far less successful at producing voluntary expressions that aligned with the results of their sighted counterparts.

2.3.5.3. Categories of Universality

Fernández-Dols and Crivelli (2015) draw upon some of the formative theories that underpin this view by referring to Basic Emotion Theory (BET), derived from the principles introduced by Ekman and Friesen (1969; 1971). This theory is primarily concerned with the recognition of a set of fundamental emotions that the authors claim harbour relevance for "detecting a message with adaptive value for senders" (p. 21), which they assert forms a connection between the sender and the receiver in terms of emotional communication. They add depth to the cognitive basis of emotion, citing a more recent claim by Ekman (1997), who proposes that the use of emotional labels such as 'happiness' and 'anger' are used as psychological "shorthand, an abbreviated way to refer to the various events and processes which compromise the phenomena of emotion" (p. 334). They elaborate on the concept of universality by introducing the possibility of different forms of innate emotional expression.

The authors indicate the importance of differentiating between certain forms of universal expression. The first is *existential universality*, whereby the production of facial expressions is a universal occurrence, which has been proven to be accurate through cross-cultural studies that show every culture producing some form of facial expression. The second form is *functional universality*, which they succinctly summarize through the maxim "does the same tool have the same use?" (p. 28), whereby they question whether a specific facial expression conveys a particular emotion in all situations. The third form is *accessibility universals*, which the authors define as being the relationship between expressions and emotions, independent of cultural context or content. According to the authors, these three components form the basis of current research into the Universality Theory, and that further work needs to be done in all three areas to determine the extent to which emotional expression can be considered universal, with this theory remaining one of the most widespread areas of investigation in modern psychological study.

2.4. **The Culturally Conditioned View**

The tenets of the opposing view are concisely stated by Mrovlje (2013), who replicates the maxim “what shows on the face is written there by culture” (p. 99), a statement attributed to Klineberg (1938) based on his research done into emotional expressions in Chinese cultures in contrast to western viewpoints of how emotion is represented physically. This has served as the central belief by those aligned with the culturally conditioned view of emotional expression, as they propose the theory that universality is implausible, and like other forms of communication, facial expressions are independently constructed through cultural means. In remarking on the widespread defiance he found from Behaviorists at the time of his original research, Ekman (1996) indicates that their fervent belief was that "learning was responsible for all that we do and all that we are, including our attitudes and personalities" (p. 368), indicating that the strong opposing view that our environment is imperative in forming our perception of the world.

Ellsworth (1994) indicates that when looking at how emotions are expressed amongst different groups, we cannot ignore the cultural relevance of how individuals express their emotional state, and what their social context has to do with their expressions, stating that “people’s emotional lives are profoundly influenced by the culture to which they belong” (p. 23), and that there is a profound correlation between how individuals from different backgrounds express emotion and particular cultural standards. One such example can be found in Klineberg (1938), where the author illustrates this theory by referring to the case study that focused on an archaic Chinese belief that the teeth must not be shown when smiling, a socially mediated standard that contradicts western ideals of the expression of happiness. This correlates with many cross-cultural studies that have found different standards of emotional expression between groups.

The belief most commonly associated with the Culturally Conditioned View is that gestures and facial expressions, much like verbal language, are socially mediated and differ across cultures, with each group “transforming simple behaviours into many different messages” (Matsumoto, 1991, p. 128) which remain unique to their specific population. Culture is born out of contextual adaptation to universal social and biological problems and challenges, and thus each individual group adapts their outward means of conveying certain messages in their own unique way, with some shared similarities between certain emotions, such as fear, being often recognized far more frequently in cross-cultural analyses than more complex emotions,

which are more likely the result of cultural conditioning to a specific context or challenge (Matsumoto, 2006). Furthermore, as these studies most commonly associate themselves with exploring human interaction from a global perspective, it is imperative to consider various inter-cultural idiosyncrasies, with Kastanakis and Voyer (2014) noting that "differences in perception can drive differences in cognition, both of which shape behaviour" (p. 429), necessitating investigations into the extent to which different cultures perceive particular non-verbal signals, which often are perceived differently in certain contexts.

Birdwhistell (1970) exemplifies the importance of considering different cultural perceptions by noting how there is evidence that some cultures utilize smiling as a representation of negative emotion, which is contradictory to the belief that it is a universal representation of happiness, as well as the inverse, when a positive emotional state manifests through a more neutral expression. This principle of considering cross-cultural nuance is supported by Lewis (2006), who states:

> "Smiles, while signifying good progress when on the faces of Britons, Scandinavians and Germans, might mean embarrassment or anger when adopted by Chinese and often appear insincere in the features of beaming Americans. Finns and Japanese often look doleful when perfectly happy, whereas gloom on an Arab face indicates true despondency" (p. 158)

Schmidt and Cohn (2001) remark on the opposing theory, and while they do acknowledge the tempting belief to attribute facial expressions to some inborn emotional mechanism, it is not a feasible theory, as "an emphasis on universality obscures the abundance of variation within and between facial expressions" (p. 10), with research needing to consider cultural meditation as a means of exploring the use of facial expressions as a form of non-verbal communication.

2.4.1. Facial Expressions as "Non-Verbal Accents"

Archer (1997) succinctly remarks that "gestures are a silent language unique to every society" (p. 90), which is a concise indication of the general belief of many theorists that are aligned with the Culturally Conditioned view. They tend to approach this subject from the perspective of each group making use of their own forms of non-verbal communication, distinct from those produced by other cultures, whether it be in different meanings associated with certain bodily configurations, or simply the lack of specific gestures in some cultures. Marsh, Elfenbein and Ambady (2003) posit that there are specific gestures and expressions that differentiate speakers according to their cultural background, which they refer to as "non-verbal accents" (p. 373).

Elfenbein (2006) further elaborates on this by proposing the existence of cultural variation in the representation of emotion, similar to spoken dialects. She indicates that this is representative of a "dialect theory of emotion" (p. 24), which states that like language, emotional expressions are universally produced, but that they contain specific nuances that vary across cultures and are understood differently across various social contexts.

Thomas (1991) exemplifies this concept by providing an anecdote to demonstrate the concept of non-verbal accents. His analogy involves the famously multilingual former Mayor of New York City, Fiorello H. La Guardia, who was known for his expressivity, with the author noting that "one could turn the sound off the television and still know from his gestures whether he was speaking English, Yiddish or Italian" (p. 6), solely due to the various associations certain gestures and expressions have with specific cultural contexts. Hwang and Matsumoto (2015) remark on the general belief of theorists aligned with this theory of cultural mediation by stating "just as different cultures have different spoken languages, they must have different expressive languages of the face as well" (p. 42). Elfenbein (2006) indicates the importance of taking globalization into account when looking at this theory, as culturally specific emotional expressions are starting to be recognized by the individuals outside of the cultural group, mainly due to the belief that "accuracy in judging foreign emotional expressions tend to improve with greater cross-cultural exposure" (p. 24), rather than being indicative of any form of universality.

Thomas (1991) also refers to the multiple "contortions of the face" (p. 9) that occur when individuals of a certain cultural background converse, which he attributes to the social mediation of non-verbal expression. He provides an exemplifying anecdote based on common observations of emotion, in reference to an assertion by Smith (1983), who demonstrates the importance of considering cross-cultural perception and interpretation when focusing on emotions by remarking:

> "A Frenchman, in telling a story that is not of the least consequence to him or to anyone else, will use a thousand gestures and contortions of his face, whereas a well-bred Englishman will tell you one wherein his life and fortune are concerned without altering a muscle" (p. 9).

While such an anecdote may be reductive by pandering to certain cultural archetypes rather than taking into account the various non-verbal nuances that extend beyond such generalizations, this sentiment does effectively reiterate the common perception that facial

expressions are produced and understood in many different ways, depending on both the individual producing the expression, and those who perceive it.

Culture plays an intrinsic role in how we recognize and categorize emotional expression on a socio-cultural basis, with Lewis (2006) suggesting that, much like all forms of body language, the various expressions produced by individuals range depending on their background, with the author asserting that some cultures utilize greater expressivity in their non-verbal communication, while it others it is far more subdued, a result of different cultures conditioning behaviour based on their specific social principles. Furthermore, Marsh, Elfenbein and Ambady (2003) cite findings that certain expressions have been known to alter the facial structure of speakers from that culture, and even in instances of neutral expressivity, the cultural background of a speaker can possibly be discerned, specifically by individuals of the same population group, a principle known as the *in-group advantage*, which will be discussed in a subsequent section.

2.4.2. The Impact of Interpersonal Interaction in the Perceptions of Facial Expressions

Many researchers have posited that the optimal way to view facial expressions is through "the international boundaries between physiology and culture" (Labarre, 1947, p. 52), which focuses on how different cultures perceive each other, as well as their use of expressions and gestures. In the text, Labarre (1947) indicates various gestures and facial expressions that are understood clearly within one cultural group but are often incomprehensible to outsiders. Therefore, not only do different cultures have variations in their use of non-verbal communication, but also tend to view their gestures and expressions differently in many instances. Dissidents of the opposing hypothesis conducted studies that demonstrated cultural diversity present in emotional expression, supposedly defiant to the theories of universality. This indicates relevance to the theory that facial expressions are influenced by interpersonal interaction, with social context playing a pivotal role in both the regularity and intensity of various facial expressions.

The central argument of theorists aligned with the culturally conditioned view indicates that facial expressions are mostly social, used to convey messages in much the same way as bodily gesture and verbal speech. Yet, can we consider facial expressions as being more social than they are natural? The social significance of facial expressions is a key concept for those associated with the culturally conditioned theory. The general belief is that facial expressions, much like bodily movement and verbal speech, serve the principal purpose of conveying

specific messages and that they can vary in different social contexts. Schmidt and Cohn (2001) consider facial expressions to be primarily interpersonal, and a communicative tool that is used more prominently in the presence of company than when alone, remarking that facial expressions are "signals, produced primarily with a social purpose" (p. 11).

Hess, Banse and Kappas (1995) investigate the disparity between the biological and social functions of expression through an experiment that focused on facial expressions both in the presence and absence of an audience, whereby participants were shown visual material designed to elicit an emotional response. The authors, citing the supposed social function of facial expressions, remark how "positive and negative emotional displays were augmented in the presence of a real or imagined audience" (p. 280), with social context being more imperative to the production of facial expressions than underlying emotional processes. As indicated by Blair (2003), when there is an absence of an observer, the emotions produced will either not occur, or be far more subdued. Findings such as these lend support to the theory that facial expressions are culturally conditioned, as their use in social contexts would suggest their primary purpose as being integral to intercultural communication, rather than being robust remnants of evolutionary development.

Aviezer, Ensenberg and Hassin (2016) contend with the theory that facial expressions are discerned independently of any external factors, indicating that context is immensely important in determining the extent and authenticity of an emotional expression. Fridlund (2017) echoes this view by elaborating on the importance of considering other factors in the expression of emotion. The author, once a proponent of the Universality Theory, expresses his disillusionment with this view after further research found immense incompatibility between the tenets of a universal approach and his own findings. He proposes that social situations are imperative to understanding emotional expression, indicating that it is not sufficient to simply indicate emotions as being universally experienced in all situations. Instead, the author states that context is imperative to determine the underlying cognitive processes associated with that emotion, and the varying stimuli that evoke certain expressions, which he indicates can occasionally be somewhat contradictory, stating "smiles may be made by mothers toward children or assailants toward victims. Tears may flow in grief, retribution, reconciliation, or triumph. The meanings of these displays can be understood only by considering who makes them and when they occur" (p. 86). The author proposes an approach that considers several external factors, such as the relationship between the transmitter and receiver of that emotional exchange, and the context surrounding that particular display of communicatory emotion.

The situational context surrounding an emotional expression also needs to be considered, as indicated by Masuda, Mesquita, Tanida, Ellsworth, Leu and Van Der Veerdonk (2008), who posit that an emotion cannot simply be judged based on a still image, but rather required an understanding of the surrounding context, which they say is a prerequisite in reality for many individuals, where external factors do play some part in how we perceive emotion, albeit to different degrees according to cultural standards, with the authors finding interesting insights into how people from different cultures negotiate the relationship between expression and situational context. They conducted a study that analysed participants from the United States and Japan, and found in the case of American participants, "when the face and the situation suggest different emotions, observers are more influenced by the facial expression and adjust their interpretation of the situation to fit the emotion expressed by the face" (p. 368). Conversely, the Japanese participants returned results that indicated that they considered both the emotion of the focal individual and onlookers and observers in their immediate environment, in determining the nature of a particular facial expression. Peripheral, secondary figures, as indicated by this study, do ultimately lend context to the perception of facial expressions in certain cultural situations.

2.4.3. Lexical Specificity of Emotion

Many theorists have considered the possibility that emotions are not perceived in quite the same way between cultures, as made evident by numerous inter-cultural differences, particularly in the lexical items chosen to reflect these emotions. This correlates to the aforementioned discussion on terms such as *schadenfreude* and *saudades*, which are mostly culturally specific concepts related to the specific languages in which they are used. Wierzbicka (1995) uses this aspect of lexical specificity to contend with what she refers to as the "high degree of intercultural consensus" (p. 228) that proponents of the Universality Theory support, providing a purely semantic opposition to the main tenets of the theory. The author indicates that the concept of emotional universals, while quite convincing, is somewhat dismantled by the implausibility that all languages have words that correspond directly with emotional labels indicated by the Basic Emotion Theory.

The author exemplifies this with *anger*, which she claims is often used to support universal emotions, as findings have seemingly led to the conclusion that it is an innate emotion. However, when contrasted with the supposed direct translation from other languages, such as in the case of the Italian *rabbia* (the term with which it is most closely associated), she notes

that there is a wider range of meanings associated with that specific lexical term that are not contained within the English equivalent, indicating a form of biased ethnocentric research, whereby English-speaking western theorists evaluate other cultures by virtue of their own language, rather than taking into account the cultural nuances that persist in each individual lexical item used to refer to an emotion.

Wierzbicka (1995) contrasts this with her theory of an "affective lexicon" (p. 231), which she defines as culturally specific sets of lexical items that each language uses to describe feelings and sensations. These different lexicons are often substantially different in size and categorization, and therefore a myopic view that classifies emotions under six or seven basic terms does not take semantic and lexical diversity into consideration in the argument toward a view of emotional universality. She adopts the theory that the specific terms used to refer to emotions do not simply operate as lexical markers, but rather harbour deeper meanings which are not always comparable to other languages, stating "there is no such thing as joy or anger: there is the English word *joy* and the English word *anger*, and there is a cognitive scenario encoded in this word; other languages have other words, and other cognitive scenarios" (p. 231). It is not enough to look at cultural diversity through making use of the "nearest-equivalent" (p. 232) method of lexical comparison, and even if words in different languages share a common core, it is certain that there are contexts in which a language has a single term that encompasses multiple English expressions, such as in the aforementioned example of the Ugandan word *okusunguwala,* which indicates both *sadness* and *anger*, which are two significantly different concepts in a language such as English. This classification, which the author refers to as establishing "conceptual primitives" (p. 236), indicates that words must be independent of specific emotional labels and the culturally conditioned terms for specific emotional states and that researchers should rather focus on defining the cognitive processes rather than simply being preoccupied with the terms used to describe them.

2.4.4. Current Perspectives and Future Directions on the Cultural Conditioning Theory

Much like the opposing theory, the Culturally Conditioned View has remained an area of frequent investigation, and the progression towards new forms of testing, whether through the increase in research on a global scale, or the rise in technology as a means of further enquiry, various theorists have been able to provide insights into the role of cultural context in the production and perception of facial expressions, making it a subject that is still widely active in current psycholinguistic research

Jack, Garrod, Yu, Caldara and Schyns (2012) utilised the parameters of the six basic emotions proposed by Ekman and Friesen (1969; 1971) in their own updating of the research. Employing data collected from two different social communities on entirely different continents – one from the USA, the other from China - they found evidence to oppose the Universality Theory, which normally made use of these parameters to suggest the existence of innate emotional expressions. In their research, the authors found that when these parameters were tested from a western perspective, there were clear congruencies that would suggest these emotions are universal. However, when the same concepts were applied from an eastern perspective, significant differences were found between the results. They remark that this demonstrates the theory of six basic emotions that are universally understood is not plausible, which suggests cultural conditioning of specific emotions.

The general conclusion is that while it is possible that some basic emotions may be marginally related to evolutionary change (specifically disgust and fear, which they claim do have some biological basis), facial expressions function as being exclusively culturally conditioned. The dominant belief is that expressions have primarily social functions within specific communities, suggesting that "these once biologically hard-wired and universal signals have been moulded by the diverse social ideologies and practices of the cultural groups who use them for social communication" (Jack, Garrod, Yu, Caldara and Schyns, 2012, p. 7242). Thus, as cultures develop, each group diverges and creates its own variations of basic emotional expressions. This is prominent in recent research that employs a more intermediary approach to the theories, with many recent proponents of cross-cultural mediation contributing their findings to a rapidly growing field of bipartisan research into this subject.

2.5. Intermediate Approaches to Emotional Expression

Ellsworth (1994) indicates that these conflicting debates, while proposing fascinating theories, do not adequately consider the contrasting view, and therefore often overlook certain broader elements in regards to human behaviour, stating "This tendency towards oversimplification reflects disciplinary preferences, with psychologists and biologists tending to overlook the cultural differences that anthropologists emphasize, whereas the anthropologist's interest in documenting human variability leads them to overlook similarities" (p. 24). However, there have been some theorists on both sides of the debate that have often indicated that the opposing view does have some merit.

Despite being one of its formative advocates, Ekman (1992) states that the Universality Theory does not necessarily diminish the importance of cultural factors in emotional expression, stating "this position does not deny the important role of culture and social learning processes in every aspect of human emotion – the control of expressions, the symbolic representation of emotional experience, how one evaluates emotion-relevant situations, attitudes about one's own emotions, how one copes with emotion and so on" (p. 550). Ellsworth (1994) remarks that the theories are not entirely incompatible, and that contemporary studies in the future should acknowledge both the emotional diversity and similarities existent between societies, and all subsequent models should reconcile these issues, as both theories hold immense credibility into looking at different aspects of human emotional behaviour.

Considering these views, despite the conflict between the two central concepts discussed in the previous sections, several other researchers have approached the concept of emotional expression from a more intermediary perspective, finding merit within both theoretical viewpoints. Russell (1995) took a bipartisan approach, referring to the cross-cultural recognition of facial expressions as "universal semantic distribution" (p. 379), which implies that certain basic expressions can be universally attributed to all cultures, which utilise a finite set of expressions (which are often not considered by proponents of universality) as compared to the seemingly innumerable number of bodily gestures that can be produced. The author cites the concept of "minimal universality" (p. 383), suggesting some form of universal agreement to which expressions represent certain emotions, even if they are socially mediated for the most part. Matsumoto, Chang and Seung (2010) comment on the importance of considering a combination of the two theories by claiming that innate expressions "interact with culture to produce our varied and multifarious emotional lives" (p. 3).

Numerous studies conducted by proponents of the universality theory found diverse populations from radically different cultures succeeding in recognising certain emotions. However, despite the convincing evidence that would support an innate emotional mechanism, Barrett (2011) attributes these findings to intuition on behalf of the participants, rather than being indicative of universality. However, the author does not dismiss the significance of evolution in emotional expression, rather suggesting that instead of evolutionary change facilitating individual emotions, it "produced a generative, multipurpose set of mechanisms that work together in each instance to produce a variety of emotional responses" (p. 403), with the ability to recognise and interpret certain emotional signals being innate, rather than the expressions themselves.

2.5.1. Display Rules: Emotional Expressions in the Presence and Absence of Observers

While their research did indicate a preference toward a theory of universality, Hwang and Matsumoto (2015) do provide evidence for a slightly more intermediate approach, whereby they assert that while innate emotional expressions do exist, their use differs cross-culturally. They reiterate the aforementioned principle of display rules, an early belief by Ekman and Friesen (1969), elaborating on the existence of these culturally mediated behaviours by defining them as "social norms learned early in childhood to help individuals manage and modify their emotional expressions depending on social circumstance" (p. 48). However, this is aligned with an individual's requirement to remain consistent with what is expected from them in a particular social role, rather than being the result of a complete social mediation of facial expression and behaviour, which often dictates appropriate non-verbal signals in various social situations and cultural contexts.

The authors exemplify this principle with a cross-cultural example of American and Japanese participants viewing a film with stressful content. This was conducted in two different environments – one in isolation, and the other in the presence of an authority figure. The findings determined that American participants did not change their expression in either environment, while Japanese participants attempted to mask their negative emotions while in the presence of the authority figure. They remark that this is a socially mediated behaviour derived from the customary avoidance of expressing negative feelings in the presence of someone of higher status. This is supported by de Gelder and Huis in T'Veld (2015) in noting how many Japanese individuals tend to mask expressions of anger or sadness, which they further elaborate on by claiming this extends to all forms of non-verbal communication, such as in the case of Japanese subjects using far fewer bodily gestures in comparison to their American counterparts. Yamamoto and Suzuki (2006) conducted a study in which participants were seated next to each other and shown amusing video clips, with a partition being put between the participants in some situations. Their findings indicated that participants smiled more regularly and with more intensity in situations where there was no partition between them, and the person next to them could be seen.

The general belief that can be drawn from these various studies confirmed that, based on the findings, there are cultural contexts in which certain emotions are utilized and expressed, with the consistency and intensity of some, whether negative or positive, being adequate indicators of the role emotional expressions play in human interaction. However, the dominant opinion

held by most theorists is that instead of defining emotion, different cultures rather mediate their usage in particular social contexts, whether it be in the presence or absence of an observer, as well as the relationship between the participant and the observer, with a previous study by Yamamoto and Suzuki (2005) finding variation in the consistency and intensity of smiles when interacting with a friend or a stranger, with social context playing a pivotal role in the use of facial expression.

Ultimately, the conclusion was that numerous emotions can be found throughout all cultures (rather than each group having unique emotions or radically different ways of expressing them), with the variance being found in the different manners of manifestation, which are dependent on various situational factors, rather than being universally represented in the same way. Much of the intermediary view has taken the approach to considering specific social contexts as a means of exploring the ways in which emotional expressions tend to differ between cultures, rather than proposing a view that advocates solely for cultural conditioning.

2.5.2. The In-Group Advantage and "Cultural Dialects" in Emotional Expression

Zhang, Parmley, Wan and Cavanagh (2014) were inclined towards a theory of cultural conditioning in their research but did indicate the relevance of universality. The authors investigated expressions of happiness, using a corpus of American and Chinese data, and found only minor deviations between cultures and their production and recognition of these expressions. Their hypothesis was not that different cultures are unable to discern the emotional state of other groups, but that they are more adept at recognising expressions when interacting with individuals from their own culture. The authors cite this as being indicative of an "in-group advantage" (p. 309), which has its basis in each individual's knowledge of their own culture's specific emotional traits. The authors refer to this as "cultural dialects" (p. 309), which may be compatible with the aforementioned concept of non-verbal accents.

These findings suggest that while some elements of emotional expression (particularly the more common expressions, such as smiles or frowns) are universal, more subtle emotional intricacies are mostly culture-specific. This is further supported by de Gelder and Huis in T'Veld (2015), who propose the "other-race effect" (p. 225), which they claim is the tendency for individuals to be better suited to recognize emotions from their own specific racial or ethnic group, which the authors suggest provokes questions as to whether we recognise based on parts (specific facial configurations), or if we make use of whole-object recognition (the entire face) in how we process the emotional expressions produced by others**.** This is explored in the study

by Yuki, Maddux and Masuda (2007), who conducted a study amongst Japanese and American participants, and found that Japanese participants associate more importance with the upper region, consisting of the eyes and eyebrows, in discerning emotions, in contrast to their American counterparts, who focus more predominantly on the lower region. The localization of emotions to a specific region of the face is particularly relevant in looking at more recent developments in global culture, whereby a large portion of the population has been instructed to wear masks that cover a large portion of the face, which will be discussed in a forthcoming section of this chapter.

Yan, Andrews and Young (2016) conducted a series of experiments with Chinese and white British participants, one of which utilized the same images as those in the original studies by Ekman and Friesen (1969; 1971). Their findings indicated that, while there was an above-chance correlation between participants in the interpretation of the expressions, the white British participants were able to categorize the expressions with slightly more consistency. The authors claim that, since the images they used were of white participants, this supports the theory of an in-group advantage. However, they indicate that the difference was extremely small (citing a deviation of just over 5%), and conclude that it is very likely that, while the in-group advantage does have relevance, it is not significant enough to support cultural conditioning as an isolated theory. Instead, they state their belief that the in-group advantage gives an advantage in recognition, rather than in-depth perception, which is more likely a trait of universality. Further experiments find significant differences in how partial-face recognition tasks returned more statistically different results, challenging the findings by Yuki, Maddux and Masuda (2007), claiming that the in-group advantage is only applicable in studies focused on the lower face, where participants from the two cultures demonstrated a greater aptitude in recognizing the emotions from their own group as opposed to the other.

Moreover, Roberson, Damjanovic and Kikutani (2010) refer to findings of previous studies, whereby students of different racial backgrounds were shown emotionally expressive images of actors of various ethnicities. The results of the study found that while there was relative synonymy in the general perception of these emotions, there was a greater response when individuals were responding to individuals in their own ethnic group, which is supportive of a theory that individuals respond most reliably to culturally similar stimuli.

However, as these studies are often rooted in race rather than culture, their assumptions are inherently unstable, as it does not account for racial diversity within individual cultures, and

thus require further development from a more culturally cohesive perspective. Yan, Andrews and Young (2016) indicate that this is not necessarily indicative of an inborn aptitude to recognize the emotions of one's own ethnic group, but rather the result of prolonged contact with a particular culture. They conclude that the in-group advantage applies to anyone discerning the emotions of a cultural group that they have been significantly exposed to, with a universal set of "display and decoding rules" (p. 45) being pertinent in inter-cultural recognition of emotion.

Several recent theorists have looked into the possible overlap between the two theories, a method defined by Elfenbein and Ambady (2003) as being indicative of the "interactionist perspective", which is based on the theory of cultural dialects (Marsh, Elfenbein and Ambady, 2003; Elfenbein, 2006) as a way of accounting for both elements of universality and cultural conditioning, as their intention "does not argue against universality in emotional communication, rather it argues only against extreme interpretations" (p. 277), and can be considered a more current intermediary view to this debate. Various cross-cultural studies were conducted, which returned results that indicated above-chance recognition of emotions between the different cultural groups (defined as 50 – 80% recognition), but that there were still certain instances of cultural variation creating some sense of deviation in the recognition of these emotions.

These differences were often shared between different cultural groups that participated in the study, which the authors suggest indicates an "ethnic bias" (p. 277), correlating to the aforementioned in-group advantage, whereby individuals are more likely to recognize emotions produced by individuals of the same cultural background as them. Their conclusion provided support for both theoretical viewpoints, with the notable recognition of facial expressions on an above-average level indicating some form of universality, with cultural variation creating "small adjustments" (p. 277) to this inborn mechanism of emotional perception. In their investigation of expressions of anger, Matsumoto, Chung and Seung (2010) provide a succinct working definition of the intermediary view, stating "all humans live in cultures, and cultures endorse the modification of universal [angry] expressions. These modifications can lead to both culturally-based universality as well as cultural differences in angry expressions" (p. 1), supporting a view that finds merit in both theories.

However, despite providing some insights into the importance of taking cultural diversity into account, Ekman (1992) does acknowledge a set of constraints related to the production and

interpretation of emotional expression that may not nullify the impactful work done by the proponents of cultural conditioning, but still limit the effect it has on facial expression, remarking how facial expressions are “not a totally malleable system” (p. 550). This is particularly relevant when looking into intermediary studies, as it is clear that there is often an imbalance between the two theories, with one being cited as more heavily influential, and the other being merely supportive of an alternative view that harbours some insights into either in-born emotional mechanisms or the role culture plays in producing expressions. Therefore, his view is that a truly intermediate view that takes both theories into account and concludes to an equal balance between the views is not entirely feasible based on the current evidence. Rather, he emphasizes the importance of considering the numerous detailed explorations into these views that take the alternative findings into account rather than invalidating them altogether (as was common with researchers on both sides of the theoretical divide) and have found interesting correlations that could suggest a more complex relationship between culture and cognition in the production and perception of facial expressions.

2.5.3. “Ur-Emotions”

A more recent view has taken the basic tenets of the Basic Emotion Theory and questioned the extent to which previous proponents of this theory neglected emotional variability, and instead focused on a much smaller corpus of emotional terms. This is discussed by Frijda and Parrott (2011), who refer to emotions are being elements in what they define as "multicomponential response patterns" (p. 407), which implies that an emotion is simply a reaction to a particular stimulus, their view being that emotions need to be considered alongside the specific environment in which it is provoked or elicited. The authors state that the primary purpose of emotions are to "initiate or modify tendencies to establish, disrupt, or maintain relationships with the environment or an object of thought" (p. 406), which is related to the concept of action readiness, an area that explores expressive behaviour and the stimuli that 'activate' particular emotions, and which the authors claim form the foundation for exploring what are commonly referred to as Basic Emotions.

The general belief around this contemporary area of study is that modern theorists should step away from perceiving emotions as compartmentalized, singular reactions to particular events, and move towards considering them as more complex states that are reactions to an interlocuter’s immediate environment, with elements of both cultural-conditioning and universality being present in the development of these "Ur-emotions" (p. 406) - ‘ur-’ being

taken from a German prefix that is used to refer to original or primitive or "core emotional sensitivities" (p. 413), that are much more complex than a one-to-one relationship between particular stimuli and the supposed universal emotional reactions that formed the basis of earlier research.

Based on this research, we can see that current research into emotions and their facial manifestations in the form of expressions has been an immensely contentious area, and as evident through studies that span over half a century, the conflict is still without resolution. Modern research has often attempted to reconcile the two theories by taking an intermediary approach – however, while some of these insights are still quite remarkable, they do not fully encapsulate the depth of human expression, and many researchers have attempted to apply some of these issues to other areas of emotional expressivity. These theories have been extended to the realm of digital communication, which is the subject of the following section on the use of emotional expression on modern social media platforms.

2.6. **Wearing Masks: A New Barrier to Emotional Expressions**

Midway through the research period for this dissertation, the World Health Organization officially declared COVID-19 as a pandemic, and as a result required several changes to everyday life. One such change was the mandatory wearing of face masks amongst most populations, as a means to lessen the spread of this respiratory disease, which provided new challenges to the present area of research. As noted by Langbehn, Yermol, Fangyun, Thorstenson and Niedenthal (2020), "the eyes are the window to the soul. However, wearing masks to prevent the spread of COVID-19 involves occluding a large portion of the face." (p. 2). It is a change that has had a profound impact on interpersonal communication, the authors remarking that there have been documented cases of miscommunication in numerous sectors that have complicated emotional interpretation.

However, as indicated by Grahlow, Rupp and Derntl (2021), despite their crucial role in social interaction, facial expressions of emotion have become complicated by the necessary mandates that require protection from the spread of the disease. This is further supported by Kastendieck, Zillmer and Hess (2021), who state that face masks present a challenge for researchers into facial expressions, as they cover the mouth, which they argue is the most important source of emotional information. Therefore, as these masks tend to conceal vital parts of the face, this newfound practice presented this research with the opportunity to explore the impact of

wearing these coverings in terms of the physical expression of emotions. In addition to bringing this research to a more local and contemporary space, a further question has been introduced into contemporary studies on this subject - to what extent is an individual's ability to recognize facial expressions, particularly those defined as basic emotions by Ekman and Friesen (1969; 1971), altered by the presence of face masks?

This has been an area that several theorists have been actively exploring over the past two years, in an effort to determine the extent to which expressions can be interpreted through the presence of these facial coverings, which conceal almost the entire lower region of the face. Langbehn et. al (2020) conducted a study that found that, while it is very likely that observers are capable of working out the emotion being conveyed through the visibility of the upper region of the face (mostly through the visibility of the eyes, as well as other external factors such as body language and posture), the emotions can appear more subdued or less intense than when the full face is visible. When testing the impact of masks on the basic emotions, the authors concluded that, while there was some consistency in the recognition of these familiar facial expressions, they were "perceived as conveying significantly less happiness, disgust, anger, and surprise, respectively, than fully visible faces" (p. 13).

In their research, Grahlow, Rupp and Derntl (2021) provide similar findings, although specifically indicate that it was emotions of anger, sadness and disgust that were most impacted by the wearing of face masks, which likely implies that the lower region of the face, specifically the mouth, play a pivotal role in conveying these emotions. Much research has been done into the various regions of the face, in order to determine if there were certain areas that were more dominant in the expression of certain emotions. The authors state that prior research has indicated that the lower region of the face is more important for the recognition of the emotions of happiness and anger, while the upper region usually emphasizes sad and fearful expressions. However, this is still an area without conclusive evidence, and the widespread, compulsory use of face masks have further complicated discussions on the localization of emotions to specific portions of the face.

Furthermore, Carbon (2020) refers to previous studies looking into the impact of emotional interpretation in the presence of "a partial occlusion of the face" (p. 2), such as sunglasses, and the niqāb (a garment worn by women in the Islamic faith) or surgical face masks. His findings indicate that there is a considerable challenge in recognizing emotional expressions in instances where part of the face is covered, particularly the lower region, which several theorists have cited as the most important in terms of emotional expression. The author notes that these masks "cover about 60–70% of the area of the face that is relevant for emotional expression, and thus, emotion reading" (p. 2). The author refers to "signal ambiguity" (p. 3) as being one of the primary reasons for observers to confuse one facial expression or another due to the presence of a face mask. As made evident by these studies, the wearing of face masks has become a common (and often mandatory) practice in most societies as a result of health concerns, and it is important that we look into their communicatory significance, especially in terms of how interlocutors observe and interpret emotional expressions in those wearing these masks. This presents a new series of challenges for researchers into the subject of facial expressions and their emotional significance, which is a further area of research that this study intended to investigate alongside the earlier research.

2.7. Emotions in the Digital Age

An analysis of contemporary perceptions of emotions would not be complete without looking at emotion in the digital space, as language is no longer restricted to the solely physical channel. As noted by Bai, Dan, Mu and Yang (2019), “widespread application of computing and the development of technology, computer-mediated communication is infiltrating daily life to a greater and greater extent” (p. 1), which indicates the meteoric rise in technology as a means of communication over the past few decades and has seen an exponential rise in the use of the internet as a communicative tool.

Social media platforms such as Facebook, Twitter and WhatsApp have considerably changed the way we interact with each other (Barbieri, Ballesteros, Ronzano and Saggion, 2018), which provide insight into the communicative nuances of contemporary verbal and non-verbal language in both theory and practice. Ge and Gretzel (2017) define social media platforms as “arenas of persuasion” (p. 1272) and comment on the extent to which they can be perceived as not only a means of faster, globalized instant messaging, but also an excellent resource for looking at patterns of modern communication. Many theorists have focused on the ways in which non-verbal communication has developed over the course of a few decades since the

outset of the internet, looking into the increased movement towards online communication as a new category of digital language, namely in the form of emoji.

2.7.1. The Origins of Emoji

Contemporary communication over social media has entailed the rise in the use of emotional pictographs, otherwise known as emoji, which are descendants of more traditional emoticons, which Sampietro (2016) defines as "sequences of punctuation marks that represent facial expressions" (p. 92), manifesting as ":)" or " :D", displaying rudimentary representations of a smiling face. Emoticons gained popularity at the advent of computer-based communication, where these symbols were used to represent basic emotions and complement the concurrent text. These were established as a form of informal communicatory shorthand and were frequently used between friends and family members in casual correspondence, rather than finding their way into formal communication, and were not the subject of significant linguistic relevance until much later.



Figure 2: Rudimentary representation of the "smile" emoticon

Emoticons were restricted to only a few different expressive meanings due to the limited potential combinations of punctuation marks, and were eventually replaced by emoji, which retain much of the same informality, but have become an ingrained part of worldwide culture, indelibly influencing how we communicate with each other. These symbols were first introduced in the 1980s and are derived from the Japanese words "絵 ("e", meaning 'picture'), 文 ("mo", meaning 'writing') and 字 ("ji" meaning 'character')" (Hakami, 2017, p. 1), and designed specifically to assist in enhancing written messages. According to Troiano and Nante (2018), emoji were created to facilitate brevity in Japanese mobile communication due to the apparent tendency for longer forms of messaging. Moschini (2016) states that the original designs were inspired by kanji, the Japanese writing system that conveyed whole words or entire abstract ideas in only a single character, which the designer attempted to replicate in establishing a small but revolutionary corpus of pictographic symbols. Originally limited to Japan, emoji eventually expanded to the worldwide market, assimilating into the lives of the global social media population, most notably with the release of iOS 5 in 2011 (Moschini, 2016).



Figure 3: Representation of the basic "smile" emoji

Much like emoticons, emoji are mostly informal and are primarily used to supplement text. However, their widespread usage has led to subsequent attempts to formalize them, with 1282 different emoji initially included in the official Unicode Standard database at the outset of their worldwide introduction (Miller, Thebault-Spieker, Chang, Johnson, Terveen, and Hecht, 2016), and increasing meteorically to over 3500 as of May 2021 with the release of Emoji 13.1 ("Emoji Statistics", n.d.), along with dedicated classifications that seek to categorize and describe each of these emoji. These attempts to catalogue emoji derive from a growing tendency to find compelling similarities and deviations in usage, particularly in emoji that do not harbour straightforward meanings, and are often used quite different between individuals, therefore necessitating a more descriptive approach to their classification beyond merely amusing, supplementary symbols that co-occur with text.

Moreover, in addition to facial expressions, standard emoji inventories include representations of flora and fauna, foods, bodily gestures, flags and a wide variety of other concrete and abstract concepts that still convey certain emotional messages, particularly when used together (López and Cap, 2017). Many theorists have acknowledged the communicatory credence of the wide range of emoji, particularly in how different users assert particular connotations onto a variety of symbols, which may extend further than their original meaning, making such classifications pivotal. Therefore, emoji are the subject of highly contentious contemporary research, as they are facilitative of a much wider form of digital communication, and "smooth out the rough edges of digital life" (Stark and Crawford, 2015, p. 1), making them an invaluable source of modern communicatory behaviour, particularly from a cross-cultural standpoint.

2.7.2. Emoji as a Form of Contemporary Non-Verbal Communication

The importance of emoji in practice should not be underestimated. Tang and Hew (2018) remark that over six billion emoji and emoticons are sent worldwide every day, which is an enormous development, as Gawne and McCulloch (2019) indicate that emoji were previously entirely unavailable for users outside of Japan prior to 2010. Over the course of a decade since their introduction to the global population, emoji have become one of the most popular forms of communication, with the authors stating that an analysis of internet behaviour conducted in 2016 found that 92% of internet users made use of emoji at some point during periods of online messaging. Prada, Rodrigues, Garrido, Lopes, Cavalheiro and Gaspar (2018) found that in a study of over 85000 social media users, approximately 90% of them used at least one emoji in



Figure 4: "Face with tears of joy" emoji, selected as OED's "Word of the Year 2015"

each online interaction. It is evident that emoji form an indelible element of contemporary cultural communication, with the Oxford English Dictionary naming the "face with tears of joy" (see Figure 4) emoji as 2015's Word of the Year (Oxford UK, 2015), a controversial decision that nonetheless indicates the broad cultural acknowledgement of emoji as a feasible component in modern communication.

Wijeratne, Balasuriya, Sheth, and Doran (2017) state that "emoji permeate modern online and web-based communication and are now regarded as a natural and common form of expression" (p. 1). Gibson, Huang and Yu (2018) comment on the "hermeneutic impulse" (p. 101) that emoji incite in receivers, who interpret emoji in the same way that they would a facial expression or gesture in face-to-face communication, thus indicating the immense relevance of research into the communicatory basis of modern emoji usage, and the various insights that can be garnered through an in-depth understanding of how different individuals make use of these images in conveying certain messages. Fugate and Franco (2021) state that "emojis, which are now incorporated into people's everyday channels of nonverbal communication, are assumed to represent, or at least resemble, human facial depictions of emotion" (p. 1), and that when observing either, an individual is engaging in a form of "affective calculus" (p. 19), whereby the brain naturally engages with a stimulus by classifying it under one or more of a few categories. Their work indicates that, while contemporary researchers do find support for the theory that emoji stimulate similar reactions to human faces, when observed, this area of study is still quite recent, and requires further research, especially as emoji continue to grow in terms of communicatory significance.

As stated by Kaye, Malone and Wall (2017), "the bountiful occurrence of emoji in real-world online text provides a new means to examine the function of contemporary interactional communication and emotion portrayal" (p. 66), thus indicating the relevance of emoji as a feasible form of psycholinguistic analysis, beyond their basic form of rudimentary expressions of emotion. Bai, Dan, Mu and Yang (2019) indicate that the enormous popularity of emoji is rooted in their "simplicity, convenience and conduciveness to emotional expression are the main motivations attracting users to use emoji" (p. 5). Furthermore, the compatibility between emoji and all the major social media networks has only increased the visibility of this as a viable element of human interaction. Miller et al. (2016) conclude that the importance of emoji

in contemporary communication is a result of a "digital world that is visually-driven, emotionally expressive and obsessively immediate" (p. 250).

Emoji have been shown to have numerous functions through their omnipotence in social media, with Gawne and McCulloch (2019) remarking on their broad set of possible communicative uses. They note how emoji can be supplementary to text, normally occurring at the end of sentences, as a form of punctuating and bolstering the general meaning of the preceding text and are even shown to replace it in some instances, as well as being pragmatic markers used as a way of clarifying (or playfully contradicting) the message the user is trying to communicate. However, Fugate and Franco (2021) do note the importance of looking at context, since there is nearly always some written text that either accompanies an emoji or provokes the use of one in isolation. Moreover, the ease of access and immediately recognizable nature of emoji allows for them to be used regularly by users across the world in their online interactions. Alismail and Zhang (2018) remark on the indelible influence of emoji, stating how they have become prominent through the ability to be instilled with meanings and concepts that "cannot translate easily into words" (p. 3367), which correlates with other non-verbal cues used in language, insofar as certain messages are better transmitted physically or visually as opposed to through the verbal or textual channel, such as emotion, relating to the aforementioned concept of semiotic versality.

2.7.3. The Paralinguistic Function of Emoji

According to Gawne and McCulloch (2019), the tendency for emoji to appear alongside speech mirrors the use of speech being used alongside gesture, namely in how they are often different communication channels that are often interdependent or symbiotic in conveying a wider message and providing context and additional information in a way that the verbal channel itself is relatively incapable. This correlation between emoji and gestural theory has often been used as a rebuttal against the fearful beliefs of some cynical theorists that emoji are weakening or attempting to replace written language, due to the perception that they are merely crude imitations of facial expressions and detract from the various nuances of spoken or written language. This has been an area of concern for many looking into the impact of social media on contemporary language development, which the authors refute by stating that the concept of emoji taking over written language is as plausible as gestures replacing speech – they are interrelated systems that can exist both independently, but are unlikely to entirely encompass the other and become globally dominant and exclusive forms of communication. Rather, the

more dominant view is that emoji are comparable to gestures in being perceived as symbiotic to written language, developing alongside it in the same way that other forms of non-verbal communication tend to evolve and adapt to different cultural interpretations and requirements.

However, the classification of emoji as non-verbal communication is still contentious, with traditional academics rejecting the concept of studying them through the same theoretical lens as gesture and physical expressions, due to their artificial, technological origins. A prevalent criticism indicates the belief that emoji are not fully representative of facial expression but are rather crude caricatures of archetypal emotional expressions that are used for the purpose of amusement rather than authentic communication. However, these concerns were unfounded, as evident by recent neurological studies which have demonstrated that cognitively, we react to emoji representing faces in much the same way they would to real facial expressions, and that the same regions of the brains are activated when viewing an artificial smiling face as they do a real one (Churches, Nicholls, Thiessen, Kohler and Keage, 2014). This indicates the presence of both communicative and psychological relevance in the use of emoji, particularly those resembling faces, providing insights into the relationship between real expressions and their digital counterparts.

Emoji form a crucial part of understanding how social media has altered the way individuals communicate in modern contexts – Hakami (2017) states that before the arrival of emoji, written communication had no meaningful way to express emotion in the same way as face-to-face communication, which the authors suggest leads to a less empathetic form of discussion with diminished communicative efficiency. Emoji add emotional nuance to online, text-based interactions, and aid in conveying tone, clarifying meaning and preventing misunderstanding of the intention of a certain message. Bai, Dan, Mu and Yang (2019) remark that emoji have become indelible forms of communication, adding "extra emotional or contextual meaning to communication" (p. 4). They serve a paralinguistic function in digital text, substituting for nonverbal cues such as facial displays and hand gestures that would otherwise be present in face-to-face communication. Wiseman and Gould (2018) claim that there are instances of emoji not only being supplementary but often expressing sentiments that could not be easily conveyed verbally, such as in the instance of sarcasm. Emoji are more than just amusing pictographs that complement the concurrent text, and according to Shiha and Ayvaz (2017), they not only enhance what is being stated, but also communicate certain emotional messages.

Danesi (2017) comments on the relevance of studying emoji in comparison to other forms of language, indicating that they add "semantic nuance" (p. 167) to written text. Alshenqeeti (2016), in drawing upon the adage of language being "a living organism" (Jesperson, 1922, p. 7), notes that emoji represent the tendency for language to constantly be undergoing some form of change through social and cultural trends, with the rise of technology having its own influence on language. The author indicates that the somewhat cynical view that text-based communication somehow reduces language of "vital communication cues" (p. 56) is not true, and that in many ways it can enhance the use of language in the digital space. He even cites how there are various instances where emoji are facilitative of linguistic creativity, such as strings of symbols on their own being able to convey entire sentences, a tendency which he likens to the use of hieroglyphics and other pre-alphabetical writing systems that made use of pictographs. This principle is perfectly encapsulated by Radford, Chisolm, Hachey and Han (2016), who remark on *Emoji Dick*, a project that endeavoured to publish a repurposed version of Herman Melville's *Moby Dick*, translated entirely into emoji.

As evident by the above discussion, it is clear that emoji harbour immense cognitive relevance in both their interpretation and use. This is further demonstrated by Li, Chen, Hu and Luo (2018) who found correlations between emoji usage and the personality traits of the users, as well as indicating deeper cognitive processes that go into the use and perception of emoji, which can impact our behaviour and perception of certain concepts, which extend far beyond simply being symbols used to emphasize text.

2.7.4. The Cultural Variability and Universality of Emoji

One of the most puzzling issues that forms much of the research into the use and interpretations of various emoji is the extent to which they are perceived in the same way cross-culturally. As mentioned previously, neurological studies have shown that individuals react cognitively to emoji in the same as they do to human faces. Therefore, the debate between Universality and Cultural-Conditioning can be applied to these findings in terms of determining the extent to which emoji function similarly between different cultural groups. The widespread use of emoji necessitates an investigation into the varying perceptions that tend to be associated with these pictographs, and the lengths to which they can be considered to be either universally recognized, or the product of different societal mediations, depending on the context. This is particularly relevant to the vast number of possible emoji, including numerous that could be considered open to interpretation. The meanings of specific emoji are often malleable, and each

person may demonstrate a different understanding towards the sense and intention embedded within a particular emoji, as well as the emotional connotations associated with that specific symbol.

Alshenqeeti (2016) remarks that while spoken language barriers may make written communication between people of different backgrounds quite difficult, many emoji (even those with more flexible interpretations) do tend to be encoded with certain meanings and intentions that can be widely understood, especially through emoji being relatively detached from any particular language or culture. The author proposes that an emoji's "increasing ubiquity around the world suggests that they may be a way to avoid, or at least reduce, cross-culture misunderstanding" (Alshenqeeti, 2016, p. 64). We can deduce that this is a field of investigation that has considered numerous demographics and population groups, as the use of emoji has developed into a field of intense, widespread cultural research, and bears significant relevance to discussions on the role emoji play in contemporary communication, particularly from cross-cultural perspectives, where research is starting to consider emoji as not merely supplementary images that bolster the text, but as an insightful form of non-verbal communication in itself.

2.7.5. Cross-Cultural Variance of Emoji

In elaborating on some of these principles of cross-cultural perceptions of emoji, Ge and Gretzel (2017) indicate that emoji, which they cite as being a new form of language in itself, constitute a universal form of communication. They believe that emoji are commonly perceived in much the same way between cultures, as a result of their omnipresent associations between different groups, and how they are mainly detached from any spoken language associations, stating that they "[function] as a paralanguage or non-verbal cues" (p. 1273). Their proposal is that emoji stand independent of any specific spoken language, as they are not designed with a particular group in mind but are rather intended to be neutral representatives of certain emotions and concepts that are separate from any cultural group.

The authors indicate one of the most straightforward examples of the flexible meanings associated with certain symbols being that of the "thumbs up" emoji, which is normally perceived as being quite positive in English-speaking communities, but is considered to be quite derogatory in cultures such as the Greek community, much like its gestural counterpart is considered a vulgar insult, indicating correlations between non-verbal communication cues and their digital counterparts. This is similar to the proposal by Bai, Dan, Mu and Yang (2019),

who indicate that the use of specific emoji across different cultures are often dependent on the cultural background and conventions of the group using them – they cite the example of certain cultures being more conditioned to using more negative or positive emotions, which they propose as being linked to their social and economic atmosphere. This further correlates to the earlier discussion on certain cultures augmenting their use of facial expressions depending on social and cultural context.

2.7.6. Variance in Meaning and Intention of Emoji

Lebduska (2014) extends on the discussion on the social understanding of emoji by proposing that due to their creative and widespread use amongst the world's population, emoji have evolved to become potent indicators of cultural expressions, and much like other forms of language, they have allowed themselves to be re-appropriated with different meanings and sentiments attached to them, even within the same social group, whereby an emoji can come to have more than one interpretation, or even mean something entirely different in a very short span of time. This extends to their visual composition, with research by Wiseman and Gould (2018) indicating that emoji often have minor variations across different platforms (such as between users of iOS and Android). Morstatter, Shu, Wang and Liu (2017) indicate that there are instances of emoji being rendered quite differently across platforms, whereby the same emoji can appear happy on one operating system, while sad on another, albeit in very rare instances. However, situations of such structural ambiguity are uncommon occurrences and are normally remedied by the specific associations individuals and those in their close communication group usually assert into more ambiguous emoji, with slight deviations in the meanings associated with individual symbols being prominent, particularly amongst smaller groups of users who frequently use them in their own social circles, embedding them with particular meanings that may be incomprehensible to outsiders.

While it may be tempting to focus on small-scale interpretations of emoji in social circles, it is imperative that we do not reduce them to a form of visual slang, as prior research does indicate that there are pivotal questions of broader cultural relationships that are evoked when looking at different perspectives of how emoji are understood by different demographics. There is an active effort being made to provide cultural cohesion and inclusion to groups that had not been considered during the initial period of cultural neutrality mentioned by Ge and Gretzel (2017). Lebduska (2014) uses the example of race, whereby in the initial release of emoji, most symbols representing faces were racially Caucasian, with very few representing other races.

The author cites this as being indicative of a sense of exclusion towards other groups – she posits that this was motivated by the initial belief that Caucasian faces represent neutrality, and are universally understood, which she refers to as "material invisibility" (para. 13) .

Subsequent updates have worked to remedy this oversight – as mentioned above, the total number of emoji in the Unicode Standard has more than doubled in only a few years, with the inclusion of more racially-diverse emoji being a prominent factor of these updates. While the Caucasian emoji are still the default (with users having to take an additional step to change the race of the emoji), it has afforded broader communicative power to other groups and allowed them to make use of emoji in a way that is both adequately expressive and inclusive, another area in which emoji research is perpetually active, particularly in providing cultural cohesion to the production and recognition of certain emoji. As of September 2021, with the release of Emoji 14.0., dozens of new emoji were made available, the vast majority representing different races in contexts that were previously occupied by the default yellow iconography ("Emoji 14.0.", Emojipedia, 2021).

As indicated by the studies mentioned in this section, emoji are an indelible part of contemporary human communication, as the influence of social media and digital technology has made global correspondence effortless, with millions of users communicating over the internet daily. Emoji, whether used to supplement concurrent words, add nuance to communication or replace speech or text, has become an area of considerable interest. Moreover, if we account for their usage as a new form of non-verbal communication, especially when extended to emotional expression, it is possible to garner insights into the varying interpretation of these pictographs that reflect similar principles of interpersonal analysis, adding a contemporary angle to the contentious debate between universality and cultural conditioning.

2.8. Previous Research Methods

This area of research has found theorists making use of numerous different methods of data collection and analysis. Much like the theories underpinning this conflict, the methodologies have gradually changed over time, being adapted to the specific needs of each individual researcher.

2.8.1. Overview of Judgment Studies

Ekman and Friesen (1969; 1971), in adapting some of the central philosophical arguments of Darwin (1890) introduced the method popularly referred to as *judgment study*, which is defined by Rosenthal (2005) as "those studies in which behaviours, persons, objects or concepts are evaluated by one or more judges" (p. 199), most often regarding discerning nonverbal cues. The Darwinian roots of this process are found in the theorist's efforts to correspond with colleagues located in different parts of the world, asking them to describe the facial expressions of the various individuals they encountered on a daily basis, which eventually took the form of a more formal method of survey research, in which participants were interviewed and their responses recorded (Hess and Thibault, 2009).

The evolved method defined by later theorists involved participants who are selected from different cultural or demographic groups, and are presented with a stimulus (most commonly still images of posed or spontaneous expressions), normally accompanied by a set of approximately six lexical terms, to which they assign each image based on their own perception of the image or video being depicted. The stimulus often differs depending on the researcher and the cultural group they were investigating, but the general method of presenting participants with a depiction of an expression and extracting their response, normally in the form of choosing from a list of limited options, has remained relatively consistent in structure.

This method has been replicated numerous times by subsequent theorists, who often alter it depending on their own unique research questions, making the general judgment study one of the most influential in this field of studying emotion. However, there have been subsequent theorists, including those who were considered pioneers in the field, who indicate significant flaws in the original methods and cited that it is wholly necessary to improve on the research methodology to facilitate more accurate results. Ekman, Friesen, O'Sullivan, Diacoyanni-Tarlatzis, Krause, Pitcairn, Scherer, Chan, Heider, LeCompte, Ricci-Bitti, Tomita and Tzavaras (1987), comment on the tendency for the original studies to be applied to cultural groups in which only marginal similarities or agreement was concluded as being congruent to other groups, and that despite these methods being notable, they require further adaptation as research progresses. Many subsequent theorists adapted the judgment study to meet their requirements, as well as rectifying some of the more notable deficiencies in the design, particularly regarding the method of gathering responses. The present study has endeavoured

to contribute to this growing field of research by adapting the methods to comply with a more contemporary perspective on the contentious issues at the core of the research.

2.8.2. Forced-Choice Response Model

Previous judgement studies made use of a method of participants selecting an answer from a limited set of options, normally aligned with the basic emotions provided by Ekman and Friesen (1969; 1971). According to Frank and Stennett (2001), the "forced-choice" method of emotional expression research is heavily favoured by proponents of the Universality Theory due to "its status as simple, clear, and methodologically strong technique that provides robust results" (p. 75), particularly in how it returns potent statistical data that can be easily analysed and used to draw conclusions to the central theoretical conflict.

However, many theorists have subsequently criticized this method, such as Russell, Suzuki and Ishida (1993), who cite some disadvantages of the forced-choice model by indicating that this particular methodological procedure does return insightful statistical results, but ultimately fails to afford participants the chance to provide their own unique responses, which they indicate could be more valuable than numerical correlations. The authors remark that the forced-choice method makes it impossible to discern what the respondent's spontaneous labelling of the emotion would be had they been given the freedom to interpret it freely, by funnelling "a range of somewhat different interpretations into a single response category, thereby exaggerating the degree of recognition" (p. 338). The authors take exception to this method, particularly because it implies a mutually-exclusive form of emotional expression, where an individual can only perceive one emotion, which is defiant to the aforementioned theories of compound and complex emotions, and forces emotional expressions to be viewed categorically, as well as limiting possible responses, particularly when focusing on participants that are more likely to have a wider vocabulary to describe these emotions (Frank and Stennett, 2001), as well as potentially asserting more than one emotion onto each of these images.

2.8.3. The Free-Response Model

In designing research in this area, theorists focused on additional parameters that could potentially improve the forced-choice model, based on previous research that looked into the refining of methods relating to these surveys. The first was the addition of an "*other*" option in order to allow for participants to add their unique responses should they not be satisfied with the ones provided, but previous research indicated that this option was rarely used, with most users preferring to select the option that was most closely aligned to their own interpretation,

creating an illusion of agreement. The second option was the addition of a "*none of the above*" option, which Frank and Stennett (2001) employed in their own research, and found that less than 8% of respondents selected this, even when the appropriate label was intentionally elided, or when "nonsense faces" (p. 81) were used instead of those with discernible expressions. The authors concluded that most respondents would rather provide a positive response that is more likely to be incorrect rather than a non-response, even if it does not correlate to their own instinctual opinion.

The method of adding emotions such as *contempt*, *embarrassment*, *shame*, *sympathy* and *amusement* in addition to the six basic emotions, as proposed by Haidt and Keltner (1999) was also considered, as their theory that adding more specific emotions can strengthen the investigation into more complex states, which could assist in determining the extents of universality, as well as supporting the contentious investigation into the possible separation of emotions and cognitive states, as discussed by Baron-Cohen et al (1996). However, this approach has been decided against, since the addition of more emotions would only serve to make the list of possible options more convoluted, while simultaneously neglecting that participants may still not find their opinion aligned with one of these options, and the implausibility of including every possible emotion in the questionnaire.

The only accurate way to measure the perception of emotions, according to Frank and Stennett (2001), is through abandoning the strict limited-response model and rather modifying it into a more flexible format. This study employed a free-response model, where the confines of the categorical approach were replaced with a more qualitative, interpretation-based model that emphasized the participant's own individual opinion and perception. This not only affords respondents the opportunity to provide their own individual interpretation that is not restricted to a limited set of options, but also allows for lexical diversity in the particular words chosen to describe the emotions.

2.9. Conclusion to Literature Review

As demonstrated by the research cited throughout this section, most theorists are in agreement that emotions are inner processes that manifest in outer physiological changes that are universally demonstrated and perceived as indicating some underlying state. However, there is a conflict between the two main theories that investigate the specific aspects of this process, which has existed since the inception of this area of study over a century ago. This is a field of

extensive examination that has seen wide global research conducted through interactions with various populations, from the advent of psychological study to the current digital age.

However, there are notable deficiencies in previous research, particularly in the methods, intentions and demographics studied. Russell (1994) indicates that one of the most significant shortcomings in this area of research is the predominance of a western view, whereby most theorists set out to confirm their chosen theoretical positions through determining whether non-western participants agreed with their Eurocentric view, rather than accurately representing these diverse cultures. According to the author, mere agreement was previously paramount to a successful conclusion, rather than documenting and analysing the unique cultural perspectives that were being considered. Therefore, it is necessary to expand this field to represent diversity in the populations, a factor that has not been fully explored in previous studies.

Moreover, the most groundbreaking and influential studies in this field approached emotions from a variety of cultural perspectives, such as in comparing data from much of the world, but neglecting Africa as a whole, which is almost entirely absent from the research, only briefly mentioned in the majority of earlier studies. Russell (1994) mentions that some studies have considered African data, but since these studies were conducted in Europe, and focused on Ethiopian or Zambian immigrants or individuals of African descent, these conclusions cannot be considered all-encompassing to an African perspective, as they were formed from a European standpoint, with the participants having been ingrained in European customs and traditions, and therefore not reliable sources of purely African perspectives. Elfenbein and Ambady (2003) conducted a similar study with African immigrants to the United States of America and found similar challenges in discerning accurate cultural viewpoints.

One of the few studies conducted on the African continent was by Gendron and Roberson (2014), who performed a study on individuals in a remote region of Namibia, which found results that advocated against universality. However, much like other attempts to include African data into the research, this study used western data as a method of determining agreement on their hypotheses, rather than considering the nuances of the African data. A more progressive approach was taken through a similar study by Tcherkassof and Suremain (2005), who conducted a comparative study between populations of Burkina Faso and France, which returned intriguing findings that helped develop an understanding of the contrasts between different cultures' interpretations of facial expressions. However, there is still an enormous

deficiency in this research from a distinctly African perspective, which has required further research into the continent and its populations.

Ducci, Arcuri, Georgis and Sineshaw (1982) indicate that many studies normally tend to conflate their participants with other groups, and often conclude that their findings are representative of the entire continent, which is a fundamentally flawed approach, as it generalizes the perceptions of countless diverse groups, rather than considering a wider set of individual perspectives. This often manifests in their use of the term "African" as a homogenous entity that shares the same social and cultural traditions, which is logically unfeasible, especially when we take into consideration the innumerable cultural idiosyncrasies that are present across the continent, which makes the generalization of all populations under one particular viewpoint inaccurate and outdated, and necessitates further research that does not solely rely on western perspectives as a gauge of accuracy.

While these previous studies do provide a much-needed framework and invaluable visibility to an under-investigated cultural context, there is still considerable work that needs to be done. This shortage of research into purely African perspectives indicates a prominent gap in the research and was chosen as the area in which this dissertation was focused. This study intended to demonstrate the central hypothesis that applying these parameters to a new cultural setting would garner new insights into this contentious issue, enriching the research and providing further context to cross-cultural analyses. These contentious questions have always been at the core of this fascinating but divisive issue since the outset of the research in the nineteenth century, persisting as an area of cross-disciplinary interest to the contemporary era.

Chapter 3: Research Methodology

As demonstrated in the previous chapter, the study of emotional expression has extended over several decades and has prompted numerous researchers to employ various methods of measuring emotional expression between cultures, to determine the extent to which facial expressions are universal or socially mediated. This dissertation was inspired by the previous century's worth of research by looking into the perception of facial expressions, making use of similar theoretical principles while applying a contemporary methodological design to situate the research in a more modern context, both in terms of how the data is collected and through the material participants are given to analyse.

These principles formed the foundation of the predominant research questions behind this dissertation, which sought to determine the extent to which the perception of emotional expressions is influenced by diversity in geographical location, as well as introducing digital emotions into the study as a means to contemporize the research and establish if there is a similarity between how different participants distinguish between emotional expressions. This form of research made use of open-ended data in a structured analytical way to deduce broad trends based on the individual experiences of the groups that take part in the study. Through utilising a process of observation and the collection of descriptive responses, the results provided insight into public perceptions of emotional expression.

3.1. Research Design

Much like prior work in this area, the approach of this study attempted to analyse perceptions of emotion through presenting participants with still images and recording their open-ended responses to the stimulus and subsequently interpreting the data that is provided by their answers. This was done in order to determine whether these results align with the principle of universality in the interpretation of facial expressions. This is a method that is often referred to as a judgment study (Darwin, 1890; Rosenthal, 2005). The methods employed in this research were therefore aligned with the main tenets of qualitative research.

3.1.1. A Qualitative Research Approach

This study approached the subject of the perception of emotional expressions from a distinctly qualitative viewpoint, which Creswell (2014; 2018) defines as "a means for exploring and understanding the meaning individuals or groups ascribe to a social or human problem" (p. 4). In this form of research, results are garnered through participants providing their own unique,

open-ended responses, rather than being asked to select from a set of options, as was customary in many prior studies that influenced this investigation. Williams (2007) remarks that this form of research places emphasis on the unique perspectives of the participants in the investigation of a certain phenomenon, and how their opinions and experiences give insight into social perceptions of this subject.

This method of research employed a phenomenological strategy of inquiry, which Creswell (2014) defines as "a design of inquiry coming from philosophy and psychology in which the researcher describes the lived experiences of individuals about a phenomenon as described by participants" (p. 14). Moreover, this research is aligned with what is referred to by Collingridge and Gantt (2008) as "existential phenomenology" (p. 389), whereby researchers discern interpretations of a particular phenomenon (in this case the perceptions of emotional expression) through acquiring data from participants who have experienced it, which is almost universally applicable to emotion. The authors cite this as lending important insights into perceptions of emotion and other forms of human behaviour, as participants are providing valuable information about what they perceive as the "meanings in their lived worlds" (p. 392).

A qualitative approach was chosen based on the tendency for individuals to experience social phenomena in different ways, and a method of ascribing purely statistical interpretations to these views fails to consider the rich and meaningful information that can be extracted from individual interpretations. Anzul, Evans, King and Tellier-Robinson (2001) indicate that affording participants the freedom to provide their own open-ended responses can greatly benefit the research, as it often returns rich and unexpected insights into the phenomenon under investigation. Collingridge and Gantt (2008) claim that traditional quantitative research is limited in this regard, as it does not account for the more intricate meanings individual participants may assert on a particular subject or issue. Conversely, qualitative research seeks to primarily describe and infer broader trends based on varying interpretations extracted from its participants, normally being utilized to measure "intangible constructs" (p. 391), which correlates directly to the concept of exploring different perceptions of emotional expression from a broader corpus of participants.

As stated by Collingridge and Gantt (2008), qualitative research does not endeavour to return exactly the same outcomes, but rather aims toward "achieving consistent similarity in the quality of the results" (p. 390), thus suggesting that the focus should be on meaningful data that gives insight into perceptions rather than data that simply correlates directly and satiates a

particular statistical requirement. The core of this research is based around finding similarities and differences in perceptions, which is heavily supported by a qualitative study, as differences are not rejected for incongruency to the theoretical intentions, but rather encouraged as they "reflect a multifaceted understanding of complex social phenomena" (p. 390), before employing a method of converting the responses to manageable statistical data. The study was able to use these differences in various ways to extrapolate insightful information towards the consensus around the perceptions of this particular social phenomenon.

3.1.2. Population Sample

This study worked with a population sample being composed of adult participants who are university students from three national universities – the University of the Witwatersrand (where this research is based), the University of Cape Town and the University of Free State. The decision to collect data from a variety of institutions was necessary as this study was focused on the perceptions of facial expressions amongst South Africans in general, and therefore required a population sample that is not limited to one individual region, but rather an extensive set of participating groups to be more inclusive of a wide range of participants.

The decision to set this study amongst tertiary students (who acted as representatives of their respective regions) was derived from the principle that universities are composed of a wide corpus of individuals from numerous backgrounds and are often adequate representations of many different demographics. This was beneficial to the culturally cohesive nature of this study and its intention to present a thorough representation of local perceptions of this contentious issue. A similar approach was taken by Walbott and Scherer (1986), who motivated their choice of involving university students as their primary participants in a comparable study by noting that university students tend to exhibit a particular penchant for detailed introspective analysis, and a level of articulateness that is necessary for this form of qualitative research, and a preferred target group.

Three national universities were contacted regarding distributing the survey amongst their student body. They are all located in different provinces, as one of the research questions of this study was to determine if differences in geographical location within the country provided variance in the data collected. Demographic participant data is indicated in Table 1 below.

Institution	Location	Total Number of Participants
University of the Witwatersrand (Wits)	Johannesburg, Gauteng	531
University of Cape Town (UCT)	Cape Town, Western Cape	243
University of the Free State (UFS)	Bloemfontein, Free State	200

Table 1: Participating Universities, Geographical Location and Participant Count

The only condition for inclusion as a participant was that the respondent was a registered student (undergraduate or postgraduate) at one of these three universities. As the questionnaire was distributed directly to participants through the respective institutions and accessed via their email services, all were adequately aligned with the criterion, thus providing ease to the research in terms of recruiting participants.

3.1.3. Participants

Our initial target was to receive data taken from the responses of approximately 200 participants from each of the three universities that provided permission to distribute the questionnaire amongst their students. This provides a substantial number of potential responses, balanced equally amongst the three institutions, while still providing adequate insights into the general perceptions of emotional expressions. The questionnaire was distributed amongst students at the participating universities, allowing for responses from both undergraduate and postgraduate students. However, additional information such as the particular degrees being completed by participants, the faculty they are associated with and their year or level of study, were considered to be inconsequential to this research, as the focus was on a broader group of students from each individual university, rather than dividing them on very specific traits that are unlikely to harbour any significant findings (see Appendix A for the questionnaire).

3.1.4. Sampling Methods

It was determined as being logically implausible to receive responses from all students at the participating universities, as well as an unmanageable expectation, as studying an entire population is not often possible (Acharya, Prakash, Saxena and Nigam, 2013). Therefore, as mentioned previously, the initial target was to receive at least 200 responses from each of the three universities to which the questionnaire was distributed. To accomplish this, a subset of the selected population (adult university students in South Africa) were invited to be participants in the study, as they represent an adequate sample of the target group.

Collingridge and Gantt (2008) indicate that sampling is the optimal method of seeking participants for a study that employs a qualitative perspective (rather than attempting to acquire responses from the entire population), as the intentions of such studies are often to apply the findings to the larger group of individuals outside of the study. This approach ultimately lends additional veracity to the methodological beliefs which claim that broad information about a large group can be effectively garnered through engaging with a smaller portion of it. Moreover, it was determined that the most effective approach to selecting participants would be through non-probability sampling, a method that does not purport to be entirely arbitrary, but instead allows the researcher to more carefully select their participants based on a specific set of criteria, rather than fully randomizing the process of recruiting potential respondents (Saylor Academy, 2012).

Considering these perspectives, in finding participants, to circumvent any unconscious research bias in terms of selecting respondents as much as possible, as well as to ensure effective participation, this study made use of the non-probability method of **volunteer sampling** (Vehovar, Toepoel and Steinmetz, 2016), which is ideal for smaller groups of respondents, whereby the participants are chosen through the researcher's knowledge and vicinity to them, similar to the widespread method of convenience sampling.

This study also employed some tenets of **purposive sampling**, which targets potential participants based on whether they meet particular criteria and focused on "the deliberate choice of a participant due to the qualities the participant possesses" (Etikan, Musa and Alkassim, 2016, p. 2). In this case, the requirement being students registered at one of the three participating universities, which is a sufficient criterion to be considered authorities on this particular subject and are determined as being best suited to the objectives of the study (Etikan and Bala, 2017). Dolores and Tongco (2007) state that the primary goal of purposive sampling

entails the researcher deciding "what needs to be known and sets out to find people who can and are willing to provide the information by virtue of knowledge or experience" (p. 147), thus we can surmise that adult university students would be relatively well-versed in discussing basic emotional expressions.

This method involved recruiting participants through an invitation to act as representatives of a broader population that they are a part of (in this instance, current university students), as a means to infer information about opinions held by the wider group, but without purporting to be the definitive, conclusive statement on dominant perceptions, but rather a manageable illustration of it. Unlike random sampling (Creswell, 2014), which selects participants for the study at random (with each member of the broader population having an equal probability of being selected as a participant), this specific sampling method employs the process of contacting all possible respondents that meet a certain criterion in a broad population and inviting them to take part in the study out of their own accord. This not only ensures that participants who volunteer will be more committed to the completion of the study, but also infer some broader trends from the general population being investigated. These methods of non-probability sampling were ideal, since it affords the research ease of access to its subjects, as well as prioritizing willingness to participate on the part of potential respondents, which is an assurance to the researcher towards the higher quality of the responses received (Etikan, Musa and Alkassim, 2016), as well as decreasing the likelihood of non-response errors.

3.1.5. Division of Demographic Information

To facilitate analysis, participants were divided into groups based on geographical region. This was determined to be the most pertinent approach to dividing participants for the purposes of this study, as it provided enough information in support of the research objectives (which is focused on perceptions of emotion based on region), as well as offering participants with the necessary privacy that was often overlooked in the more traditional studies that inspired this research.

The decision to select these geographical locations (reflected by the three participating universities) as factors in the study was due to the need to provide different contexts, rather than an insular set of perspectives from a single location. South Africa is a nation of many cultures, and thus it was determined to be unfeasible to divide participants by their cultural background. Geographical region is determined through the distribution of the survey amongst the different participating universities, each one situated in a different part of the country. Each

of the three regions is known for slight variance in socio-cultural idiosyncrasy and grouping participants by geographical region would provide compelling insights into the perception of facial expressions.

3.2. Motivations for the Questionnaire Model Approach

As evident above, previous research into this field made use of more traditional survey methods, with data collected through fieldwork, in which researchers conducted in-person interviews with different population samples (Ekman and Friesen, 1969;1971). However, this study attempted to modernize this approach by making use of an online questionnaire to collect the data, which was distributed directly to potential respondents through their university-assigned email addresses. This method was chosen as it was perceived as being the most advantageous to the aims of this research, for a variety of reasons, as outlined below.

One of the primary motivations of this study was to contemporize the research, which extends to the method of data collection. It was decided that making use of the invaluable resources provided by the internet would afford us the chance to bring the general tenets of these theories and prior research into a more modern space and allow us to assimilate this study into a more contemporary, digitally-based form of research, which is more convenient as well as cost-effective to both researchers and the participants. Moreover, an online questionnaire was chosen as it allowed for a more ethically-sound collection of data, as respondents were afforded complete anonymity, as the survey did not require any personal information other than an association with a particular age bracket and the geographical location of the participant's university (garnered through the university-specific survey they are sent), and protected the identity of the participant.

As this survey was circulated online, we were able to receive a much larger response rate, as the nature of the distribution allowed it to reach a much wider population than the traditional style of in-person interviews, or traditional paper-based questionnaires (Creswell, 2014), which was imperative in the aim of including respondents in the other geographical regions the study had investigated. The online design of the questionnaire was also chosen as it was perceived to be more flexible and allowed the participants the chance to complete it on any electronic device that has internet access (either on-campus or off-campus), without strict constraints on time, allowing them to engage with the questionnaire at their own unique pace. This, contrasted with the rather confining conditions of in-person interviews that emphasized direct contact with participants, was determined to likely be more appealing to potential respondents, and reduced

non-response errors as far as possible to maximise the amount of data that could be used for the data analysis section. Moreover, the COVID-19 pandemic necessitated the need for a form of data collection in which direct contact was avoided as far as possible to abide by social distancing requirements, making the format of an online questionnaire the optimal choice for such a study.

Finally, the decision to employ an online questionnaire was based on the convenience and rapidity of receiving responses, as the electronic process automates preliminary trends immediately. The survey model of research allowed for results to be seen almost instantly, which facilitated faster and more efficient analysis of trends and patterns. This assisted in determining the effectiveness of the methodological approach, and whether it needed to be revised or altered before the pre-conceived data collection period ended, as well as providing immediate feedback towards the rate of responses, to reflect any potential problems or unforeseen obstacles that would require immediate rectification, such as distribution to more students, or any methodological issues that could be altered to fit the requirements.

3.3. Data Collection Procedure

As stated previously, this research was based on prior methods that have been employed in numerous previous studies, taking inspiration from the formative years of Basic Emotion Theory (Ekman and Friesen, 1969; 1971), and applying their general methodological principles to a new system of data collection, adapting the judgement study process to be more inclusive of contemporary methods of collection and analysis, which mainly took the form of altering the structure of data collection. Rather than in-person interviews, as were conventional in previous studies, this procedure was done through a questionnaire completed by the participant themselves. Moreover, in an effort to modernize the collection and allow for ease of analysis and more widespread participation, an online questionnaire model was chosen. Three surveys were designed to be distributed to the participating universities in order to manage the number of responses coming from each of them. However, each survey was designed equally, with the images and questions remaining consistent throughout, presented in precisely the same order and with identical instructions.

Potential respondents from the three universities received an email outlining the purpose of the study, and an invitation to take part in the research. These were sent through the university-facilitated student email services, which all participants would have had access to. Participants that elected to be a part of the research were invited to follow a link, which took them to a

Google Forms page, which contained a further explanation of the study and its main objectives, as well as a reiteration of the terms of anonymity, and a disclaimer that indicates that by agreeing to take part, they are giving consent to submitting their answers for subsequent analysis, in line with ethical considerations.

The following procedure was followed by participants in completing the questionnaire after agreeing to partake in the study and following the link provided. All instructions were made clear at the outset of the questionnaire.

Step 1: Participants were prompted to align themselves with one of six age groups (purely for the sake of demographic information), as well as to confirm that they were a student at that university. All other personal information, such as their name, student number or gender were not required, as they were inconsequential to the research, which focuses on geographical location.

Step 2: Similar to past judgement studies, participants were presented with an image, which was accompanied by a question asking them to provide their opinion on the emotion being expressed by the individual in the picture, phrased as "How would you describe the emotion(s) shown in the image above?". The questionnaire consisted of 45 questions in total.

Step 3: After considering each image, the participant provided their response, in the form of a few words or a short sentence, in the textbox accompanying each image. Unlike previous judgment studies, participants were not presented with a series of options, but rather provided their own original responses, encouraging free interpretation.

Step 4: After having completed the questionnaire, the participant submitted their responses through a "complete survey" button, which took them to a conclusion screen where they were thanked for participating and provided with contact details, should they want to follow up on the research. Once the responses are submitted, they were added to the database of responses for the particular university, to be used for the subsequent data analysis after the data collection period had concluded.

Figures 5 and 6 below are examples of questions taken from the questionnaire:

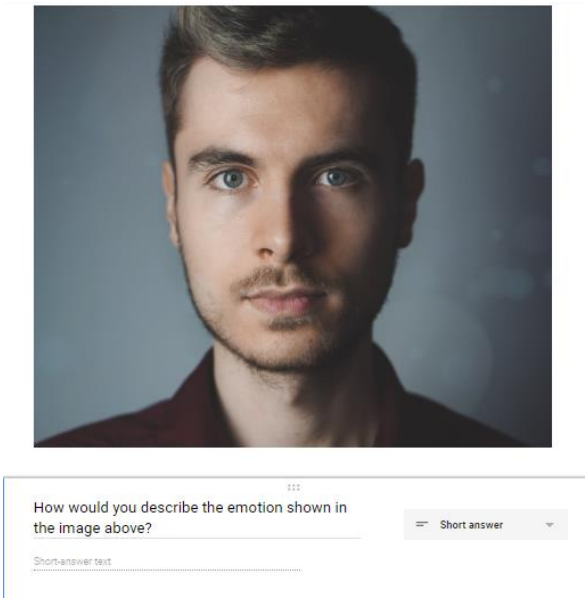


Figure 5: Example of Question (Human Face)

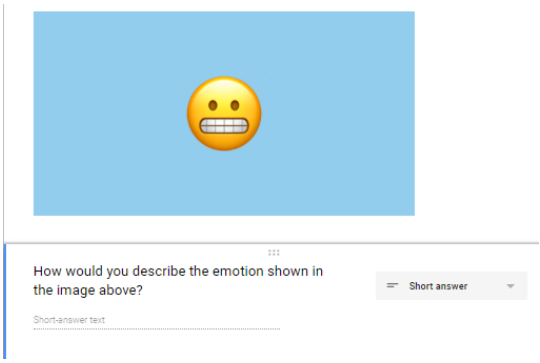


Figure 6: Example of Question (Emoji)

3.4. Questionnaire Design

As indicated previously, this research was inspired by previous judgement studies, and endeavoured to integrate more modern perspectives of data collection and analysis to contemporize the research. The questionnaire model approach required an intricate selection of particular items to facilitate effective participation in terms of accessibility and ease of use, and subsequent analysis in how the data is collected.

3.4.1. Accessing the Questionnaire

The questionnaire was accessed through an email sent to the student's university account, from which they were invited to follow a link to take part in the research. The questionnaire was designed and hosted on Google Forms, one of the more commonly used online platforms for collecting data. The reason for choosing this particular hosting site was because not only did it allow ease of design for the researcher, but the interface was also easy to use and navigate for

participants, as well as being quite efficient in the production of results. It could be accessed through any electronic device with internet access, which allows for further flexibility, and allowed respondents to complete the questionnaire at their own pace. Specifics of the visual design, such as the most visually optimal fonts and colour palette, were carefully considered, as Sue and Ritter (2012) cite this can significantly influence the effectiveness of the design and decrease the frequency of non-response errors, with the emphasis being placed on a more neutral tone to reduce distraction.

All respondents received a thorough introduction prior to beginning the questionnaire in the email, in order to familiarise themselves with the nature of the research being conducted, and to inform them on what to expect from the study. Clear and concise instructions were presented, as well as all objectives and aims, in both the body of the initial email inviting them to take part in the study, and at the outset of the questionnaire. It was also emphasized that respondents were not obligated to complete the questionnaire, and in the case that they were uncomfortable answering any of the questions, they were allowed to exit the questionnaire should they feel compelled to do so, at any time. Respondents were also provided with the necessary contact details, should they want to follow up on the research, make any enquiries or provide feedback.

3.4.2. Selection of Images

The images used in the questionnaire were extracted from online public-domain and stock photography databases. Prior research made use of original images taken for these specific studies, or candid images taken without the knowledge of participants. Both of these alternatives would present this research with unnecessary ethical obstacles, as well as weakening the potential for an authentic interpretation of these expressions (Naab and Russell, 2007). The use of stock photographs allowed the use of portrayals of emotion that vary in intensity, with a combination of images that are more obvious in the emotion they are depicting, and those that are more ambiguous, to determine the extent to which interpretations may differ.

All images chosen were portrait-style close-ups of people expressing an emotion, using the basic emotions proposed by Ekman and Friesen (1969) as a guideline in the selection process, with the basic emotion terms used as keywords in the filtering of the various photographic databases that were consulted (cited below). Images were chosen based on their association with a particular term that correlates with the aforementioned basic emotions (Ekman and Friesen, 1969; 1971), with the ones that were deemed to be the most appropriate and visually distinct being chosen. There was an emphasis on racial diversity, as well as an even

combination of male and female individuals depicted, as well as a range in age, as a means to provide sufficient variety. This research emphasized a more inclusive approach, and it was determined that it would be beneficial to employ the use of a wide range of different faces, to be reflective of the culturally cohesive basis of this study.

The photographs selected were extracted from the following public-domain stock photography websites. They are all non-copyrighted images, chosen to prevent infringement on the artistic licence of the photographers to which they are attributed.

- Pexels (www.pexels.com)
- Unsplash (www.unsplash.com)
- Pixabay (www.pixabay.com)
- FreeImages (www.freeimages.com)
- Burst (www.burst.shopify.com)

The pictures chosen were of ordinary or anonymous individuals, rather than public figures, thus removing the possibility that responses could have been biased depending on how the participant felt about the individual depicted.

The emoji images were extracted from Emojipedia (www.emojipedia.org,), the online database of all 3500 individual emoji. Emphasis was placed on using emoji that are both familiar, and those that are used less frequently or are regarded to have more malleable meaning than more common ones, in order to provide enough variety.

Figures 7 – 14 below include examples of the pictures selected for use in the questionnaire. They were selected to meet the aforementioned criteria of diversity in race, age and gender, as well as on the varying intensity of the expression depicted, using discretion as researchers to determine which of the images best reflected each emotion.



Figure 7: Photograph depicting “anger”

Anger is exemplified in Figure 7 through the presence of downturned, furrowed eyebrows that make the eyes appear slightly narrower, a downturned, tightened mouth, flared or wider nostrils and a hard stare, all of which are considered common characteristics of this emotion.



Figure 8: Photograph depicting “disgust”

Figure 8 demonstrates the emotion of disgust through the shape of the mouth that exposes the teeth (commonly referred to as a grimace), as well as the position and shape of the eyes and the tightening of the eyebrows. In addition, the nose is wrinkled, which is a common (albeit not compulsory) characteristic of this emotion



Figure 9: Photograph depicting “fear”

Figure 9 depicts the emotion of fear through the wide-eyed stare, raised eyebrows and a gaping mouth with exposed teeth, common characteristics of this emotional expression.



Figure 10: Photograph depicting “happiness”

Happiness is portrayed in Figure 10 through the wide smile that shows the teeth, as well as the creases at the lateral corners of the eyes (alternatively known as the *orbicularis oculi*), which is commonly referred to as the aforementioned Duchenne smile, a sign of authentic joy, rather than a “false” smile.

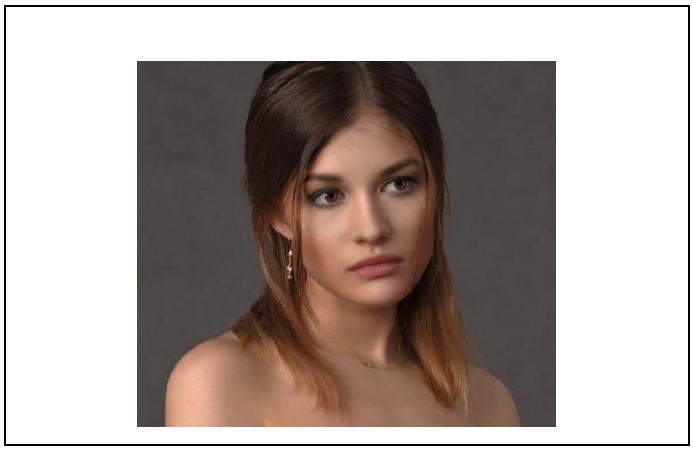


Figure 11: Photograph depicting “sadness”

Figure 11 depicts sadness through both the downturned eyebrows (with the corners angled up) and frowning mouth that is slightly protruding (often referred to as a pout), both common characteristics of sadness.

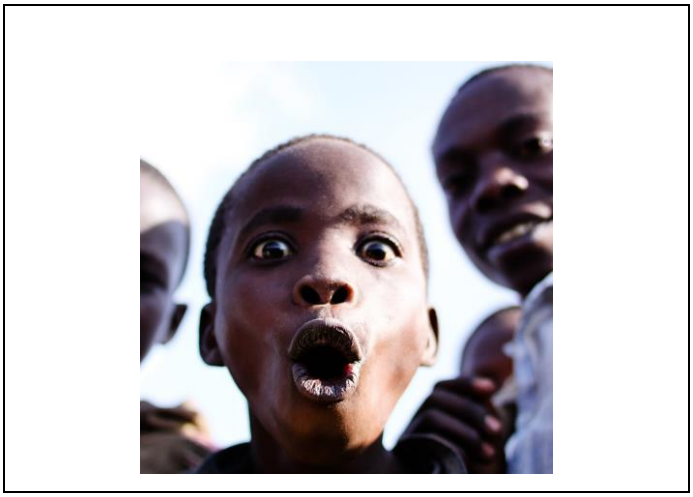


Figure 12: Photograph depicting "surprise"

Surprise is portrayed in Figure 12 through the presence of the wide-eyed stare and the shape of the mouth, which is formed in a slightly upturned circle or oval. The jaw also appears looser. There are only minor differences between the expression of surprise and the above-mentioned fear, which is an area of considerable interest in this dissertation, as will be demonstrated in the forthcoming data analysis section.

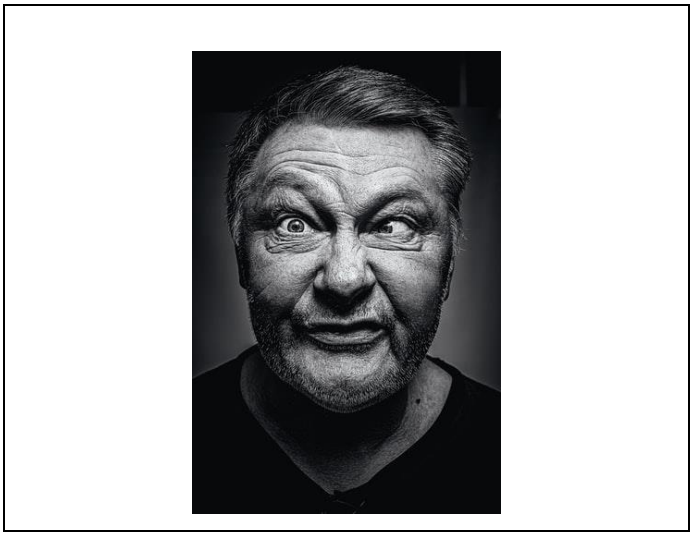


Figure 13: Photograph depicting ambiguous emotion or state

As with the images selected to represent more ambiguous emotions, faces were chosen that do not feature characteristics that are uniformly or commonly represented in other images, either through the combination of two or more individual characteristics that do not normally appear together, or features that are not often found in traditional representations of emotions. In

Figure 13, the pursed lips, arched eyebrows and wide, crossed eyes convey an emotion that is not easily identifiable in comparison to the six basic emotions mentioned previously, and therefore can be considered somewhat ambiguous, left open to interpretation.

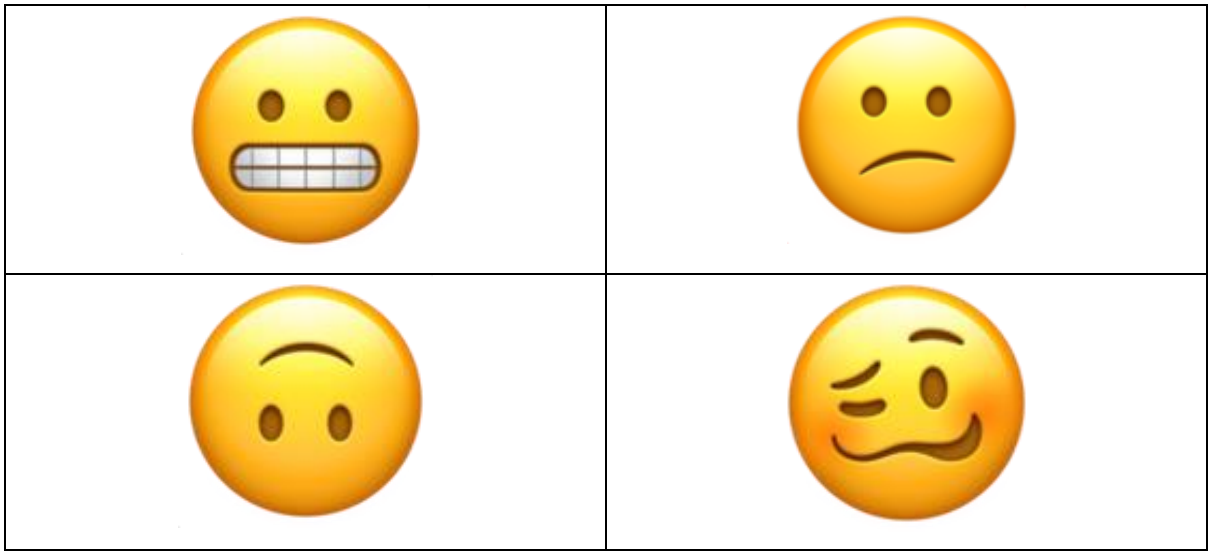


Figure 14: Ambiguous emoji

Figure 14 represents a sample of the emoji selected to be used in the questionnaire. As mentioned previously, all emoji are provided with bespoke labels in order to differentiate them from each other. These are normally defined by either the structural composition of the image (for example "Face with Uneven Eyes and Wavy Mouth"), a specific scenario or an emotional term (such as "Grimacing Face" or "Face with Look of Triumph") that the coders used as the guideline when designing these emoji.

During the design period of the questionnaire, the images selected were ordered by means of a randomizer, to prevent any unconscious research bias in terms of the order in which they were presented to the respondents. However, this order remained consistent throughout all three individual questionnaires distributed to the various universities, allowing each participant to have access to identical questions.

3.5. Data Analysis Procedure

The intention of the study was to garner a widespread set of results to facilitate effective and insightful analysis of the perception of emotional expressions from the surveyed group. Once the period of data collection had returned sufficient results, the research entered into the analysis stage, whereby the open-ended responses, in the form of "voluminous, unstructured and unwieldy" (Bryman and Burgess, 1994, p. 216) data, were investigated through the lens of qualitative analysis, interpreting the data through a set of conceptual guidelines taken from

previous research, using the framework of Basic Emotion Theory (Ekman and Friesen, 1969; 1971). Dey (1993) indicates the benefits of utilizing a basic three-step method of qualitative research in designing a survey model, whereby the process involves "describing phenomena, classifying it and seeing how our concepts interconnect" (p. 31). Through actively engaging with the data in an analytical way, this study was able to find broader interpretations of trends and attitudes towards this subject and determine correlations between different parameters, and the perceptions of emotional expressions.

3.5.1. Categorization of Images

In order to facilitate the process of effective analysis, we employed a rudimentary categorization of the emotional images that were to be used in the survey, aligning them with the six basic emotions through associating them with keywords used when searching for them online, creating a corpus of control for the subsequent analysis, as well as our own discretion as researchers to determine which of the images best reflected typical expressions of these six fundamental emotions. As per Ekman and Friesen (1969; 1971), the categories used for classification were (a) "happiness" (b) "sadness", (c), "anger", (d) "fear", (e) "disgust" and (f) "surprise". Synonymous terms for the basic emotions (such as "joy" or "glee" for "happiness") were also taken into account. Moreover, all emoji are assigned a specific name by the Unicode Consortium and were labelled as such.

3.5.2. Grouping of Responses

Core words from each response, such as those relating directly to emotions (such as words used to describe an emotional state) were grouped with identical or similar words, which were then categorized under one of the seven broad groups mentioned above, employing a method of acknowledging and actively engaging with lexical diversity. For example, for the basic emotion of "happiness", words such as "joy/joyful", "glee" and "exuberance" were considered to be similar enough to be synonymous. However, this research was cognizant of the fact that each individual term carries with it a lexical specificity, so efforts were made in the analysis process to avoid unnecessary conflation of terms. When words are extracted from the same lexical root, such as "anger" (noun form) or "angry" (adjective form), they were considered together.

As this research is qualitative, and thus was formed around individual opinions rather than selection from a set of predetermined options, these basic emotions were only used as a means of grouping various responses. A seventh parameter, that of "*other*" was utilized in order to account for responses that cannot be considered aligned with the six basic emotions. This

employs a method of giving credence to the possibility of lexical similarity and semantic nuance on the part of respondents, rather than emphasizing the importance of direct equivalence between the intentions of the original image and the varying interpretations that respondents may assert based on their perception of the emotion depicted. This is also applicable to responses that veered away from emotional terms, and rather entailed participants providing more narrative descriptions, as will be discussed subsequently.

3.5.3. Responses to the Questionnaire

As mentioned throughout this dissertation, this study was inspired by the research done by Ekman and Friesen (1969; 1971), who defined the six basic emotions that form the foundation of this study. The questionnaire was designed to include images that reflected all six of these basic emotions, garnered through free stock photography websites, which were acquired through searching for these basic emotion terms and choosing a diverse range of images that reflect a wide range of expressions. The following subsequent has divided these responses into the six basic emotions, utilizing the original theoretical framework devised by Ekman and Friesen (1969; 1971). As mentioned in the literature review, there has been some contentious debate as to whether *contempt* is classified as an emotion, and has therefore not been included as an individual emotion in this questionnaire, but rather associated with the emotion of anger, as per the original studies. In addition, the research also utilized ambiguous expressions of emotion, to determine whether more vague images provided any correlation between geographical groups. Images were sorted randomly by use of a third-party sorting programme, to prevent unconscious researcher bias in the design of the questionnaire.

To place this research in a contemporary space, two additional categories of images were included. To allow for insights into perceptions of emotion within the digital realm, emoji were included in the questionnaire, as an opportunity to garner data into how modern South African university students interpret digital expressions of emotion. The research also included two images of individuals wearing face masks, as a method of considering the expression of emotion through only the upper portions of the face being visible, an area of research borne from the COVID-19 pandemic and the worldwide regulations that made wearing masks mandatory. This was done to determine whether participants could still identify emotions based on only the top half of the face, which relates to the theory that the eyes are as impactful in conveying emotion as the rest of the face.

3.6. Reliability and Validity

The **reliability** (the extent to which a research method can be considered consistent in its measuring of a certain social phenomenon) and **validity** (the extent to which a research method can be considered effective and accurate in accomplishing what it sets out to measure) afforded by qualitative research, when assimilated effectively into the methodological design and the subsequent data analysis, are able to provide enriching insights into the chosen subject and demonstrates a meaningful understanding of the theoretical issues at the core of the study.

To ensure reliability in terms of the data, 10% of the images selected for the study were given to three individuals (my research supervisor, as well as two other students in the Department of Linguistics) as a brief, informal pilot study to assess whether the images were strong enough to warrant inclusion in the research. This process yielded only minor variances in the results, providing the necessary consistency to confirm the quality of the research instrument. This is consistent with the major tenets of reliability and validity, whereby a study can only satisfy these criteria if the stimulus is replicable across all participating groups.

3.7. Ethical Considerations

The questionnaire used in this research was entirely confidential and total anonymity was guaranteed to all respondents. The only personal information participants were required to provide was selecting their age from a list of options at the outset of the survey. They were grouped by geographical location based on the survey they completed, as three individual surveys with identical questions were distributed to each of the three universities, in order to facilitate more manageable data collection. Other personal information such as name, gender and student number were deemed inconsequential to the study and were not required, as they were not likely to contribute any meaningful insights into the research question, as well as potentially being invasive on the privacy of the participant, who may not want to associate with one of the selected demographics.

Ethical clearance from the three universities chosen to take part in the study was pursued for the main study to ensure it meets all requirements in order to proceed. Ethical approval from the Human Research Ethics Committee (Non-Medical) at the University of the Witwatersrand was granted under protocol number H20/11/23. Subsequently, gatekeeper's approval from the two other participating universities was granted.

Chapter 4: Data Analysis

This chapter presents the findings of this study. The data collection process was undertaken amongst populations from three different South African regions that agreed to be part of this study on perceptions of facial expressions of emotion. The three groups are located in different parts of South Africa, namely Johannesburg, Cape Town and the Free State.

The study seeks to answer the following research questions:

1. Is the perception of emotional expressions influenced by diversity in geographical location?
    a. What emotions are commonly perceived amongst the target population, and which are perceived differently?
    b. How do facial health masks that cover the lower half of the face (a requirement of the recent COVID-19 pandemic) impact the perception of emotions?
2. Is there a universal trend in the recognition of emotions in the contemporary digital space?
    a. Which emoji are commonly perceived amongst the target population, and which are perceived differently?

This study followed a theoretical framework that made use of the Basic Emotions Theory (Ekman and Friesen, 1969; 1971), which consists of six basic emotions that correspond to the following general terms:

- Anger
- Disgust
- Fear
- Happiness
- Sadness
- Surprise

Furthermore, this study considered more ambiguous emotions (namely those that could not be easily attributed to one of the basic emotions mentioned above), as well as emoji, which are often categorized through physical description rather than through emotional terms. The study also looked at the influence of face masks on the perception and recognition of emotions, as a result of mandatory practices under the present COVID-19 pandemic.

4.1. Demographic and Participant Data

The participants were extracted from the student bodies at three South African universities, namely the **University of the Witwatersrand** (Johannesburg, Gauteng), the **University of Cape Town** (Cape Town, Western Cape), and the **University of Free State** (Bloemfontein, Free State). The following table indicates the number of responses received from each individual group after potential respondents were sent the email inviting them to participate in the research. For the purposes of this study, the geographical locations will be used to refer to the populations, rather than the universities.

Region	Number of Participant Surveys
Johannesburg, Gauteng	531
Cape Town, Western Cape	243
Bloemfontein, Free State	200

Table 2: Responses Received from Each Participant Group

Table 3 below indicates the total number of completed questionnaires, indicated by the number of participants at each geographical location that submitted a full questionnaire, rather than exiting before completing all the questions:

Location	Number of Participant Surveys	Number of Completed Participant Surveys	Percentage
Johannesburg	531	496	93.4%
Cape Town	243	232	95.5%
Free State	200	165	82.5%

Table 3: Number of Completed Participant Surveys from Each Geographical Region

In the data analysis process, we refer to each group by the abbreviated name of the city in which the university is, for broader viewership. The following key can be used for the forthcoming discussion:

- "JHB" refers to the sample taken from the University of the Witwatersrand in Johannesburg, Gauteng
- "CPT" refers to the sample taken from the University of Cape Town in Cape Town, Western Cape

- "BFN" refers to the sample taken from the University of Free State in Bloemfontein, Free State

As made evident by these results, the majority of participants completed the questionnaire. This finding accounts only for participants who either completed the whole survey, or submitted an incomplete set of responses, where some questions were left blank (rather than those that withdrew from the questionnaire before completion). It does not include sporadic non-responses, such as "I don't know" and "?", which were an occasional response to certain questions, unless it was clear that the participant was unable to answer the majority of questions, in which case this would be included with incomplete surveys. Participants that withdrew before completing the survey were excluded.

4.2. Analysis of Data

As discussed in the methodology chapter, responses were divided into geographical locations, based on the city in which the population is situated, in order to answer the study's research questions, which endeavoured to determine whether geographical location influences how participants perceive facial expressions of emotion. The most common keywords were extracted by means of a sorter (an additional research tool designed to list the most common words and terms in a set of data) that determined the most frequently used terms in each set of responses.

As outlined in the methodology section, this study acknowledged the existence of synonymy in the participants' responses, and thus different words considered to be similar were grouped together under the general categorizations of the basic emotions. For example, for the category of "happiness", terms such as "joy" and "glee" were perceived as being semantically close enough to be grouped under this emotion. As the Ekman and Friesen (1969; 1971) research indicated, the basic emotions are a rudimentary set of universal categories, so some variance in terms of the words used to describe them is to be expected. However, the study did not actively attempt to conflate similar terms and assume that they lack lexical specificity, instead using this as a broad categorization to assist in sorting the unwieldy but insightful volume of data and providing a strong analysis.

For full citations for each individual image, refer to Appendix B, which includes the image reference sheet. For the graphs and charts below, the numbering system refers to where that

particular question appeared in the survey. For ease of analysis, emotions have been grouped together into the forthcoming sub-sections.

4.2.1. Anger

To solicit the emotion of "anger", images were selected that were perceived to be structurally similar to common conceptions of what the physical manifestations of anger would be. This included furrowed eyebrows, hard stares and downturned mouths (either closed or open). In total, five images depicting anger were selected. Figure 15 depicts the images selected for this emotion.

4.2.1.1.	4.2.1.2	4.2.1.3	4.2.1.4	4.2.1.5
				

Figure 15: Images Depicting Anger

4.2.1.1. Responses to Anger #4

The following figure depicts the collective responses for this question:

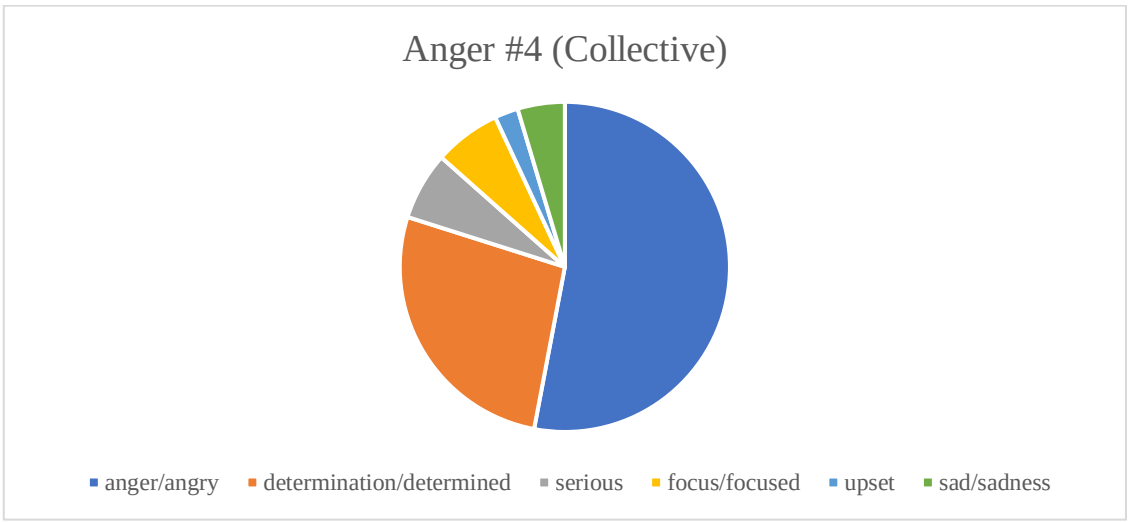


Figure 16: Chart Depicting Collective Responses to "Anger #4"

As demonstrated in Figure 16, across all three participating groups, responses were heavily inclined towards the term "anger" or "angry" (53%), followed by "determination" and "determined" (27%), indicating significant agreement between the respondent groups in the interpretation of this emotion across two broad categories.

The following figure depicts the responses, as divided by geographical region:

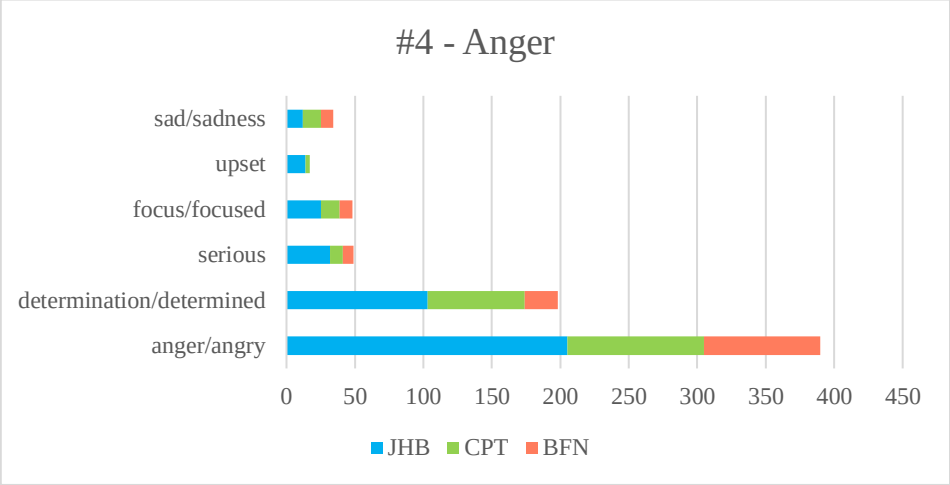


Figure 17: Graph Depicting Geographical Responses to "Anger #4"

The responses for this emotion, labelled as "#4 – Anger", were predominantly associated with the term "anger" or "angry". As indicated in the graph above, the vast majority of respondents used this term to describe the emotion. This was consistent through all three participating groups. The most consistent group to associate this emotion with anger was the Johannesburg sample, with nearly double the number of participants using "anger" or "angry" to describe this image. The second most common response across the groups was "determination" or "determined", which also received a significant number of responses.

4.2.1.2. Responses to Anger #6

The following figure depicts the collective responses for this question:

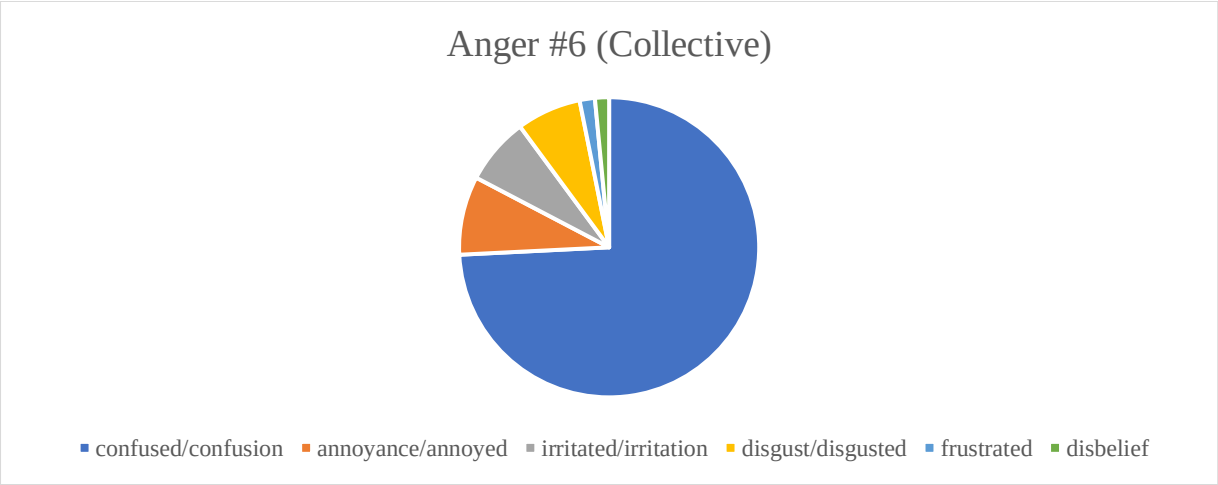


Figure 18: Chart Depicting Collective Responses to "Anger #6"

As indicated by Figure 18, there is a dominance of the terms "confused/confusion" (74% of the total responses across the three groups) in the description of this image, with the next most common response being "annoyance/annoyed" (8%) and "irritated/irritation" (7%). None of these responses are included in the basic emotions list.

The following figure depicts the responses, as divided by geographical region:

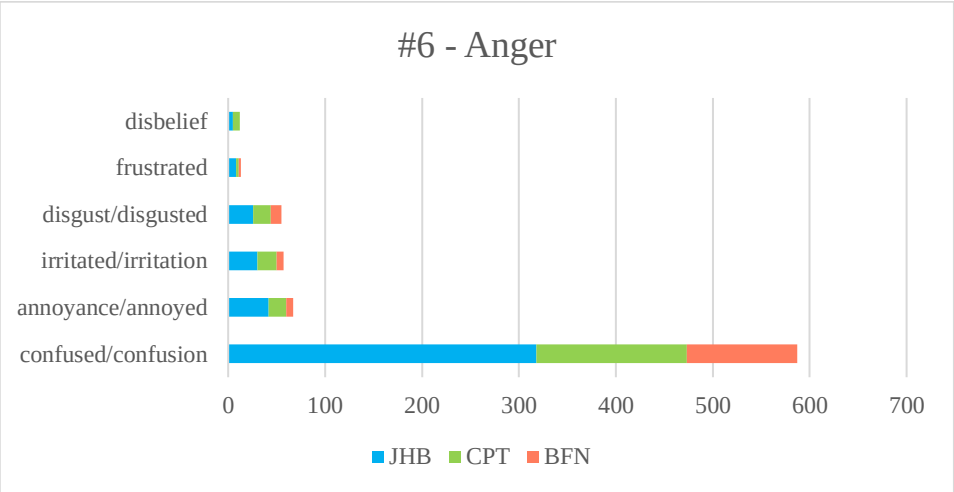


Figure 19: Graph Depicting Geographical Responses to "Anger #6"

The responses for this image, labelled as "#6 – Anger" indicate the vast majority of respondents used the term "confused" or "confusion" to describe this emotion, which is far more than any of the other common responses. Notably, the term "anger" was not included in the set of most common responses for this image.

4.2.1.3. Responses to Anger #22

The following figure depicts the collective responses for this question:

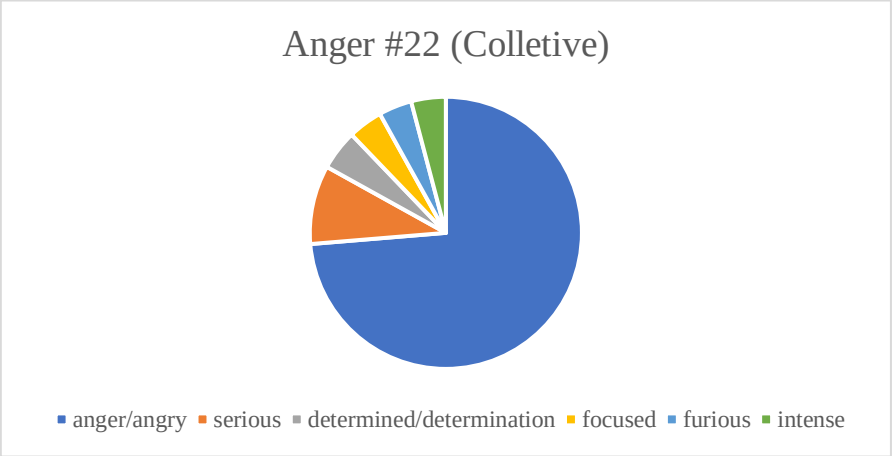


Figure 20: Chart Depicting Collective Responses to "Anger #22"

As demonstrated in Figure 20, there is a significant dominance of one term, with “anger/angry” (74%) being the most common response across the three groups when they are compared, followed by “serious” (9%). The term “furious” (4%) is considered a synonym of “anger/angry” and is also included as one of the more common responses.

The following figure depicts the responses, as divided by geographical region:

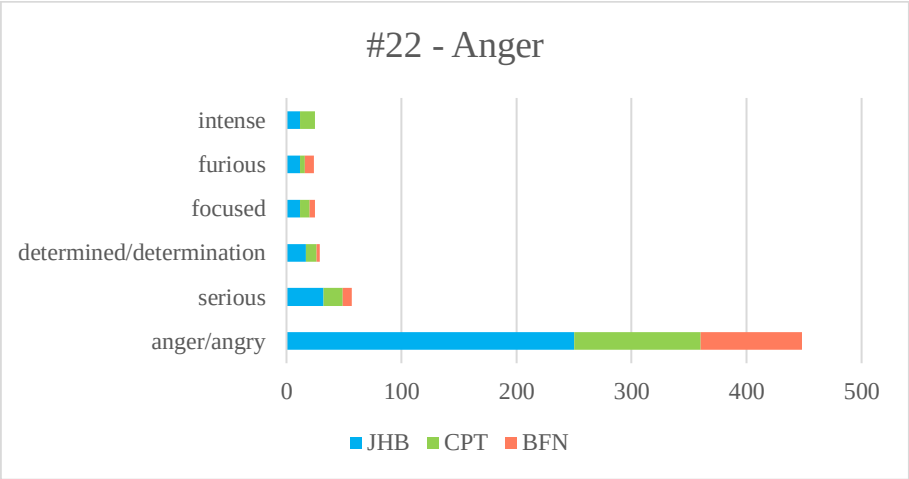


Figure 21: Graph Depicting Geographical Responses to “Anger #22”

Figure 21 represents the responses to “#22 – Anger”. The most common response across the three participating groups was once again “anger/angry”, which was the dominant term used by respondents from the three groups. The term “serious” trails behind as the second most common response, indicating that a significant number of participants view this as an emotional state, which can also be found in the presence of “intense” and “focused”.

4.2.1.4. Responses to Anger #26

The following figure depicts the collective responses for this question:

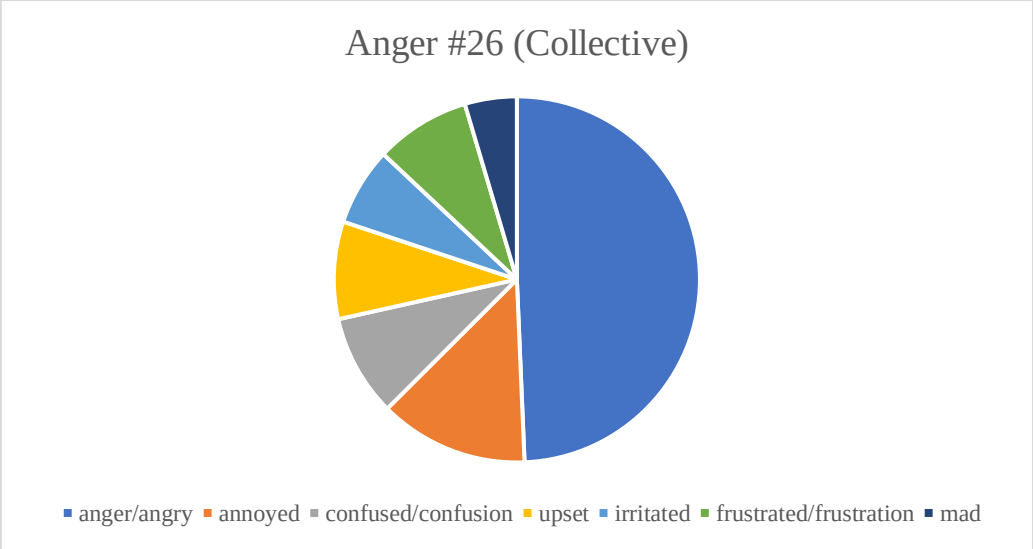


Figure 22: Chart Depicting Collective Responses to "Anger #26"

The responses for this once again indicate broad support for the term "anger/angry" (49%). However, unlike the previous three questions, none of the responses here received over half the responses. This is due to the significant presence of terms such as "annoyed" (13%) and "confused/confusion" and "upset" (both 9%).

The following figure depicts the responses, as divided by geographical region:

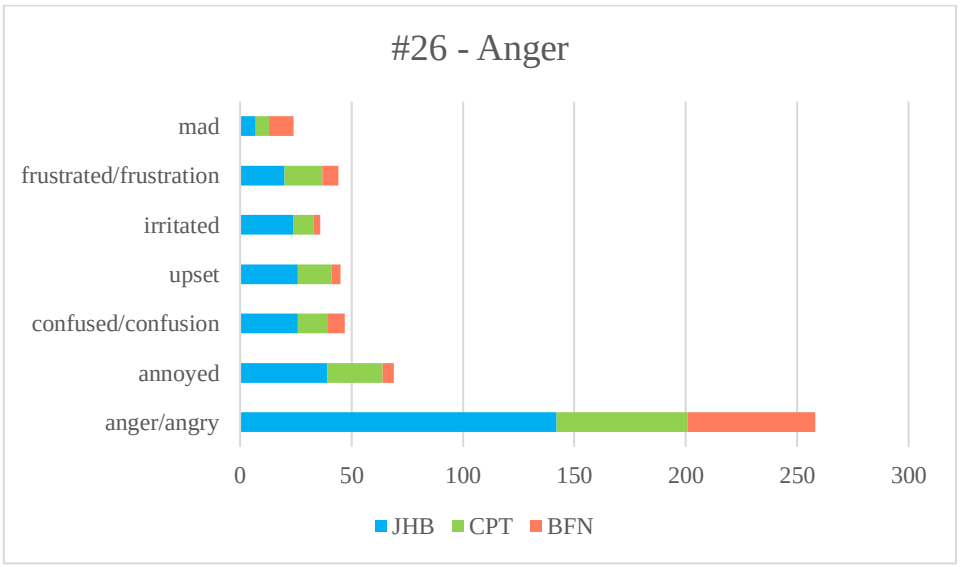


Figure 23: Graph Depicting Geographical Responses to "Anger #26"

As demonstrated in the responses for "#26 – Anger", respondents were in favour of the term "anger/angry". A synonym in the form of "mad" is also present, albeit being in the minority of the common responses.

4.2.1.5. Responses to Anger #42

The following figure depicts the collective responses for this question:

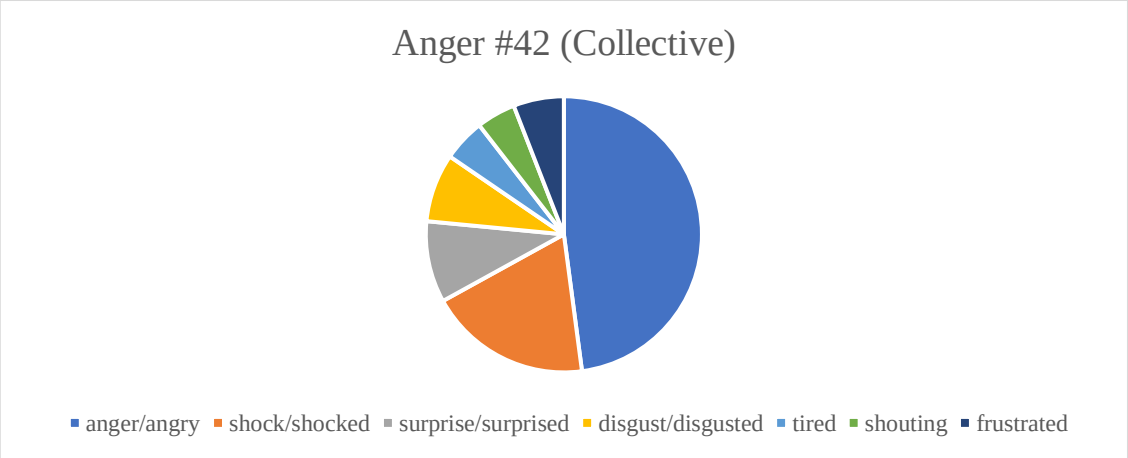


Figure 24: Chart Depicting Collective Responses to "Anger #42"

As indicated in Figure 24, the most common response was "anger/angry" (48%), which is yet another instance of this term receiving just less than half of the total number of responses. The terms "shock/shocked" (19%) and "surprise/surprised" (10%) also appeared significantly in the responses across the three participating groups.

The following figure depicts the responses, as divided by geographical region:

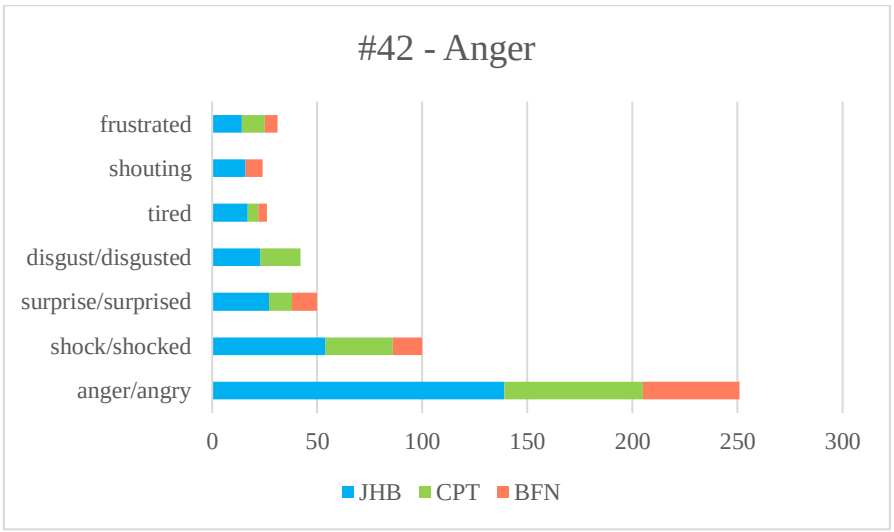


Figure 25: Graph Depicting Geographical Responses to "Anger #42"

The responses for "#42 – Anger" indicate significant agreement between the participating groups in the interpretation of this image, with "anger/angry" once again receiving most responses across the three groups. The terms "shock/shocked" and "surprise/surprised" also received a significant number of responses. The term "shouting" was included, indicating that several participants view this as an emotional state, rather than solely an action.

4.2.1.6. Summary of Findings for "Anger"

A summary of the responses to this emotion indicates that most respondents from the three participating populations are in agreement around the emotion of anger and its physical manifestations, as demonstrated in the discussion above. Of the five images selected to elicit the emotion of anger, four of them featured "anger/angry" as the most common response, each one of them receiving approximately half of the answers in most cases. However, in one image (4.2.1.2), the emotion of anger was not dominant enough to appear in the list of common responses, in which case the term "confused/confusion" was most prominent. This image was slightly different from the others, as it featured an individual who was not facing the camera directly, and who was making use of additional body language in the form of the concurrent hand gesture, which likely indicates that participants viewed the combination of the facial expression (which is structurally similar to the other images) and this particular hand gesture as being indicative of an emotion other than anger. Of the six basic emotions, anger is the only one that was significantly present in these responses. The variability between the three participating groups remained consistent, with the majority of responses reflecting almost identical data in terms of the rate at which participants identified "anger" as the dominant emotion in four out of five images, and "confusion" as the most dominant in the fifth, with the data across the three groups indicating that the interpretation was significantly reliable.

4.2.2. Disgust

To solicit the emotion of disgust, images that closely resembled popular conceptions of the emotion were selected. These included images that featured a very particular shaping of the mouth (referred to as a grimace) and the tightening of the eyebrows, as well as the wrinkling of the nose, which we have mentioned is a non-compulsory but frequently occurring characteristic. Five were chosen in total. Figure 26 depicts the images selected for this emotion.

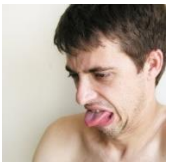
4.2.2.1.	4.2.2.2.	4.2.2.3.	4.2.2.4	4.2.2.5
				

Figure 26: Images Depicting Disgust

4.2.2.1. Responses to Disgust #2

The following figure depicts the collective responses for this question:

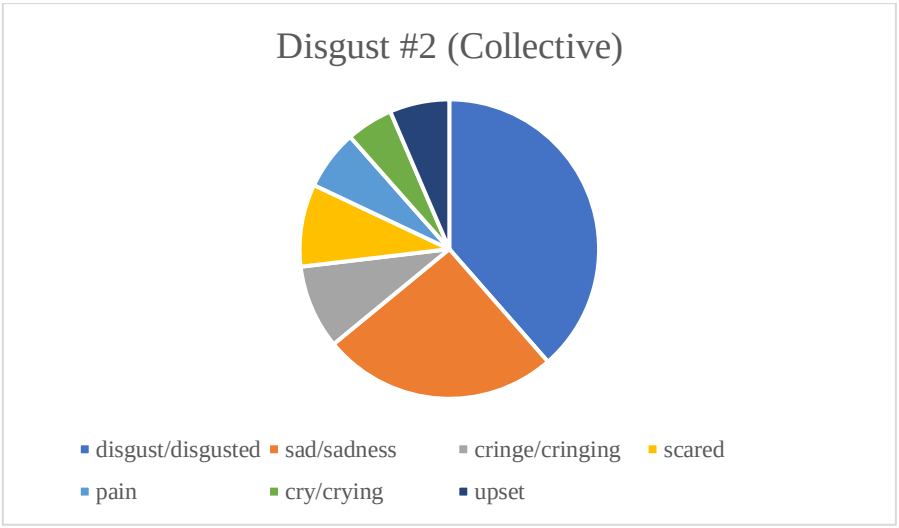


Figure 27: Chart Depicting Collective Responses to "Disgust #2"

Based on the data for "#2 – Disgust", there were two prominent responses across the three groups – "disgust/disgusted" (39%) is most dominant, with "sad/sadness" (25%) following it, indicating a relatively even division between the two, in contrast to other questions in the survey. As mentioned above, "cringe/cringing" and "cry/crying" (both 9%) are somewhat significantly present.

The following figure depicts the responses, as divided by geographical region:

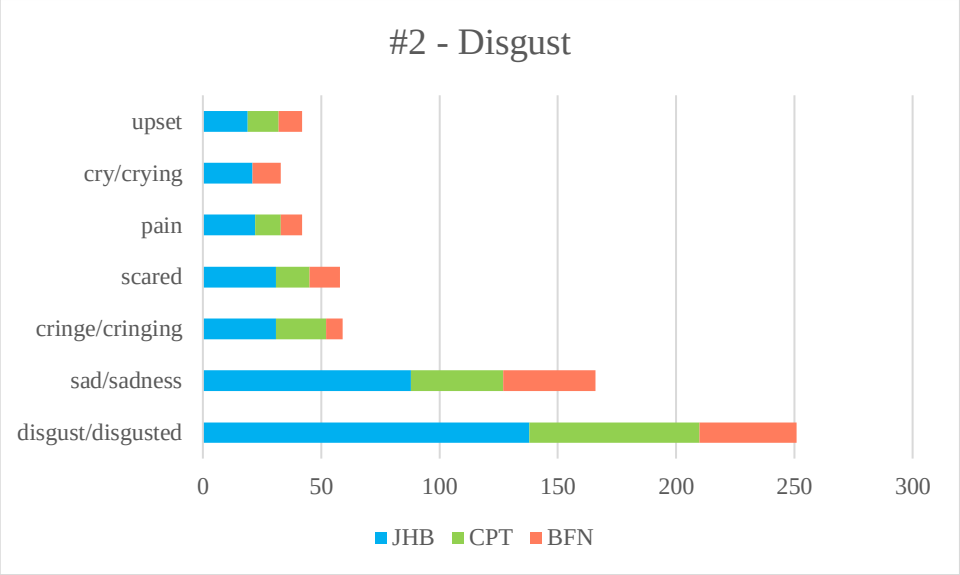


Figure 28: Graph Depicting Geographical Responses to "Disgust #2"

The emotion depicted in "#2 – Disgust" evoked several responses, with a notable divide between categories. The most common response across the three groups was "disgust/disgusted", which is followed closely by "sad/sadness". Less prominent responses can be seen as similar enough to be considered synonymous with these two major categories, with "cringe/cringing" being similar to the former, often being conflated with the feeling of disgust, while "cry/crying" is often considered a physical manifestation of sadness.

4.2.2.2. Responses to Disgust #7

The following figure depicts the collective responses for this question:

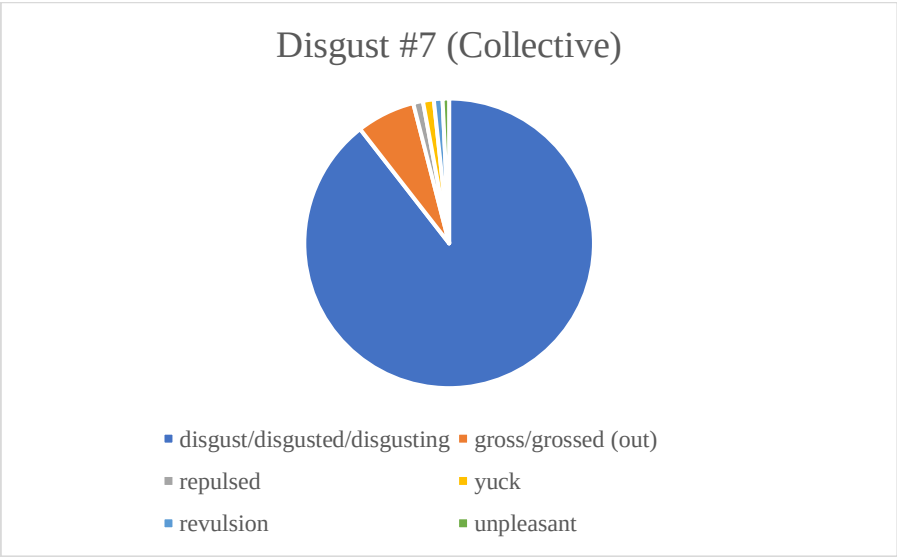


Figure 29: Chart Depicting Collective Responses to "Disgust #7"

The responses for this question heavily lean towards the term “disgust/disgusted/disgusting” (89%), an enormous majority that indicates a near-universal correlation between the participants in their interpretation of this emotion. The only other response with a significant number of responses is “gross/grossed out” (7%). All other responses were too paltry to be of much significance, indicating general agreement that this image best depicts the emotion of disgust.

The following figure depicts the responses, as divided by geographical region:

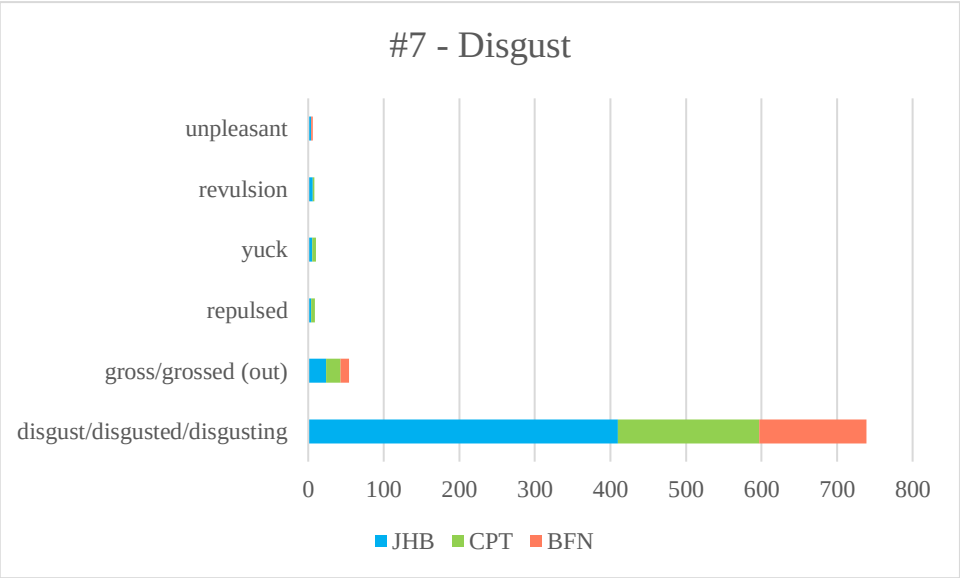


Figure 30: Graph Depicting Geographical Responses to “Disgust #7”

The most common responses across the three groups for this question all correlate to the term “disgust”, with “disgusted” and “disgusting” being used quite widely in describing this emotion.

4.2.2.3. Responses to Disgust #16

The following figure depicts the collective responses for this question:

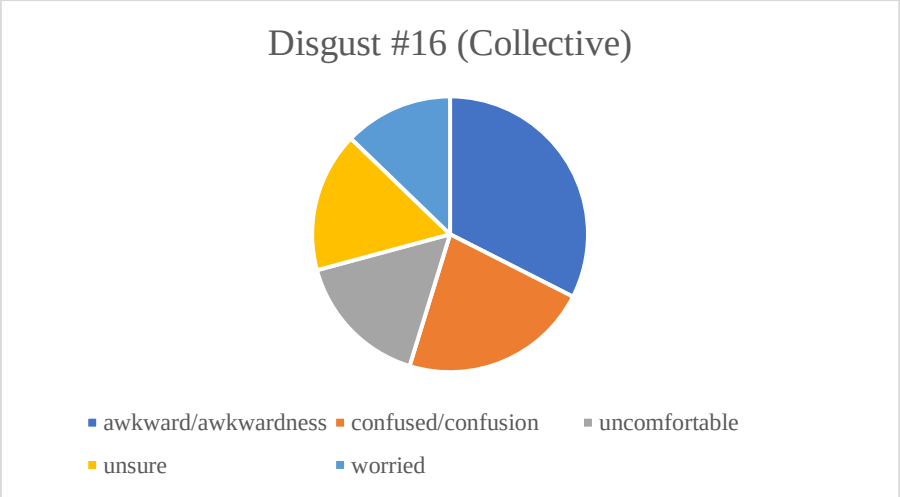


Figure 31: Chart Depicting Collective Responses to "Disgust #16"

As indicated by Figure 31, none of the responses holds a significant majority, with the participants providing quite a diverse spread of potential answers. The most common is "awkward/awkwardness" (32%), followed closely by "confused/confusion" (22%), as well as "uncomfortable" and "unsure" (both 16%), and "worried" (13%), indicating that there was not any clearly defined majority as to what emotion this image represents.

The following figure depicts the responses, as divided by geographical region:

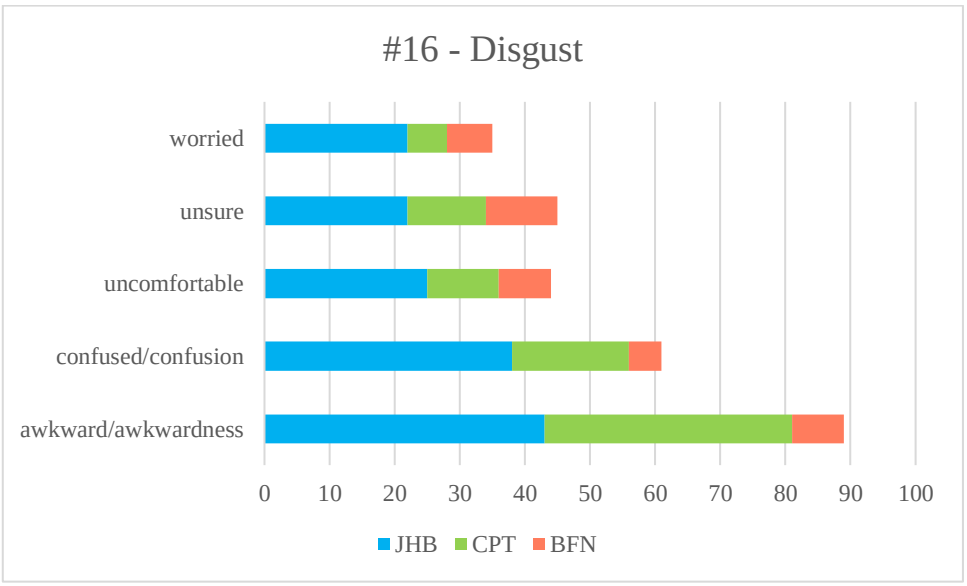


Figure 32: Graph Depicting Geographical Responses to "Disgust #16"

The responses for "#16 – Disgust" represent quite a diverse range of responses, with participants being quite divided as to the interpretations of this particular emotion, with "awkward/awkwardness" and "confused/confusion" being the most prominent responses, but neither holding a clear majority.

4.2.2.4. Responses to Disgust #37

The following figure depicts the collective responses for this question:

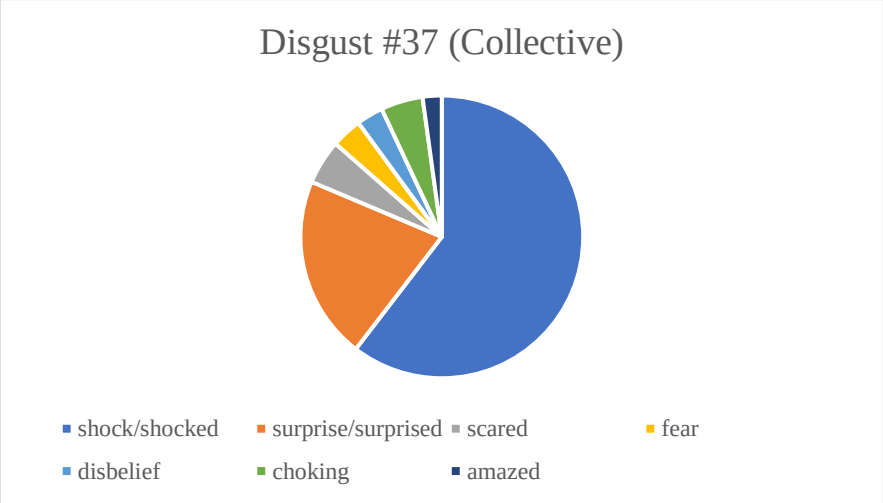


Figure 33: Chart Depicting Collective Responses to "Disgust #37"

The vast majority of responses for this question used the term "shock/shocked" (60%), which is nearly three times more than the second most common response, "surprise/surprised" (21%). The latter is one of the basic emotions proposed by Ekman and Friesen (1969; 1971), and is therefore of significant interest for this study, considering the belief that these emotions are all distinct from one another, lending credence to the belief that there is variability between interpretations of emotional expressions.

The following figure depicts the responses, as divided by geographical region:

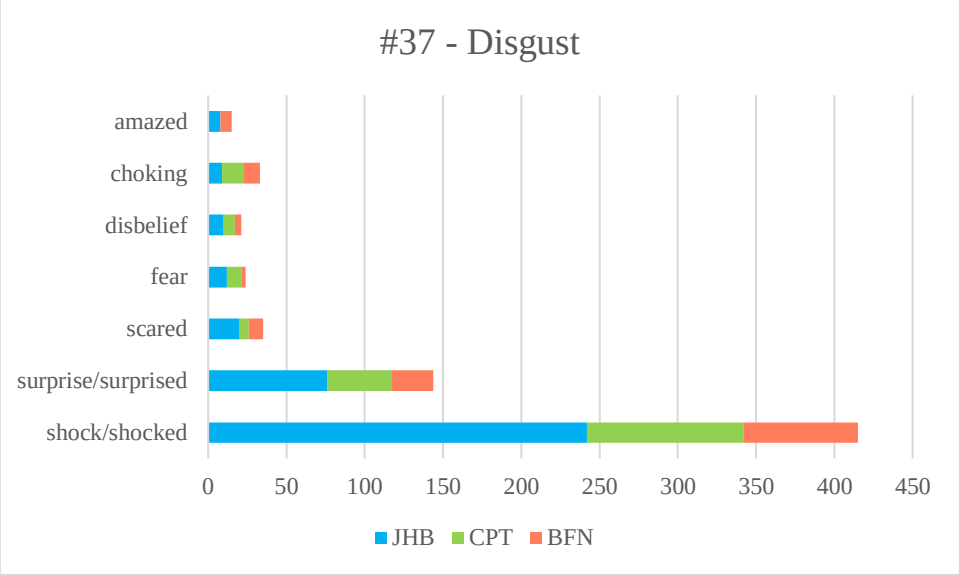


Figure 34: Graph Depicting Geographical Responses to "Disgust #37"

The responses for "#37 – Disgust" demonstrate deviance from the original emotion, as disgust does not appear on the list of most common responses. Instead, the most common responses across the three groups are "shock/shocked" and "surprise/surprised". The common responses also include the term "choking", the action which multiple participants used as a description for the image, rather than a traditional term for an emotion, indicating that some participants may resort to describing scenarios in place of an emotional term when the expression is slightly more vague. This tendency is discussed in a forthcoming section.

4.2.2.5. Responses to Disgust #45

The following figure depicts the collective responses for this question:

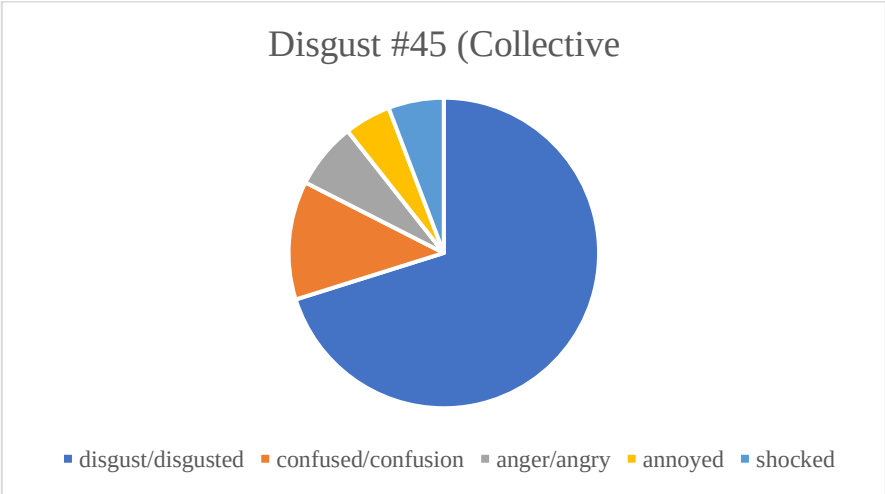


Figure 35: Chart Depicting Collective Responses to "Disgust #45"

The image used in this question was taken directly from the previously mentioned study by Darwin (1890), which is a formative text in emotional studies. The original emotion ascribed by the author was "disgust", and as evident by Figure 35, the majority of modern respondents agree with this categorization, as "disgust/disgusted" (70%) is the most common response, followed by another mention of "confused/confusion" (12%), which is the second most common response for this image. Another basic emotion, "anger" (7%) is in the third position.

The following figure depicts the responses, as divided by geographical region:

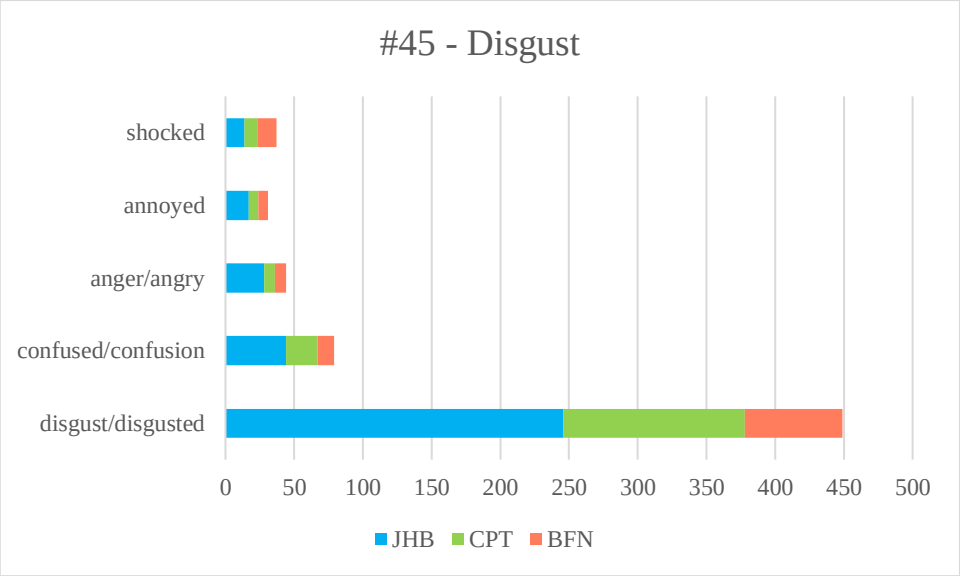


Figure 36: Graph Depicting Geographical Responses to "Disgust #45"

As evident by the responses, there was a significant correlation in how participants from the three groups interpreted "#45 – Disgust", with the terms "disgust/disgusted" being present in the most responses.

4.2.2.6. Summary of Findings for "Disgust"

In considering the responses for these five images that supposedly depict the emotion of disgust, there are several interesting observations. Primarily, while it may not be an emotion that is consistently labelled as such (based on the widespread and diverse range of responses), it is still quite significantly identified, mainly in images such as "#7 – Disgust" and "#45 – Disgust", where the emotion holds the majority number of responses without being notably contested by any other term. Additionally, in two of the questions, the term "confused/confusion" appears, and in considering these images ("#16 – Disgust" and "#45 – Disgust") with the previous instance of "confused/confusion" being a prominent response ("#6 – Anger", where it was the most common answer), we can find structural similarities – the

individuals depicted are all facing away from the camera, with wrinkled noses and narrowed eyes. This possibly indicates the presence of "confused/confusion" as a potential addition to future lists of fundamental emotions, due to these specific facial configurations regularly eliciting a particular response in participants distinct from the previously proposed basic emotions. However, there are some instances where the dominant emotion is contested, such as in "#2 – Disgust", where "sad/sadness" is a common response, holding 25% of the total number of responses, compared to the 39% held by "disgust". In other questions, "disgust" is not even present as a common response, with "#16" and "#37" yielding results that place "awkward/awkwardness" and "shock/shocked" as the common responses. This seems to be quite a consistent pattern across the three groups, as their interpretation varies in the same way across the three questions, indicating similarities in how they perceive this emotion and the supposed physical manifestations as seen in the images.

4.2.3. Fear

Images that represented common characteristics of the fear emotion were selected to solicit that particular response. These included images that depicted widened eyes, the round shaping of the mouth, which is often left agape, and the tightening of the eyebrow region. Five were chosen in total. Figure 37 depicts the images selected for this emotion.

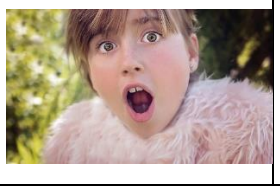
4.2.3.1.	4.2.3.2.	4.2.3.3.	4.2.3.4.	4.2.3.5.
				

Figure 37: Images Depicting Fear

4.2.3.1. Responses to Fear #18

The following figure depicts the collective responses for this question:

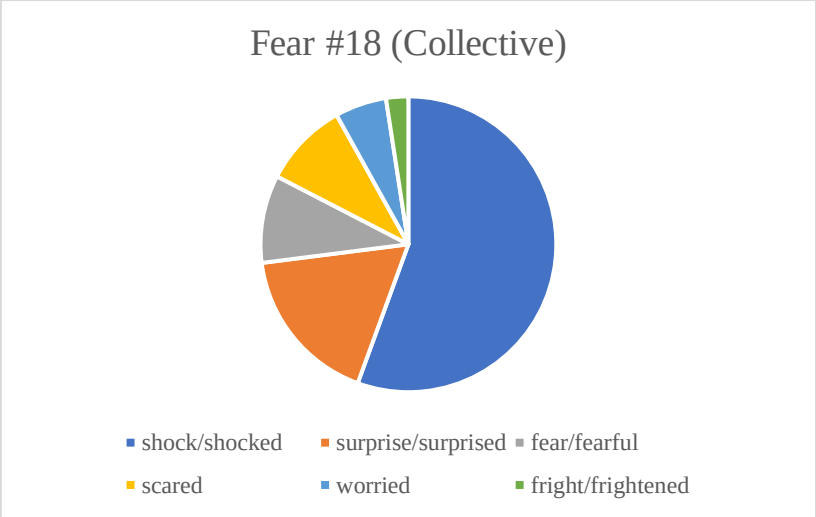


Figure 38: Chart Depicting Collective Responses to "Fear #18"

As demonstrated in Figure 38, the term "shock/shocked" (56%) holds the majority of responses, followed by "surprise/surprised" (17%), another of the basic emotions. "Fear/fearful" (10%) is the third most common response for this image, which indicates that it trails considerably behind the dominant responses, but is still significantly present. Various synonyms for "fear" also appear in the form of "scared" (9%) and "fright/frightened" (2%), as does the term "worried" (6%), which is often cited as being related to the emotion of fear.

The following figure depicts the responses, as divided by geographical region:

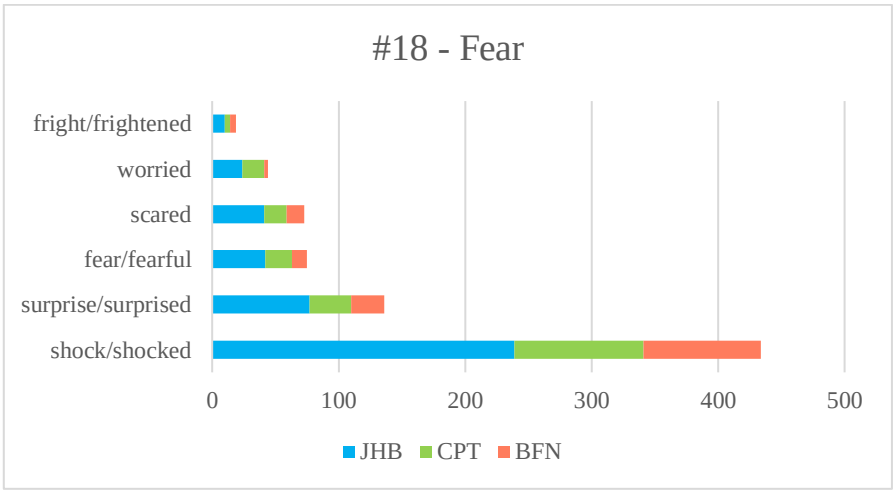


Figure 39: Graph Depicting Geographical Responses to "Fear #18"

The responses to "#18 – Fear" indicate clear agreement between most respondents on the image depicting "shock/shocked", with a few additional categories being significantly included in the responses.

4.2.3.2. Responses to Fear #19

The following figure depicts the collective responses for this question:

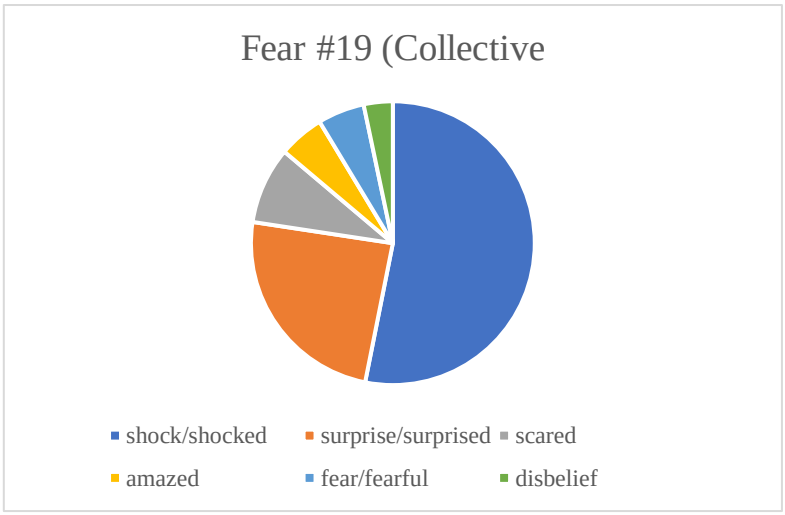


Figure 40: Chart Depicting Collective Responses to "Fear #19"

As with the first question in this section, the responses for "#19 – Fear" are mostly weighed towards either "shock/shocked" (53%), or "surprise/surprised" (24%), which lead the answers with a significant majority. "Scared" (9%) is in the third position, while "fear/fearful" is in the minority, occupying the fourth position, the same place as the more positive term "amazed" (both 5%).

The following figure depicts the responses, as divided by geographical region:

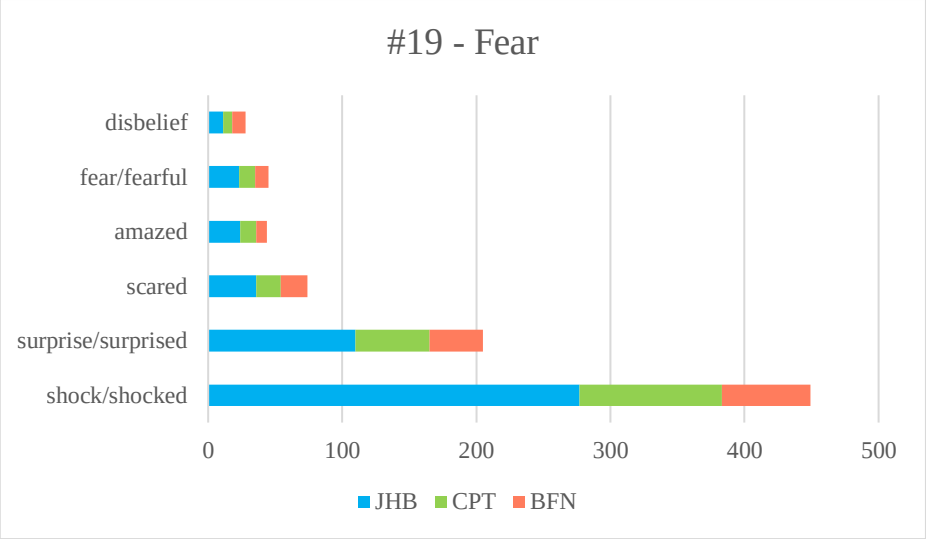


Figure 41: Graph Depicting Geographical Responses to "Fear #19"

As demonstrated in Figure 41, the majority of responses for this question as slanted towards "shock/shocked" and "surprise/surprised" across the three groups, with "fear" occurring towards the bottom of the list of common responses, overtaken by one of its synonyms.

4.2.3.3. Responses to Fear #23

The following figure depicts the collective responses for this question:

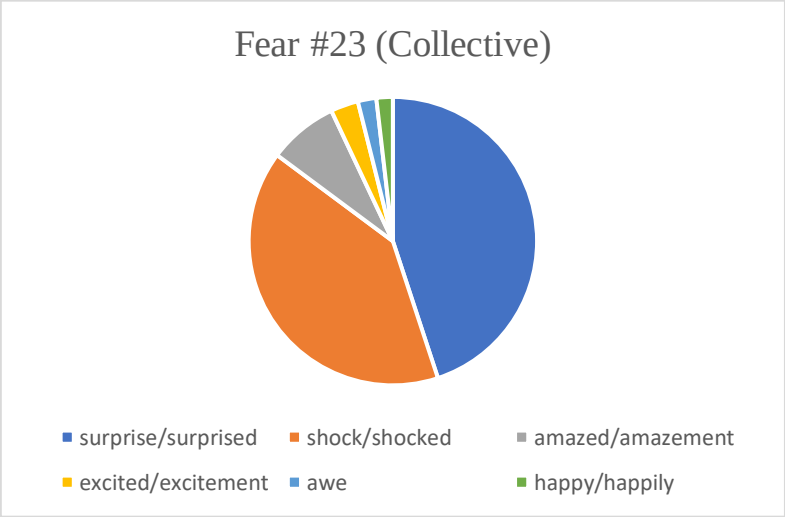


Figure 42: Chart Depicting Collective Responses to "Fear #23"

As can be seen in Figure 42, the responses for this image are close to equally distributed between two terms – "surprise/surprised" (45%) and "shock/shocked" (40%). The term "fear" is not present in the list of common responses at all, which is peculiar considering how it was featured in the previous responses, albeit at a much lower position. Additionally, another basic

emotion, “happy” (2%) appears as one of the less frequent responses that received multiple entries.

The following figure depicts the responses, as divided by geographical region:

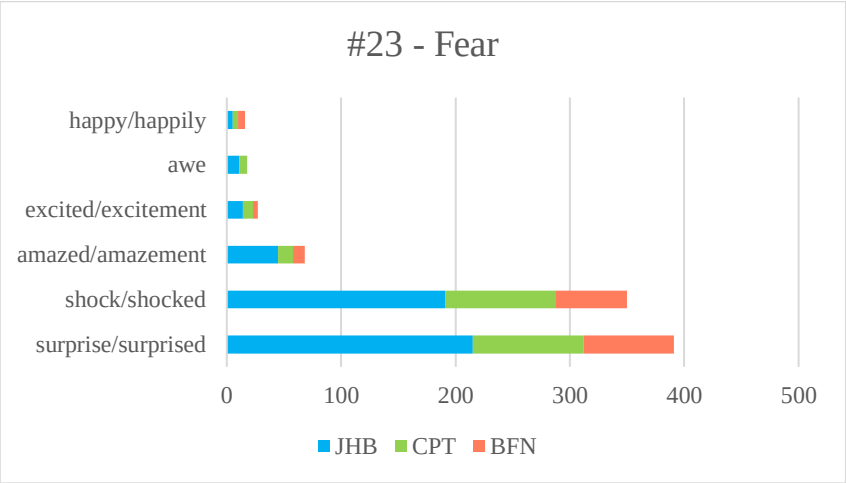


Figure 43: Graph Depicting Geographical Responses to “Fear #23”

Much like the previous two depictions of “fear”, the responses for “#23 – Fear” are leaning towards “shock/shocked” and “surprise/surprised” across the three groups, with the exception being that the position of these terms are inverse, with the latter occupying the top position in this set of responses, have the slight majority.

4.2.3.4. Responses to Fear #32

The following figure depicts the collective responses for this question:

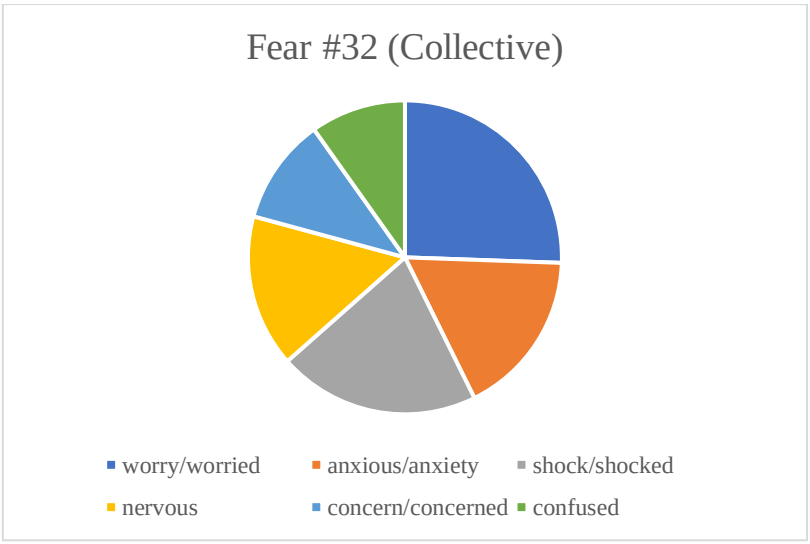


Figure 44: Chart Depicting Collective Responses to “Fear #32”

As shown in Figure 44, the responses to this question are divided between a few different terms. The most common term is “worry/worried” (26%), which is marginally related to “fear”, as is “anxious/anxiety” (17%) and “nervous” (16%) in terms of their varying definitions. “Shock/shocked” (21%) is the second most common response, a departure from the previous sets of responses, where it was the most prominent answer across the three groups. None of these responses holds a significant majority, indicating that this image was slightly more ambiguous than others in this section.

The following figure depicts the responses, as divided by geographical region:

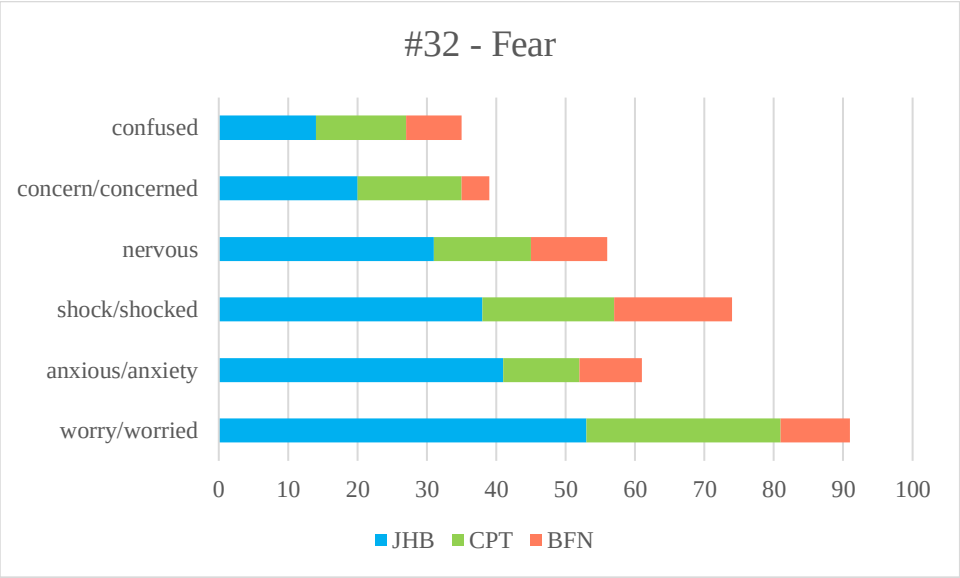


Figure 45: Graph Depicting Geographical Responses to “Fear #32”

The responses for “#32 – Fear” indicate the first instance where participants deviated from relying on the terms “shock/shocked” and “surprise/surprised” as their primary responses, with the former occupying the second position, and the latter being entirely absent from the set of common responses.

4.2.3.5. Responses to Fear #34

The following figure depicts the collective responses for this question:

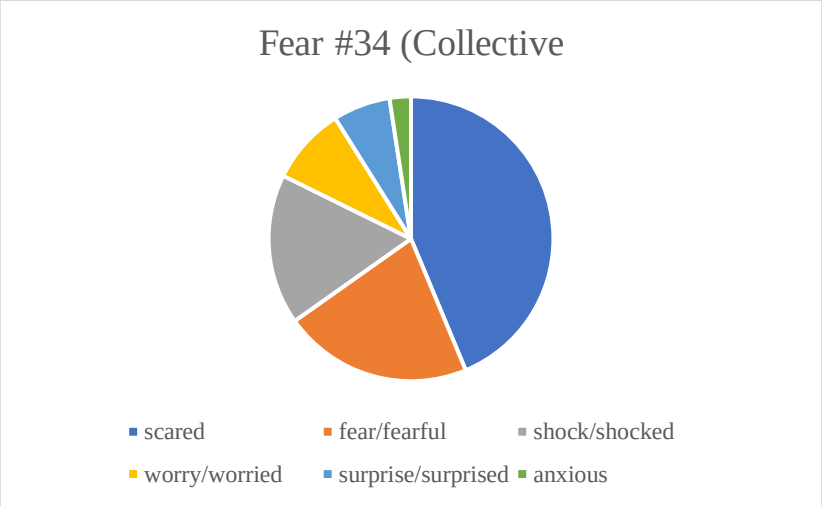


Figure 46: Chart Depicting Collective Responses to "Fear #34"

The responses for this question indicate that "scared" (44%) is the most prominent answer, holding the majority. This is followed by "fear/fearful" (21%), which occupies the second position. This indicates that this image is the most reliable in the questionnaire when it comes to depicting the emotion of fear, according to participants. Another previously mentioned term that is related to the emotion, "worry/worried" (9%) occupies the fourth position, while "anxious" (2%) is at the bottom of the list of common responses. "Shock/shocked" (17%) and "surprise/surprised" (7%), which dominated previous questions, sit at the third and fifth positions respectively.

The following figure depicts the responses, as divided by geographical region:

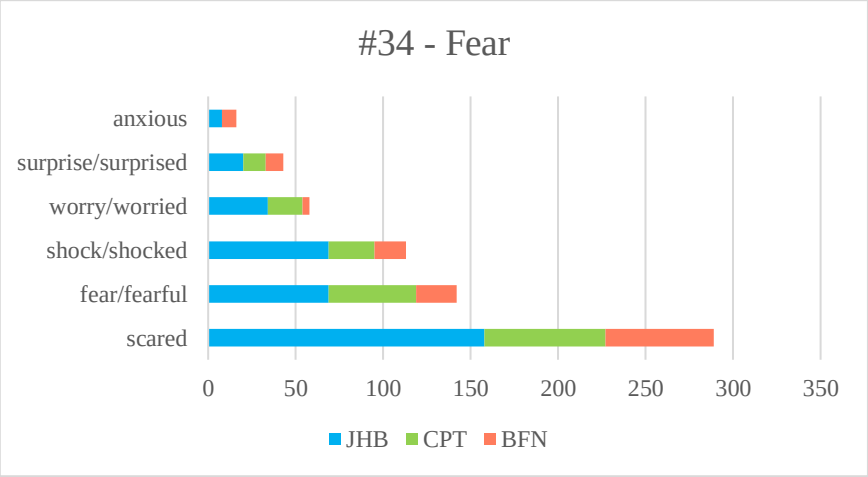


Figure 47: Graph Depicting Geographical Responses to "Fear #34"

The results for "#34 – Fear" indicate a synonym for "fear" finally occupying the top placement in terms of the results, with "scared" consistently appearing as the most prominent response across the three groups.

4.2.3.6. Summary of Findings for "Fear"

As indicated through this section, the emotion of "fear" is not easily identified in the same way as other emotions discussed in this dissertation, based on the responses for the individual questions. The terms "shock/shocked" are the most prominently featured in the responses to questions that relate to "fear" (appearing in all the lists of common results, and being the most frequent in three of them, namely "#18 - Fear", "19 - Fear" and #23 - Fear"), leading us to potentially conclude that there is some psychological conflation between faces depicting the two emotions, which are not normally considered similar outside of their physical manifestations, commonly described as being evoked in different scenarios. Another basic emotion, "surprise/surprised", is also quite frequent, appearing in four out of the five lists of common responses, often appearing alongside "shock/shocked" as one of the most common responses. There appears to be an element of interchangeability between the two terms, which is further discussed in the subsequent section on "surprise". The term "fear" is not a dominant response in any of the questions, with the closest instance of this being "#34", where the synonymous term "scared" is most prominent.

Structurally, there are not very clear differences between the images used to elicit the emotion of fear, as they all are quite similar in terms of depicting the same facial configurations (widened eyes and opened mouths), leading us to conclude the differences in the interpretations come in the concurrent physical qualities, such as posture and bodily gestures, whereby the most consistent uses of "fear" or its synonyms were in relation to images where the individual depicted had more of their body visible, implying that the expression of fear is related to more than just the face. Moreover, the images of fear each represent a different level of intensity, which we can consider as an additional factor in these results.

4.2.4. Happiness

To solicit the emotion of happiness, various images were selected that depicted common characteristics of the emotion. This includes the mouth being shaped into a smile (either closed or open, the latter exposing the teeth), as well as wrinkling at the lateral corners of the eyes, previously referred to as a Duchenne Smile. Five were chosen in total. Figure 48 depicts the images selected for this emotion.

4.2.4.1.	4.2.4.2.	4.2.4.3.	4.2.4.4.	4.2.4.5.
				

Figure 48: Images Depicting Happiness

4.2.4.1. Responses to Happiness #5

The following figure depicts the collective responses for this question:

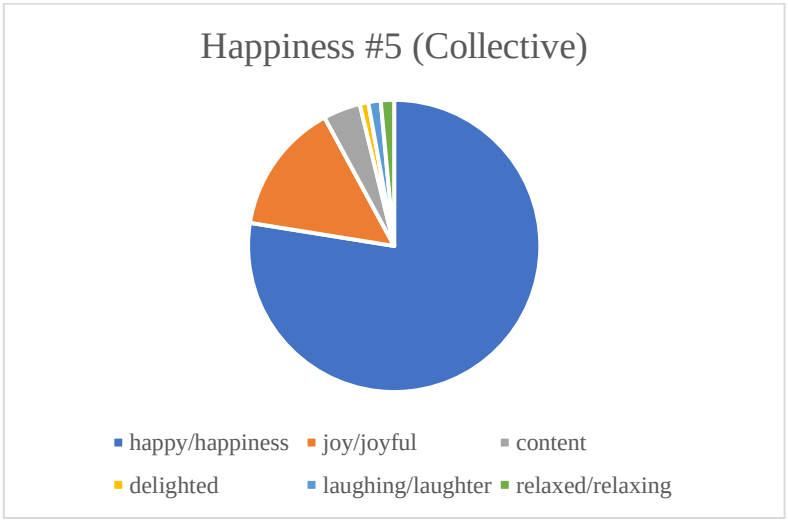


Figure 49: Chart Depicting Collective Responses to "Happiness #5"

As seen in Figure 49, the vast majority of respondents interpreted this image as depicting "happy/happiness" (78%). Another significant result is the second-place position of "joy/joyful" (15%), a synonymous term. Additionally, terms such as "content" (4%) and "delighted" (1%) are of note, since they are also often considered related to the concept of happiness, all being positive emotions.

The following figure depicts the responses, as divided by geographical region:

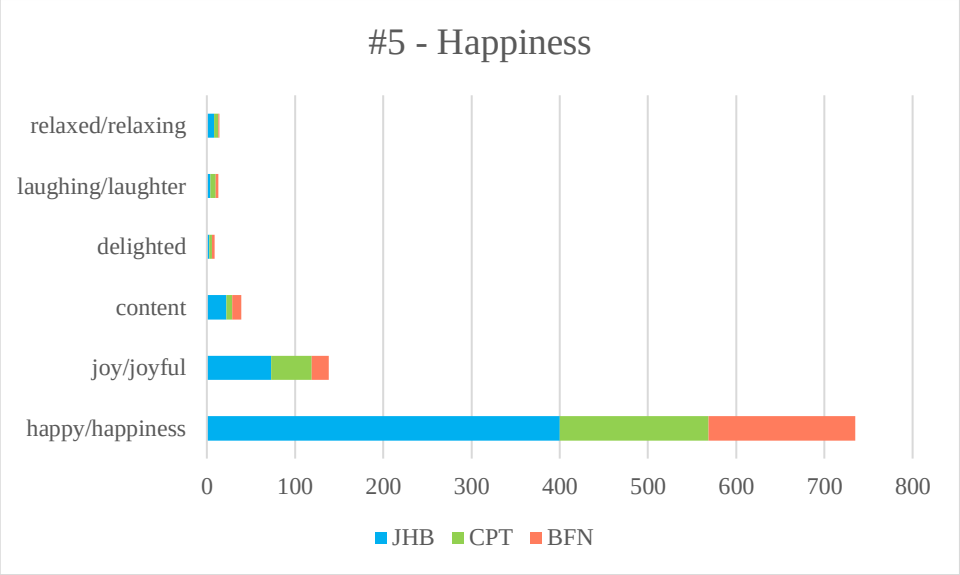


Figure 50: Graph Depicting Geographical Responses to "Happiness #5"

The responses for "#5 – Happiness" indicate a clear preference for the term "happy/happiness", with a few additional terms, most of which are synonymous to a certain level, receiving multiple responses across the three participating groups.

4.2.4.2. Responses to Happiness #14

The following figure depicts the collective responses for this question:

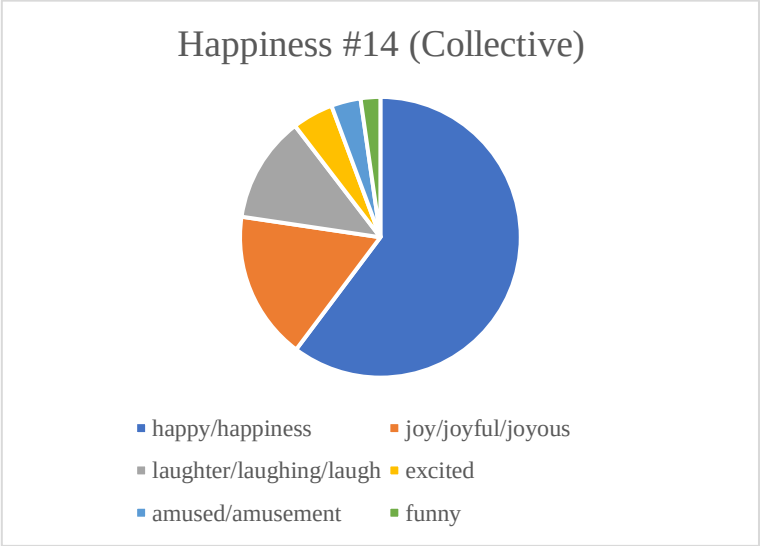


Figure 51: Chart Depicting Collective Responses to "Happiness #14"

The term "happy/happiness" (60%) dominates the list of common responses for this question, with "joy/joyful/joyous" (17%) and "laugh/laughter/laughing" (12%) being notable inclusions in the data as well.

The following figure depicts the responses, as divided by geographical region:

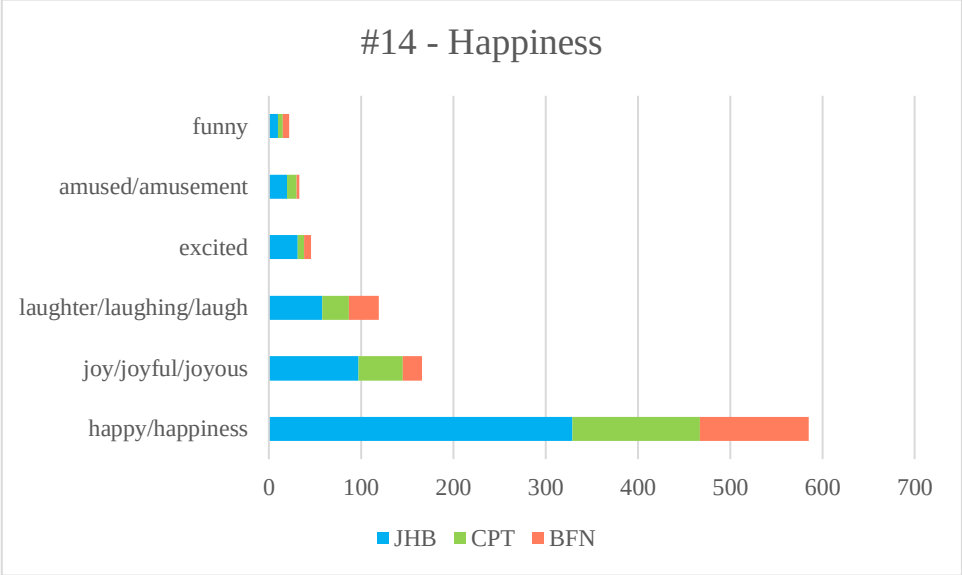


Figure 52: Graph Depicting Geographical Responses to "Happiness #14"

Across the three participating groups, responses for "#14 – Happiness" slanted towards the root term and its synonyms, with the majority of responses being quite similar in their description of the image used in this question.

4.2.4.3. Responses to Happiness #20

The following figure depicts the collective responses for this question:

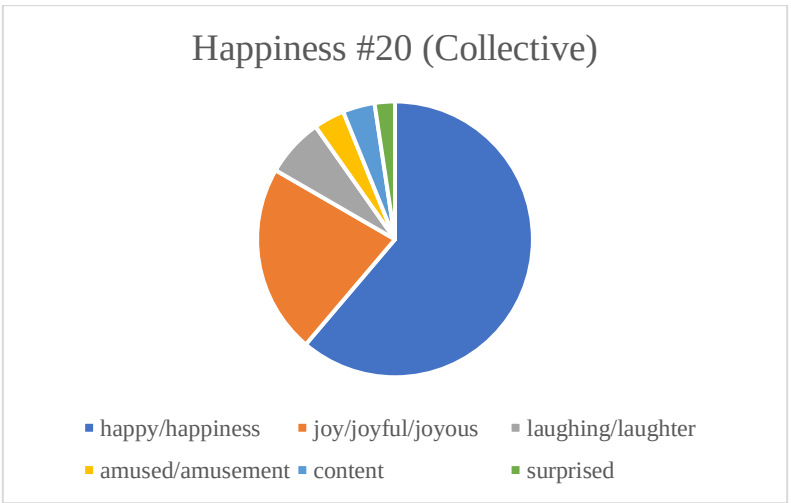


Figure 53: Chart Depicting Collective Responses to "Happiness #20"

The responses for this question lean heavily towards "happy/happiness" (61%), which holds a clear majority, followed by regularly occurring terms such as "joy/joyful/joyous" (22%) and

"laugh/laughter/laughing" (7%). The basic emotion of "surprise" (2%) also has a small but notable presence in the data, having received several responses across the three groups.

The following figure depicts the responses, as divided by geographical region:

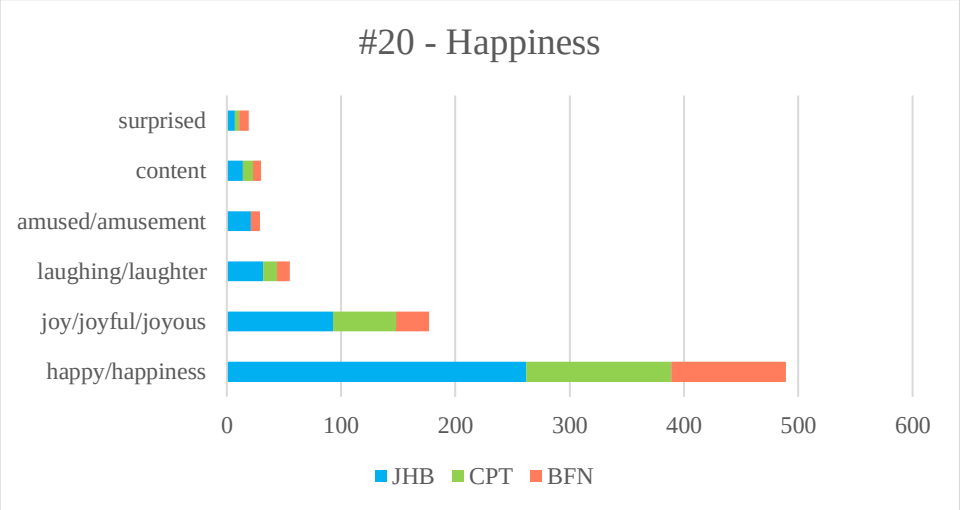


Figure 54: Graph Depicting Geographical Responses to "Happiness #20"

The responses for "#20 – Happiness" indicate a majority preference for the term "happy/happiness" and related terms, as well as including another basic emotion, "surprise", which has previously been seen in responses for "fear" and "disgust", as discussed previously.

4.2.4.4. Responses to Happiness #39

The following figure depicts the collective responses for this question:

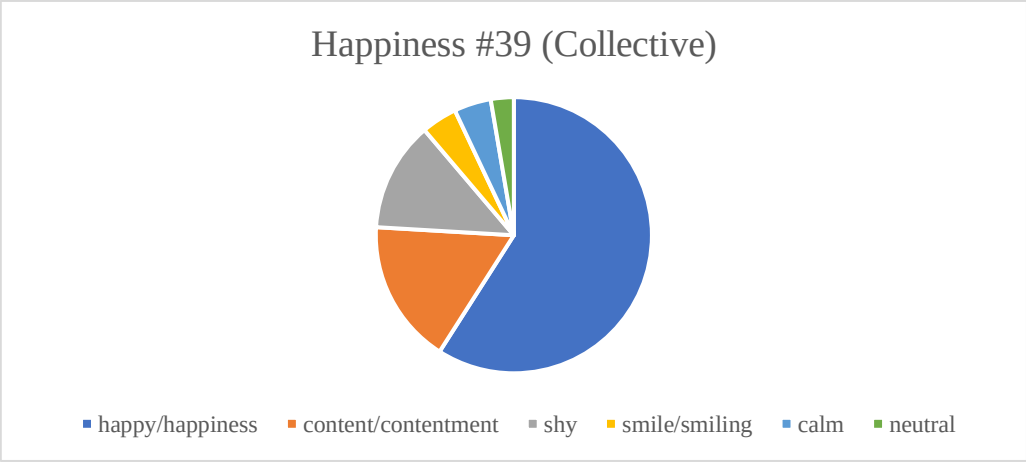


Figure 55: Chart Depicting Collective Responses to "Happiness #39"

As seen in Figure 55, "happy/happiness" (59%) once again recurs as the most dominant response across the three participating groups. The term "joy/joyful/joyous", which was

previously prominently featured in the responses to other questions in this section, is absent, replaced in the second position by the slightly more subdued "content/contentment" (17%), which could be related to the possibility that participants perceived this image as still being related to happiness and representative of a more positive state, but to a slightly less intense degree. Several participants also made use of the action term "smile/smiling" (4%) to describe this image. The third position is occupied by a slightly less buoyant emotion in the form of "shy" (13%), being the first instance of a less directly positive emotion being used to describe an image that depicts happiness. More impartial emotional states such as "calm" (4%) and "neutral" (3%) are also featured in the common responses.

The following figure depicts the responses, as divided by geographical region:

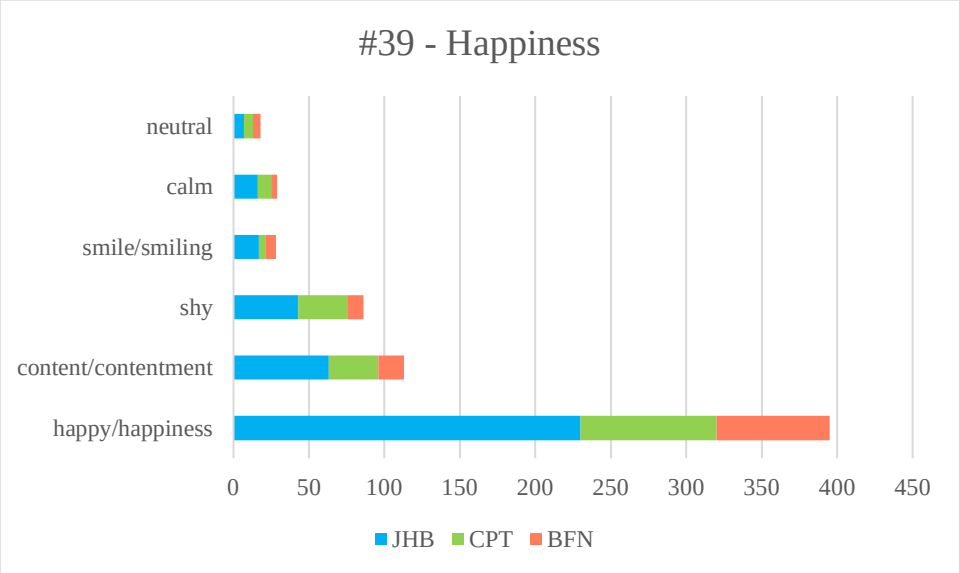


Figure 56: Graph Depicting Geographical Responses to "Happiness #39"

The responses for "#39 – Happiness" once again reflect a preference for the term "happy/happiness", which leads the list of common responses, as do synonymous terms. There are additional responses that do not equate directly to these terms, such as "shy" and "neutral", which are not considered entirely positive emotions, but rather ambivalent states.

4.2.4.5. Responses to Happiness #43

The following figure depicts the collective responses for this question:

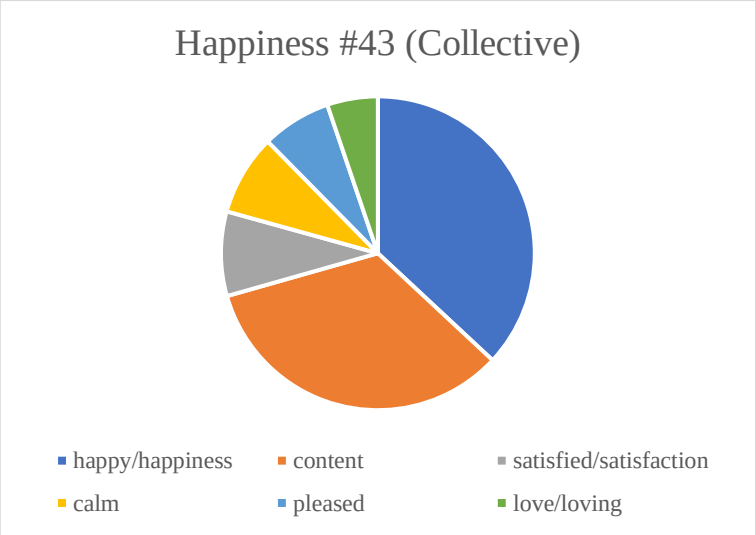


Figure 57: Chart Depicting Collective Responses to "Happiness #43"

As shown in Figure 57, the most dominant responses are split between "happy/happiness" (37%) and "content/contentment" (34%), with only a small margin of difference between them. More subdued emotional terms such as "satisfied/satisfaction" (9%) and "calm" (8%) appear in a lower position in the list of common responses, while the exceptionally positive "love/loving" (5%) trails behind them.

The following figure depicts the responses, as divided by geographical region:

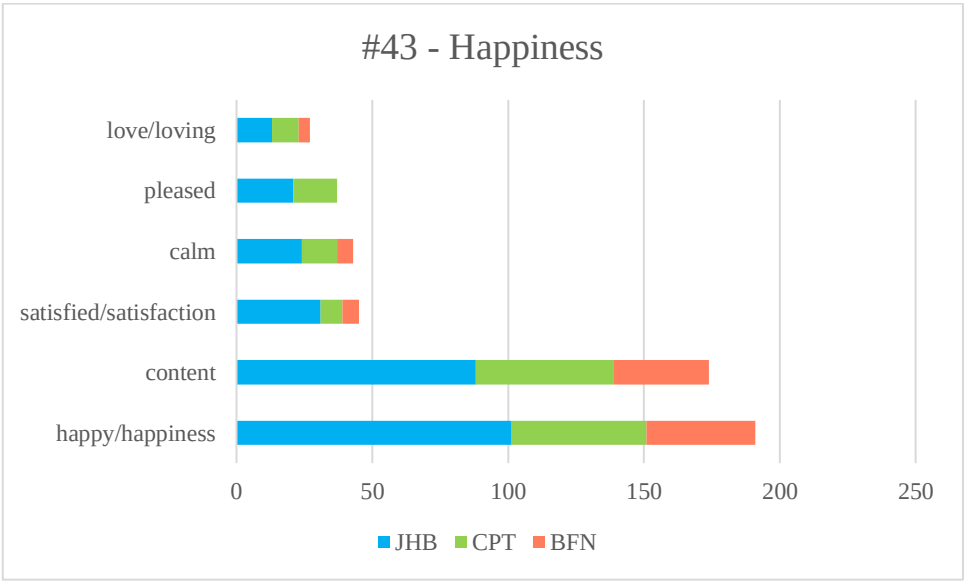


Figure 58: Graph Depicting Geographical Responses to "Happiness #43"

Unlike in the previous four sets of data under this section, the responses for "#43 – Happiness" are relatively evenly split between two major terms relating to positive emotions, both of which are consistent with the rest of the data insofar as being frequently recurring responses to images depicting the emotion of happiness.

4.2.4.6. Summary of Findings for "Happiness"

As made clear by the responses to the five images chosen to depict the emotion, "happiness" is one of the most consistent emotions to be interpreted in the same way across the three groups, with the main response across all questions by the three participating groups uniformly being "happy/happiness", in some cases holding an overwhelming majority. The images where this response was the most prominent were mainly those in which the features were more broadly positive, with the wrinkling of the lateral corners of the eyes and the wide smiles indicating more frequent responses that refer to more exuberant emotions, leading to terms such as "happy/happiness" and "joy/joyful/joyous" to dominate.

For images that still featured these physical traits, but on a slightly less intense level (such as the smile not showing the teeth of the subject) more subdued responses such as "calm" or "content/contentment" tended to appear higher on the list of common responses, and while these are still referring to positive emotional states, they clearly indicate that participants viewed these images as being far less enthusiastic than others. Ultimately, these findings show that across the three geographical groups, there is a significant correlation in how respondents perceived the emotion of happiness, making it quite possibly the most universally recognized emotion explored in this study. In all five questions, the three participating groups were united in indicating their preference for the term "happiness" or terms directly related to it.

4.2.5. Sadness

Images that represented the emotion of sadness featured various qualities – this includes downturned eyebrows, narrowed eyes and the mouth frowning or slightly protruding (referred to as a pout). Additionally, some images featured the individual depicted crying, another common manifestation of this particular emotion. Five were chosen in total. Figure 59 depicts the images selected for this emotion.

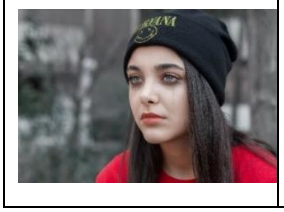
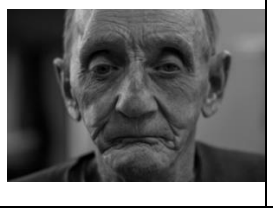
4.2.5.1.	4.2.5.2.	4.2.5.3.	4.2.5.4.	4.2.5.5.
				

Figure 59: Images Depicting Sadness

4.2.5.1. Responses to Sadness #9

The following figure depicts the collective responses for this question:

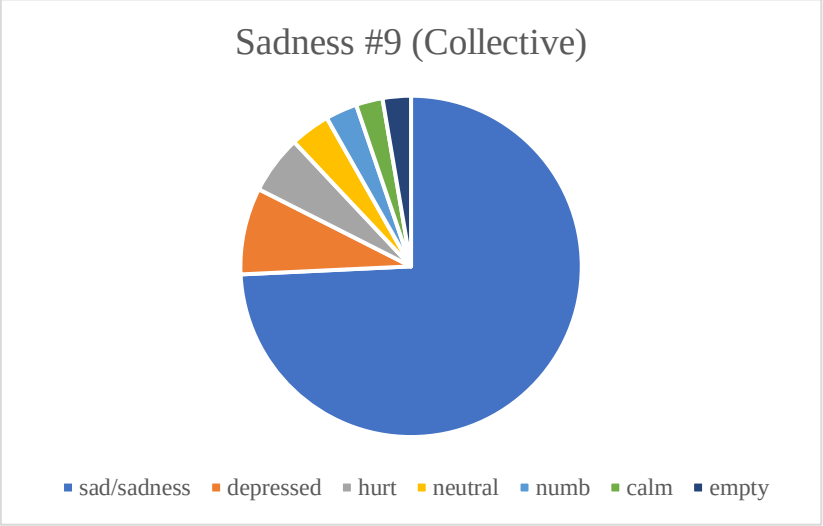


Figure 60: Chart Depicting Collective Responses to "Sadness #9"

Nearly three-quarters of the responses for this question used the terms "sad/sadness" (74%), indicating a heavy preference for this emotion. A similar term in the form of "depressed" (8%) follows it, as does "hurt" (5%), both of which are significantly lower, as are "numb" and "empty" (both 3%). More positive terms such as "neutral" (4%) and "calm" (3%) also appear as common responses.

The following figure depicts the responses, as divided by geographical region:

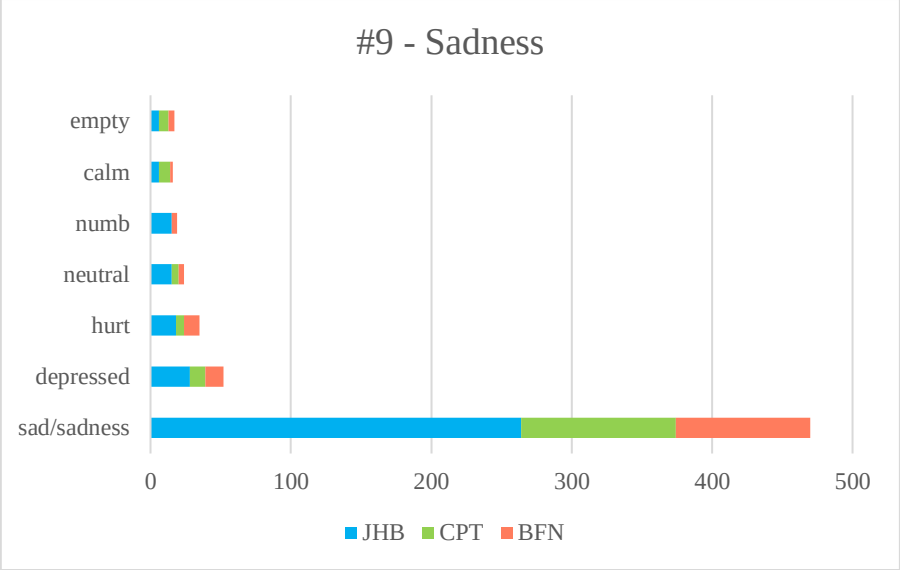


Figure 61: Graph Depicting Geographical Responses to "Sadness #9"

For the image labelled as "#9 – Sadness", responses from the three participating populations leaned heavily towards one response, with the majority of common answers being either synonymous with this term, or somewhat related in terms of being more negative emotions.

4.2.5.2. Responses to Sadness #15

The following figure depicts the collective responses for this question:

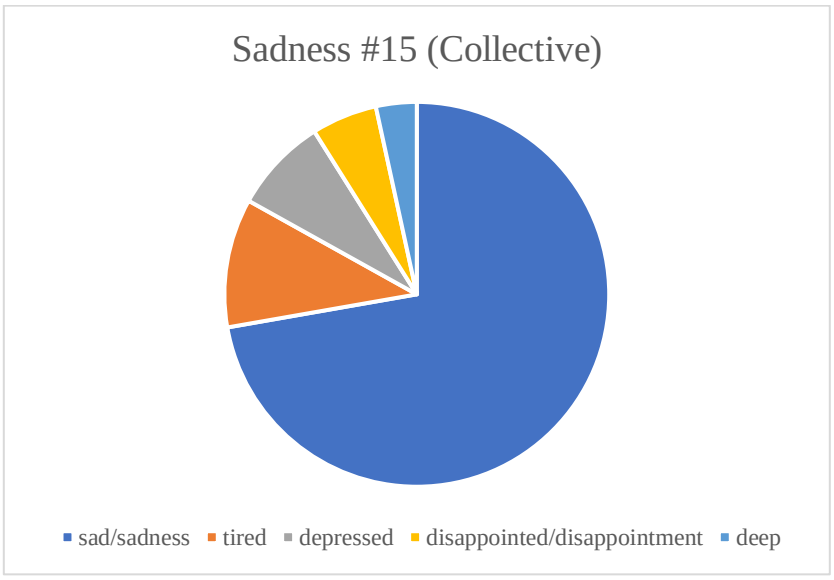


Figure 62: Chart Depicting Collective Responses to "Sadness #15"

As depicted in Figure 62, "sad/sadness" (72%) holds the majority of responses. Less frequent responses include the similar "depressed" (8%), and the negative "disappointed/disappointment" (6%). Terms not directly related include "tired" (11%), which

we can assume refers to both physical and mental exhaustion (as distinctions between the two meanings are rarely possible without additional terms or situational context) and "deep" (3%), which is the lowest of the common responses, and can be considered somewhat neutral or ambiguous in terms of positive or negative connotations.

The following figure depicts the responses, as divided by geographical region:

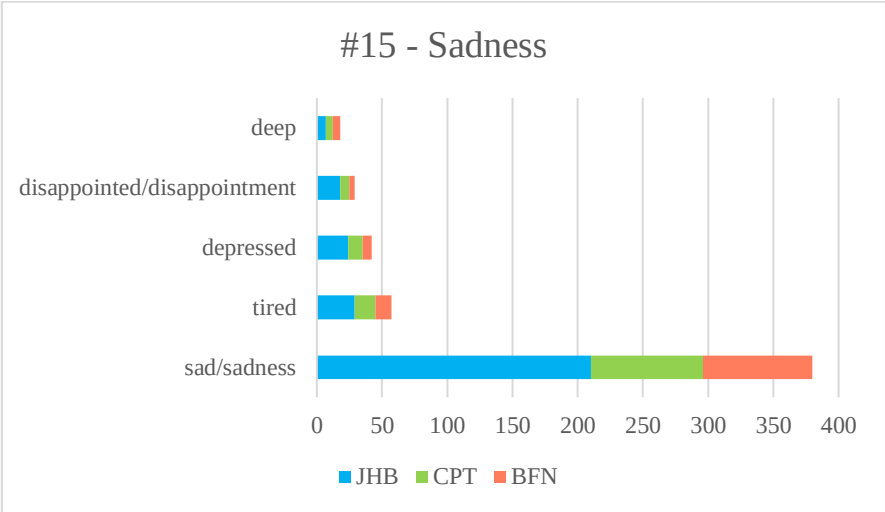


Figure 63: Graph Depicting Geographical Responses to "Sadness #15"

The responses for "#15 – Sadness" indicate another instance of preference for the term "sad/sadness", which leads this set of data, followed by other synonymous and related terms.

4.2.5.3. Responses to Sadness #24

The following figure depicts the collective responses for this question:

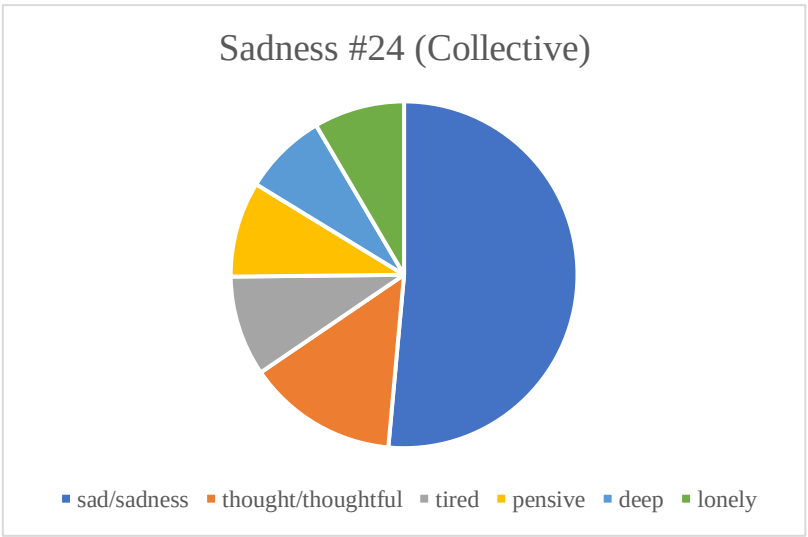


Figure 64: Chart Depicting Collective Responses to "Sadness #24"

As demonstrated above, “sad/sadness” (51%) once again dominates as the most common answer, but only holds a marginal majority, having just over half of the total number of responses (contrasted with the 70 – 74% of previous questions in this section). The logical explanation is that this emotion is widely considered to depict an entirely different category of emotion, as evident by the frequently occurring terms such as “thought/thoughtful” (14%), “pensive” (9%) and “deep” (8%), with several responses implying that participants viewed this individual and their expression as possibly depicting an emotion quite separate from the one that was supposedly depicted in the image.

The following figure depicts the responses, as divided by geographical region:

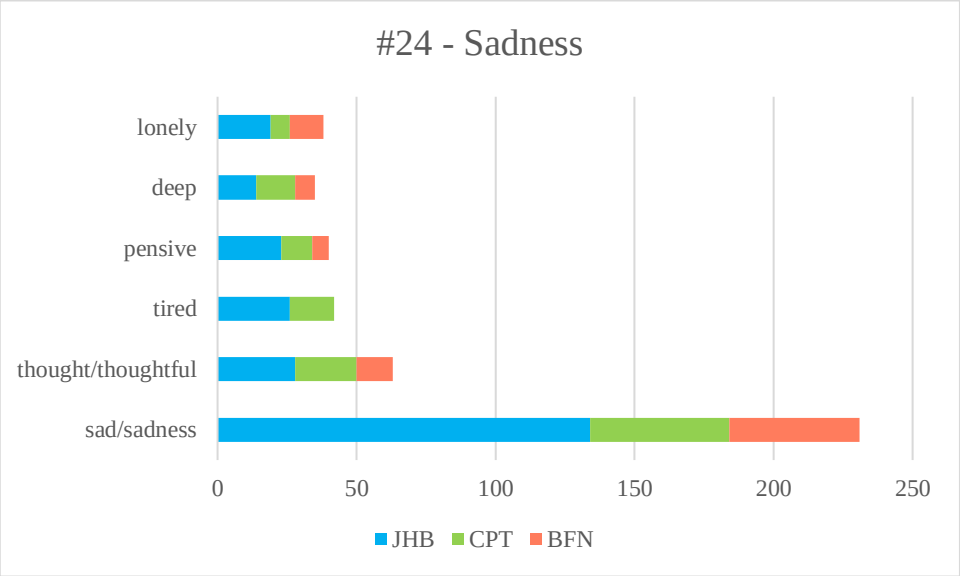


Figure 65: Graph Depicting Geographical Responses to “Sadness #24”

Figure 65 depicts the responses for “#24 – Sadness” across the three populations, which correlates with previous sets of data in this section insofar as sadness is once again the most prominent emotion. However, there are numerous entries into the list of common responses that are not directly related to either this emotion, or to negative emotions as a whole.

4.2.5.4. Responses to Sadness #29

The following figure depicts the collective responses for this question:

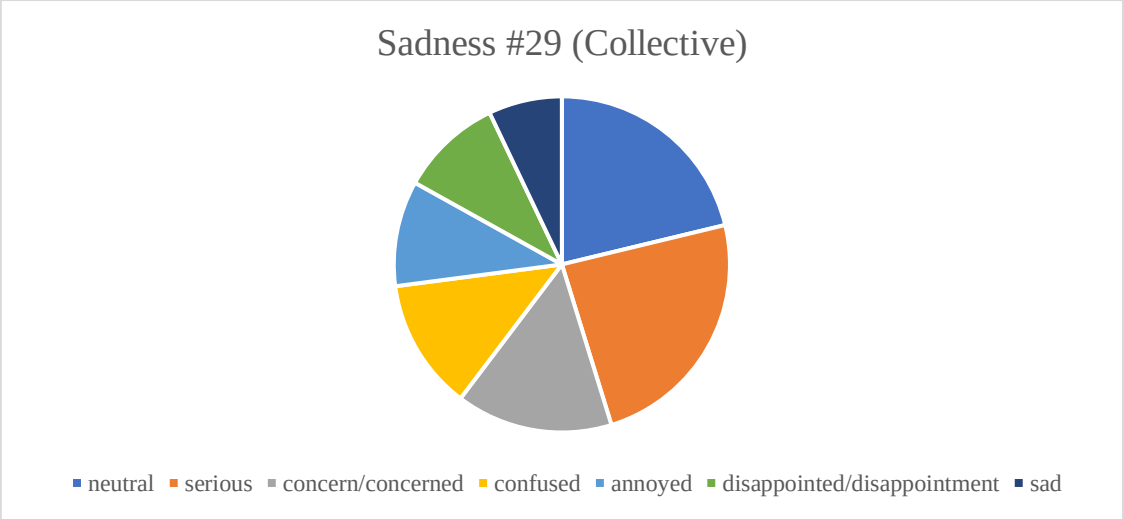


Figure 66: Chart Depicting Collective Responses to "Sadness #29"

Figure 66 depicts the responses to this question, which are evidently quite evenly spread amongst a few different emotional terms. The most common response is "serious" (24%), followed by "neutral" (21%). They are followed by "concern/concerned" (15%) and "confused" (13%). Interestingly, "sad/sadness" (7%) is the lowest placing of the common responses, indicating that the majority of participants viewed this image as being representative of a more ambiguous emotion than others in this section, with a consistent lack of clear agreement between what this image depicts.

The following figure depicts the responses, as divided by geographical region:

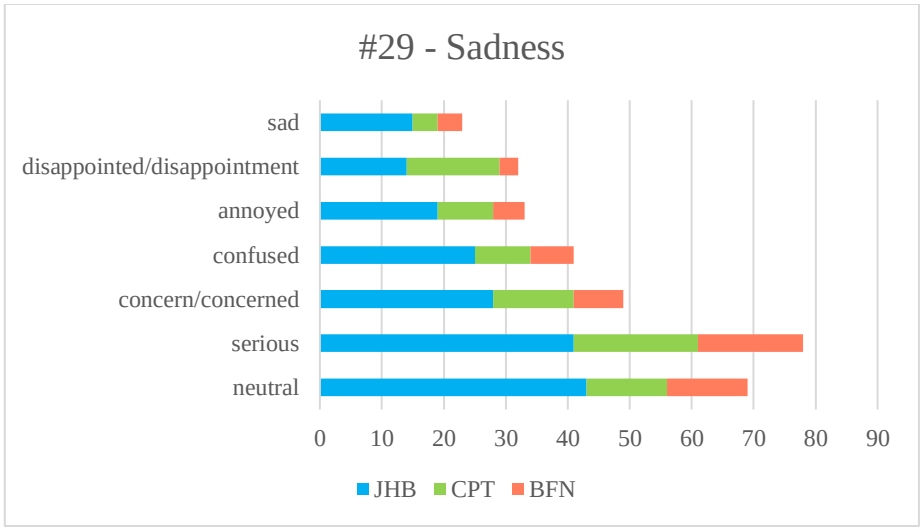


Figure 67: Graph Depicting Geographical Responses to "Sadness #29"

Despite being quite dominant in other questions within this section, "sad/sadness" is much less prominent in responses for "#29 – Sadness", being the lowest-scoring of the common responses, in comparison to a range of other terms, none of which are directly related to the emotion in terms of being synonymous.

4.2.5.5. Responses to Sadness #36

The following figure depicts the collective responses for this question:

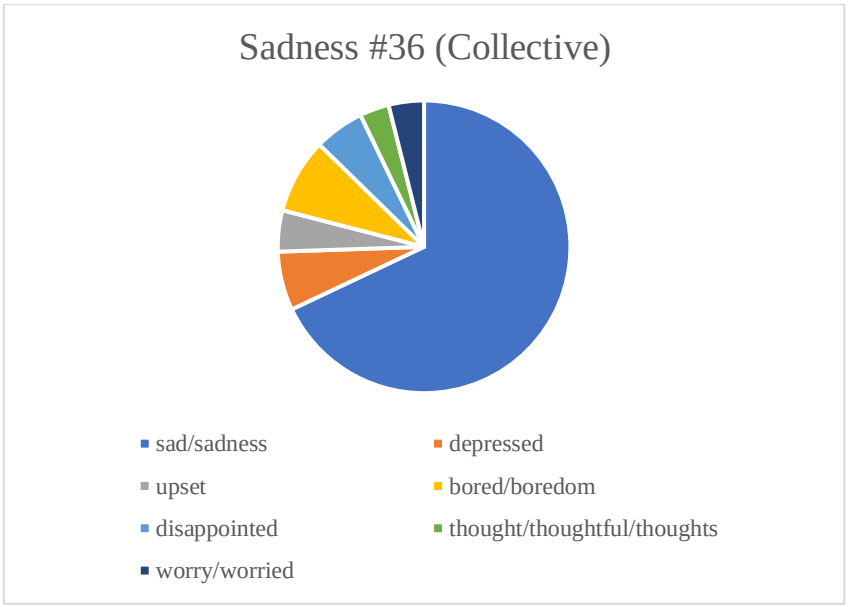


Figure 68: Chart Depicting Collective Responses to "Sadness #36"

As seen in the figure above, "sad/sadness" (68%) is the most dominant answer, with the rest of the answers being divided roughly equally between a few other terms, such as "depressed" (7%) and "upset" (5%), which are considered to be related to this emotion. The latter previous appeared in the section on "anger". Additional responses include "bored/boredom" (8%) and recurring terms from earlier in this section, such as "disappointed" (6%) and "thought/thoughtful" (3%), which indicates a wider range of terms used in answering these questions, even within the minority of respondents.

The following figure depicts the responses, as divided by geographical region:

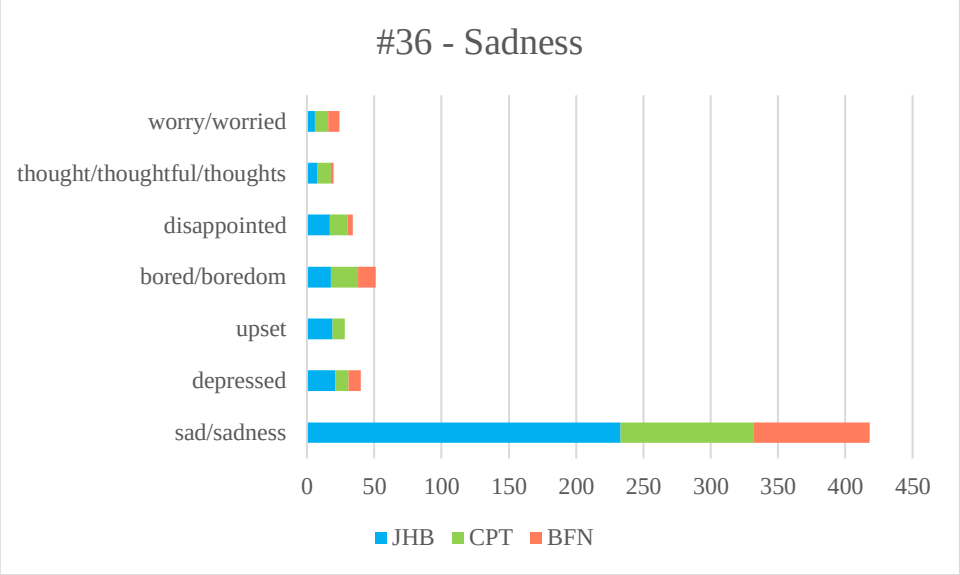


Figure 69: Graph Depicting Geographical Responses to "Sadness #36"

The responses for "#36 – Sadness" represent another instance of "sad/sadness" being the dominant response across the three groups, with an additional set of regular responses that can be considered synonymous, as well as others that are somewhat theoretically similar.

4.2.5.6. Summary of Findings for "Sadness"

For most of the questions in this section, the majority opinion across the three participating groups was that the images depicted "sadness" or similar terms in approximately 60% of the cases. However, an interesting observation is that in one of the five questions ("#29 - Sadness"), "sad/sadness" performed quite poorly, being overtaken by terms that are not directly related to the emotion, such as "serious" and "neutral" being common responses. Another instance where "sadness" did not perform as well as in other questions is "24 - Sadness", where it still holds the majority, but a slightly weaker one, with terms such as "thoughtful" and "tired" being prominent, taking away the large dominance we saw in other questions in this section. We can conclude that in these vaguer cases, the deviation is the result of the emotion depicted not having clear physical qualities of "sadness" (such as visible frowns). This implies that, while there is consistency in the interpretation of the emotion when it is quite distinct in most cases, it is not enough to qualify it as an emotion that is universally recognized, since respondents show a preference for more explicit expressions of sadness, rather than slightly more ambiguous cases, in which case they demonstrate a willingness to deviate towards alternative terms in instances where the target emotion may not be as explicit.

4.2.6. Surprise

To solicit the emotion of surprise, images were selected that featured common characteristics of the emotion. This included widened eyes and the shaping of the mouth, which forms either a circle or an oval, depending on the extremity of the emotion. Some images also featured the individual smiling in conjunction with other physical characteristics relating to surprise. Five were chosen in total. Figure 70 depicts the images selected for this emotion.

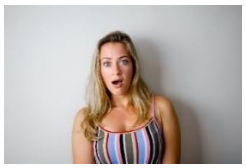
4.2.6.1.	4.2.6.2.	4.2.6.3.	4.2.6.4.	4.2.6.5.
				

Figure 70: Images Depicting Surprise

4.2.6.1. Responses to Surprise #1

The following figure depicts the collective responses for this question:

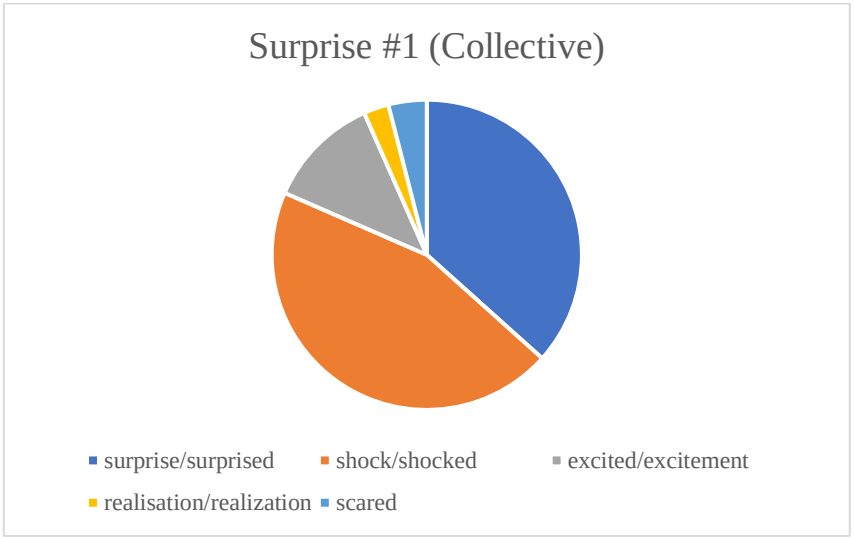


Figure 71: Chart Depicting Collective Responses to "Surprise #1"

As demonstrated in Figure 71, the responses to this question are dominated by two main terms, namely "shock/shocked" (45%) and "surprise/surprised" (37%). These have previously appeared in earlier questions, as seen in the section on "anger", and in this instance, it is quite notable as these images were chosen to elicit the emotion of "surprise", which is a common response, but one that is slightly overtaken by another term with which it is often seemingly conflated.

The following figure depicts the responses, as divided by geographical region:

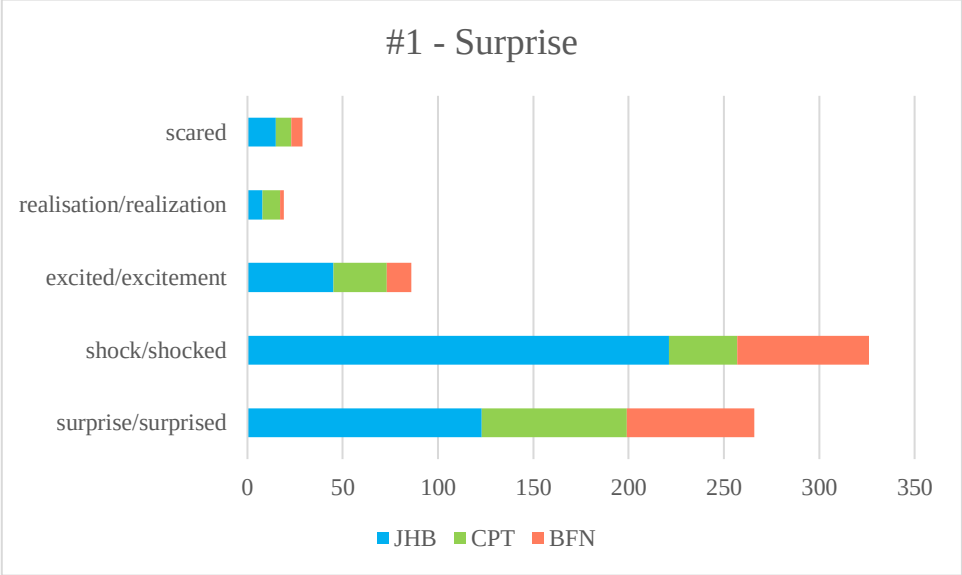


Figure 72: Graph Depicting Geographical Responses to "Surprise #1"

The responses for the image labelled "#1 – Surprise" indicate that participants across the three groups interpreted this emotion as being indicative of two broad categories, which we have previously seen are considered to be related, based on how frequently they appear at the top of lists of common responses, as seen in the section on the emotion of "fear".

4.2.6.2. Responses to Surprise #10

The following figure depicts the collective responses for this question:

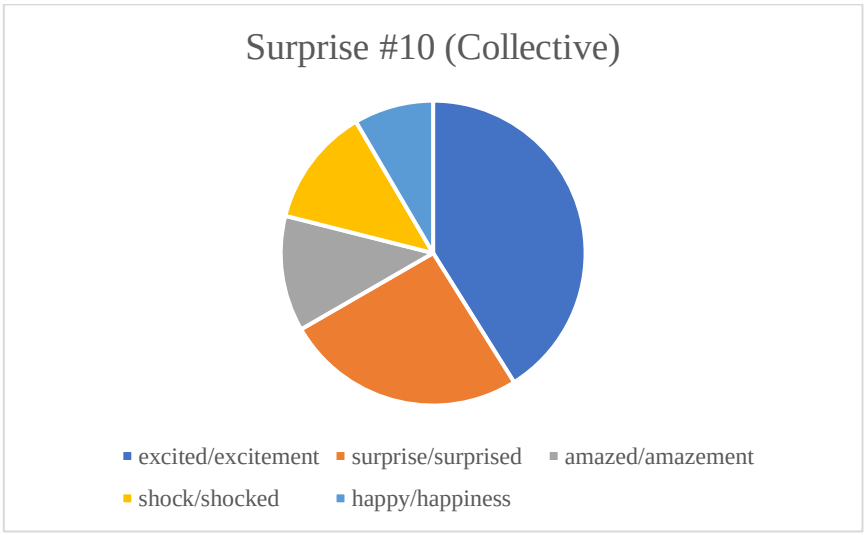


Figure 73: Chart Depicting Collective Responses to "Surprise #10"

The most common response for this image was “excited/excitement” (41%), which holds a marginal majority over “surprise/surprised” (26%). The term which has previously been considered interchangeable, “shock/shocked” (13%) trails behind, with “amazed/amazement” (12%) being an additional response that appeared quite often in the data. The basic emotion of “happy/happiness” (8%) was also commonly used, albeit less frequently.

The following figure depicts the responses, as divided by geographical region:

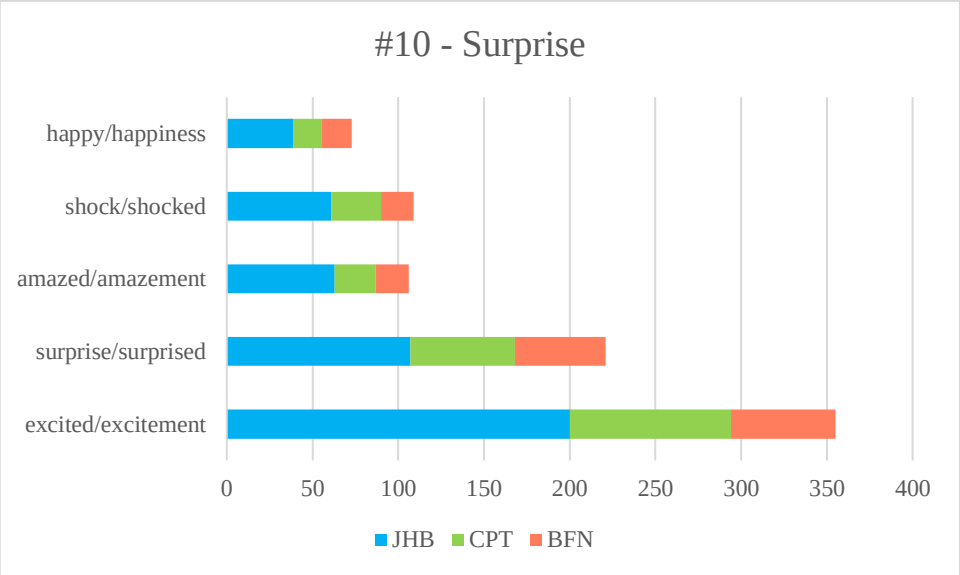


Figure 74: Graph Depicting Geographical Responses to “Surprise #10”

The most common response for “#10 – Surprise” is the emotion of “excited/excitement”, which previously appeared briefly in some responses for the emotion “happiness”, considered a relatively positive emotion that is quite similar in terms of situational context. “Surprise” is quite prominent in the list of responses, as is “shock/shocked”’.

4.2.6.3. Responses to Surprise #12

The following figure depicts the collective responses for this question:

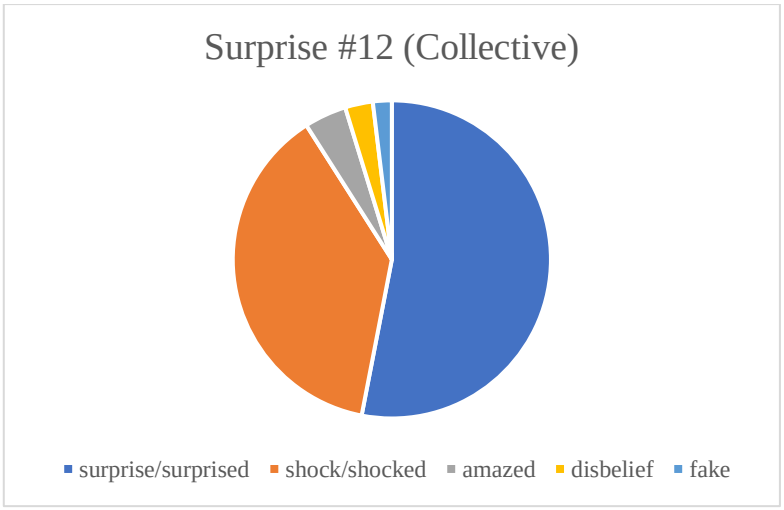


Figure 75: Chart Depicting Collective Responses to "Surprise #12"

Figure 75 demonstrates that "surprise/surprised" (53%) holds the majority of responses, followed by "shock/shocked" (38%). As we have mentioned already, these two terms often co-occur quite frequently. The rest of the responses consist of much smaller frequent terms, such as the more positive "amazed" (4%), and more abstract terms such as "disbelief" (3%). A fascinating observation found in this data is that the term "fake" (2%) appears relatively frequently, implying that participants perceived this image as depicting an inauthentic or forced emotion.

The following figure depicts the responses, as divided by geographical region:

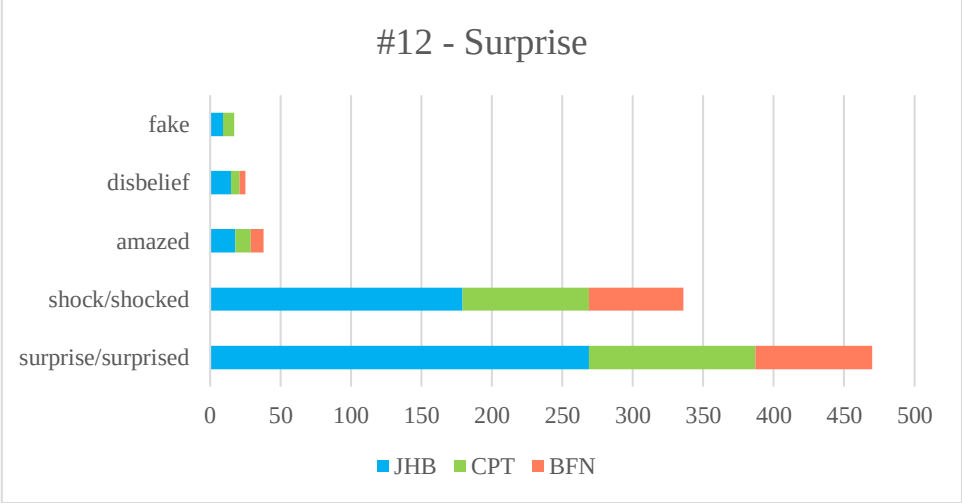


Figure 76: Graph Depicting Geographical Responses to "Surprise #12"

The responses for "#12 – Surprise" across the groups indicate a further correlation between "surprise/surprised" and "shock/shock", as they both once again dominate the data, holding a considerable majority over the rest of the common responses.

4.2.6.4. Responses to Surprise #27

The following figure depicts the collective responses for this question:

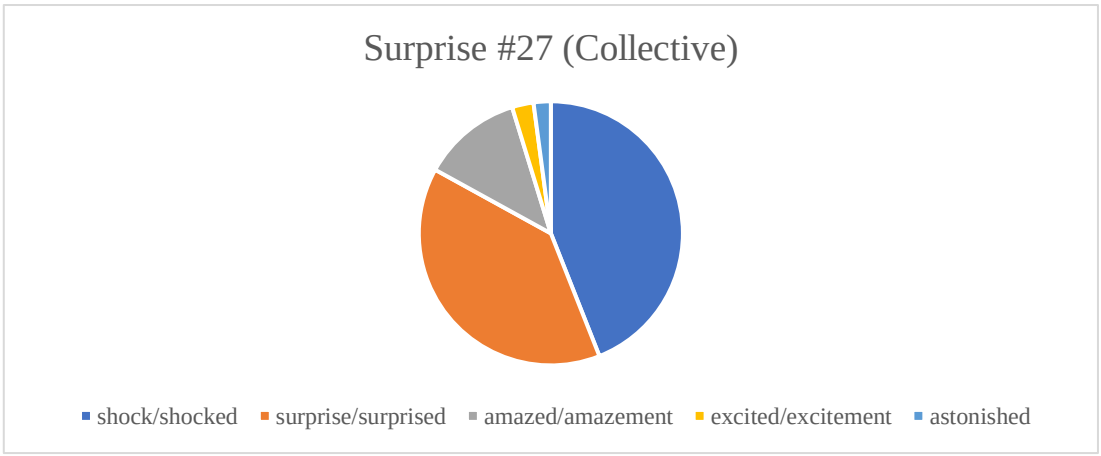


Figure 77: Chart Depicting Collective Responses to "Surprise #27"

Once again, the responses for this question are split between "shock/shocked" (44%), which holds the majority in this instance, contrasted with "surprise/surprised" (39%), which is an inverse of the previous question. Another frequent entry is "amazed/amazement" (12%), as are other clearly positive terms such as "excited/excitement" (3%) and "astonished" (2%), all of which share similar qualities in terms of their meaning and context.

The following figure depicts the responses, as divided by geographical region:

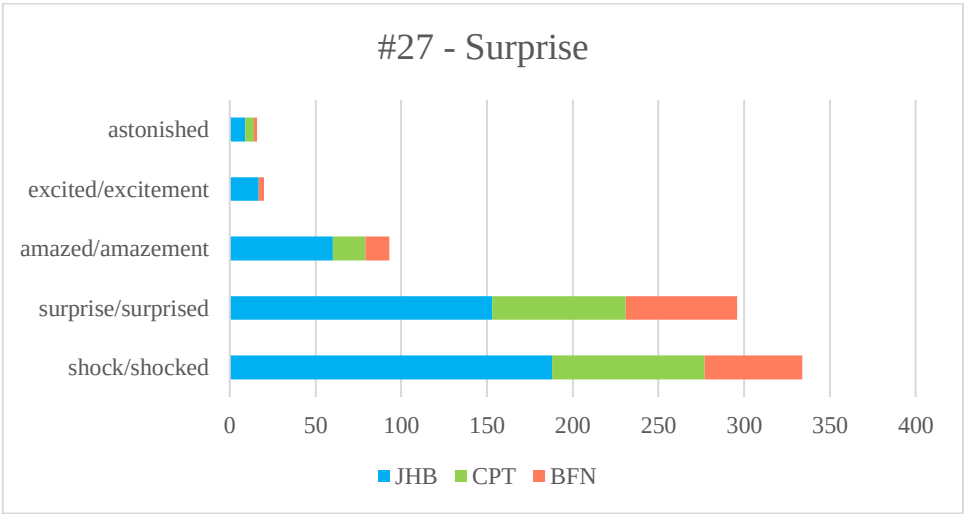


Figure 78: Graph Depicting Geographical Responses to "Surprise #27"

The responses for "#27 – Surprise" indicate further instances of both "shock/shocked" and "surprise/surprised" as the dominant response. However, unlike previous questions in this section, all the responses for this question are relatively enthusiastic, rather than being a blend of negative and positive reactions.

4.2.6.5. Responses to Surprise #30

The following figure depicts the collective responses for this question:

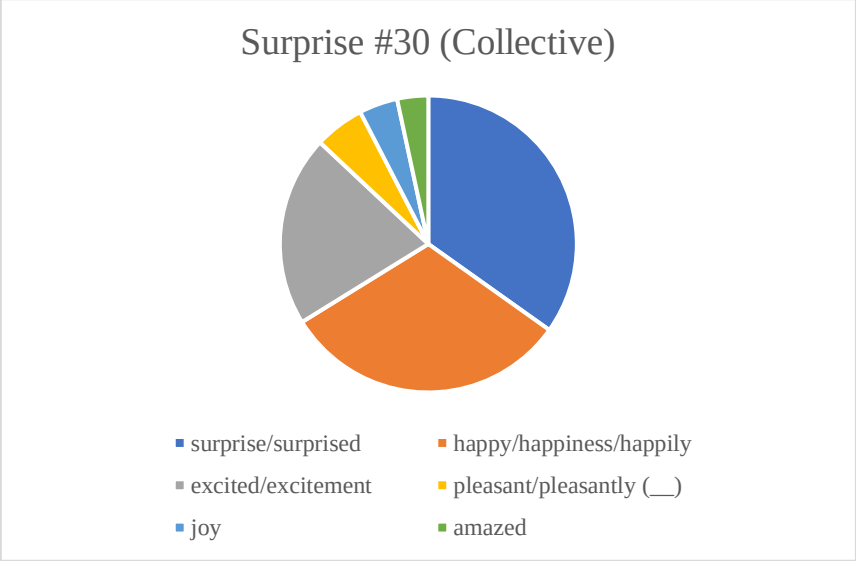


Figure 79: Chart Depicting Collective Responses to "Surprise #30"

The most common response for this question, as indicated in Figure 79, is "surprise/surprised" (35%), which has a small majority. It is followed closely by "happiness/happiness/happily" (31%), another basic emotion that received numerous entries onto this list of common responses, as did "excited/excitement" (21%) and "joy" (4%) which we have seen grouped with "happiness" as a somewhat similar term. "Amazed" (3%), which is featured in earlier questions in this section, also appears on the list, albeit at a lower position. As mentioned above, "shock/shocked" does not appear in this data set, not receiving enough entries to be considered a common response.

The following figure depicts the responses, as divided by geographical region:

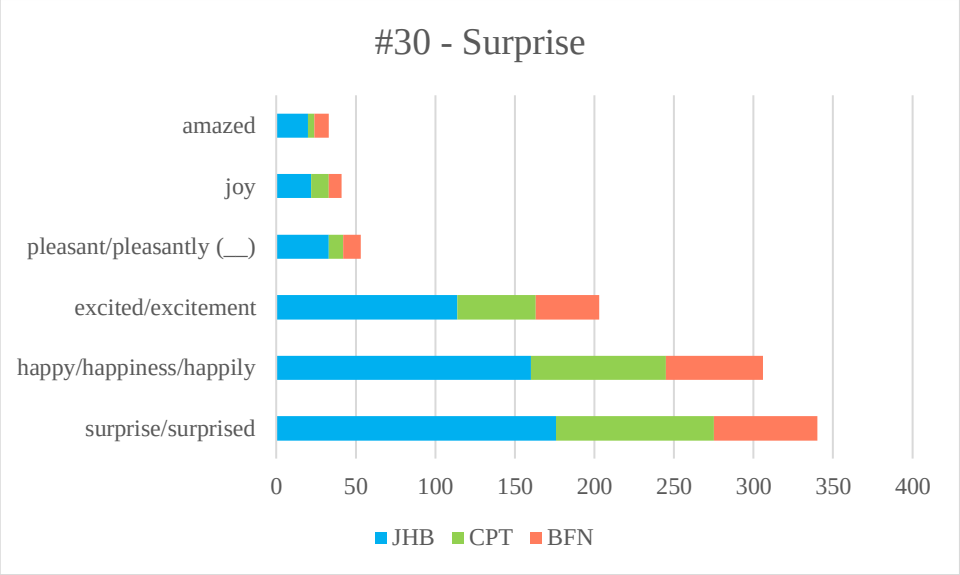


Figure 80: Graph Depicting Geographical Responses to "Surprise #30"

In quite a rare occurrence for the questions in this section, the responses for "#30 – Surprise" include "surprise/surprised" without "shock/shocked" appearing anywhere in the list of common answers, indicating one of the few instances where one appears without the other, a considerable deviance from the pattern we've seen previously in this section, as well as those that looked at other emotions.

4.2.6.6. Summary of Findings for "Surprise"

The main finding of this section is that "surprise" and "shock" are often considered quite similar across the three participating groups, as they often appear quite close together, both in this section and in previous ones, being somewhat interchangeable. However, the prominence of "surprise" (which features as a notably common response for all these questions) indicates that it is a relatively well-recognized emotion, even when it is often conflated with "shock", which respondents clearly consider to be structurally quite similar, so much that they often occur almost equally amongst the results. These are two emotions that are clearly thought to manifest through relatively similar physical traits, despite their situational contexts being quite different in many cases, "surprise" being a more positive emotion, while "shock" related to more negative contexts. This could lead to fascinating further research into the similarities and differences between how individuals perceive these two emotions.

A further observation is that the vast majority of responses in this section, even if they did not correlate directly to the emotion of "surprise", did remain relatively positive, with terms such as "excitement" and "amazed" being quite frequent, and very few negative or neutral terms

appearing. This is of particular interest, considering the structural differences between "surprise" and the aforementioned emotion of "fear" are only marginal, both of them featuring similar physical qualities (widened eyes, raised eyebrows and agape mouths formed into a circular or oval shape). Therefore, it is quite clear that there are certain physical traits that divide these emotions beyond that of the most prominent features, which possibly includes the posture of the individual depicted, as well as small details in their expression (the opened mouths in "surprise" are often slightly upturned, while in fear they are more commonly slightly downturned), indicating that the boundary between the two emotions and their physical manifestation is much narrower than it would appear. This can be contrasted with the section on "fear", where the results skewed towards the term "shock/shocked" rather than the target emotion itself, whereas "surprise/surprised" is much more prominent here, which reflects the more positive expressions on most of the images in this section.

4.2.7. Ambiguous Emotions

Not all emotions can easily be identified in the same manner as the aforementioned basic emotions, and to solicit a wider range of responses, a few images were selected that either did not feature any of the characteristics associated with the aforementioned emotions, or featured a blend of them, resulting in a slightly more complex depiction of an emotional state. Six were chosen in total. Figure 81 depicts the images selected for this emotion.

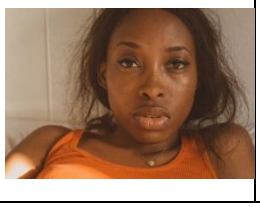
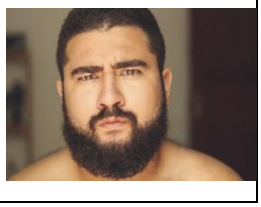
4.2.7.1.	4.2.7.2.	4.2.7.3.	4.2.7.4.	4.2.7.5.	4.2.7.6.
					

Figure 81: Images Depicting Ambiguous Emotional Expressions

4.2.7.1. Responses to Ambiguous #11

The following figure depicts the collective responses for this question:

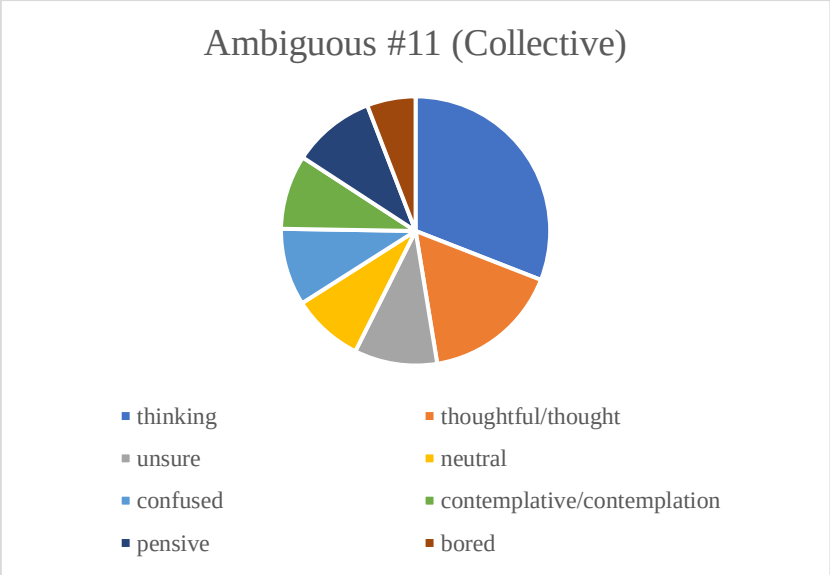


Figure 82: Chart Depicting Collective Responses to "Ambiguous #11"

As shown in Figure 82, the most common response to this question was "thinking" (31%), followed by the similar "thoughtful/thought" (16%). Synonymous terms such as "pensive" (10%) and "contemplative/contemplation" (9%) also received multiple responses. More ambivalent terms such as "bored" (6%), "unsure" (10%) and "neutral" (9%) also appear in the list. This ultimately provides evidence that this ambiguous emotion evokes interpretations that are more subdued, focused less on an emotional state, and more on the activity of being deep in thought.

The following figure depicts the responses, as divided by geographical region:

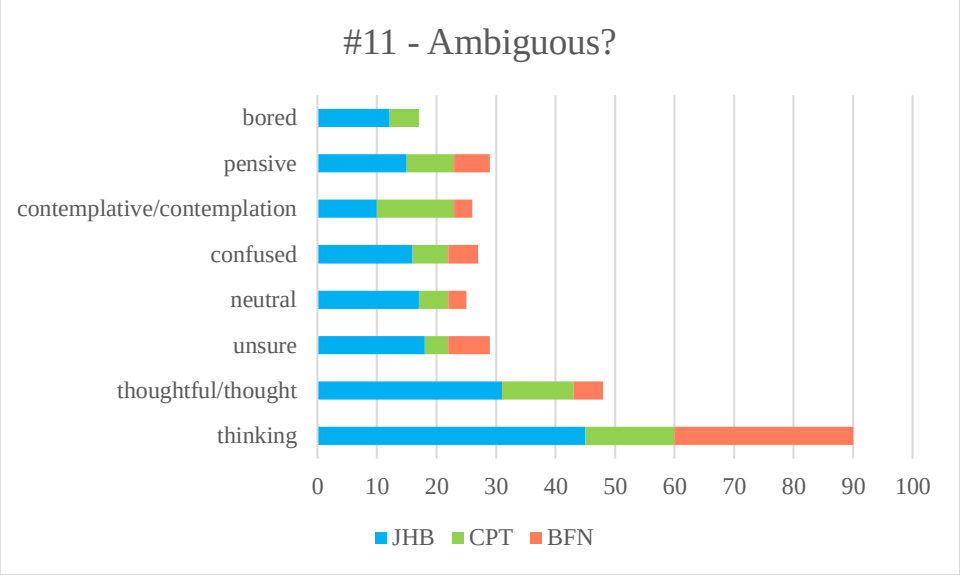


Figure 83: Graph Depicting Geographical Responses to "Ambiguous #11"

The first ambiguous image rendered responses quite similar to some findings from a previous question across the groups, whereby there was an emphasis on the state of thinking or being thoughtful, rather than a direct reference to a specific emotional state.

4.2.7.2. Responses to Ambiguous #13

The following figure depicts the collective responses for this question:

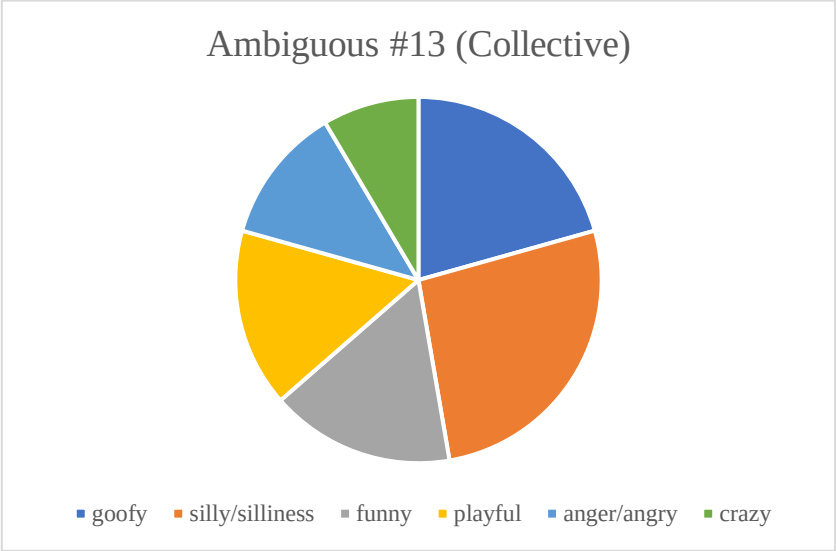


Figure 84: Chart Depicting Collective Responses to "Ambiguous #13"

As demonstrated in Figure 84, the responses for this question were slightly more evenly spread out across a range of different terms, both individual and in terms of the categories. The most dominant response was "silly/silliness" (27), as well as "goofy" (21%). When taken alongside

the next most popular responses, “playful” and “funny” (both 16%), it is clear that the majority of respondents perceived this image to be depicting a more light-hearted, humorous emotion. However, there were some responses that indicated slightly less-positive reactions, such as “anger/angry” (12%) and “crazy” (9%), proving that there is still some degree of inconsistency in how respondents interpreted this question.

The following figure depicts the responses, as divided by geographical region:

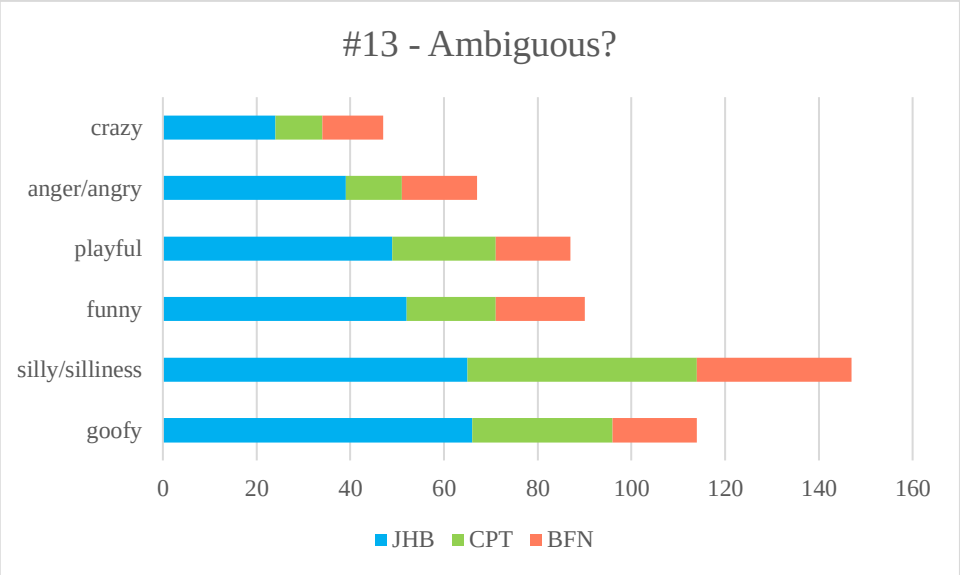


Figure 85: Graph Depicting Geographical Responses to “Ambiguous #13”

The selection of this picture was of particular interest, since none of the qualities in this photograph necessarily reflect any of the features present in more traditional expressions – the uneven arching of the eyebrows, the peculiar direction of the gaze, as well as the positioning and shape of the nose and mouth, make this is a more difficult image to interpret, which the results for this question reflect, with the responses being spread across a variety of terms.

4.2.7.3. Responses to Ambiguous #21

The following figure depicts the collective responses for this question:

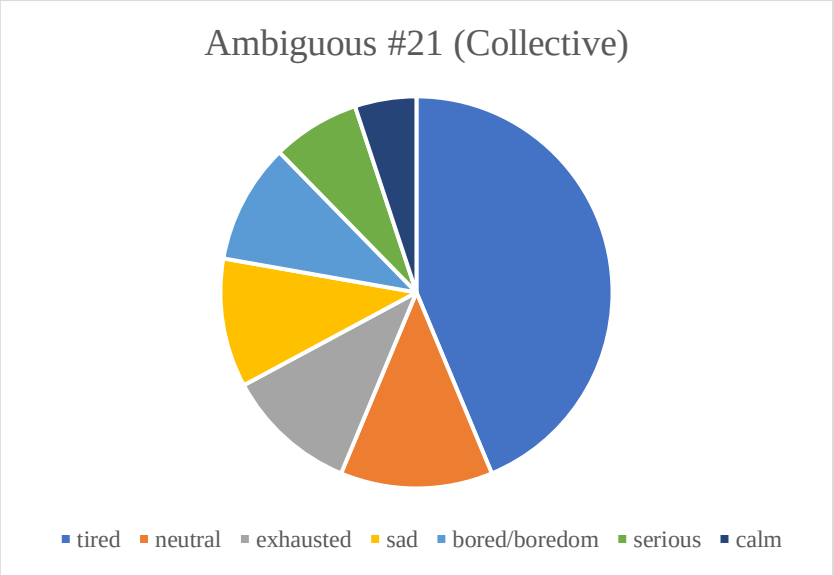


Figure 86: Chart Depicting Collective Responses to "Ambiguous #21"

As reflected in Figure 86, the most prominent result is "tired" (44%). Similar terms are found in the presence of "exhausted" (11%) and possibly "bored/boredom" (10%). More ambivalent terms such as "neutral" (13%) and "calm" (5%) also appear quite prominently in the results. Terms such as "serious" (7%) and the basic emotion "sad" (11%), which appear in the results for other emotions, are also featured.

The following figure depicts the responses, as divided by geographical region:

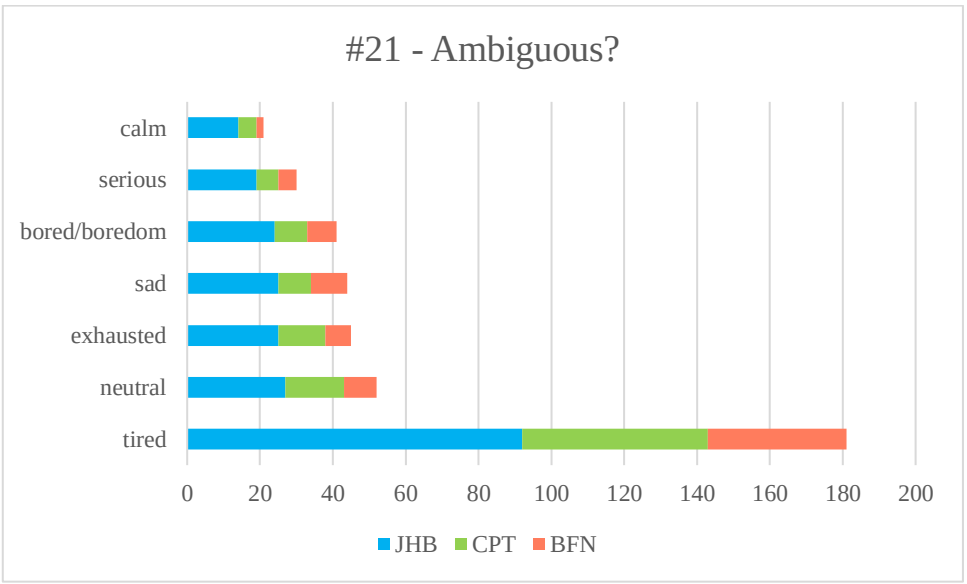


Figure 87: Graph Depicting Geographical Responses to "Ambiguous #21"

The responses for this image are weighted heavily towards the term “tired”, with a few synonymous terms appearing on the list of common responses as well. In looking at individual responses, this image evoked the most widespread example of narrative responses, whereby the responses of many participants included brief descriptions of the scenario they imagined she was in. Examples of these include “She does not know what to do”, “Picking up sultry vibes” and “posing for a selfie”. This implies that some individuals may resort to describing a scenario or imagined situation instead of being able to identify the emotion.

4.2.7.4. Responses to Ambiguous #33

The following figure depicts the collective responses for this question:

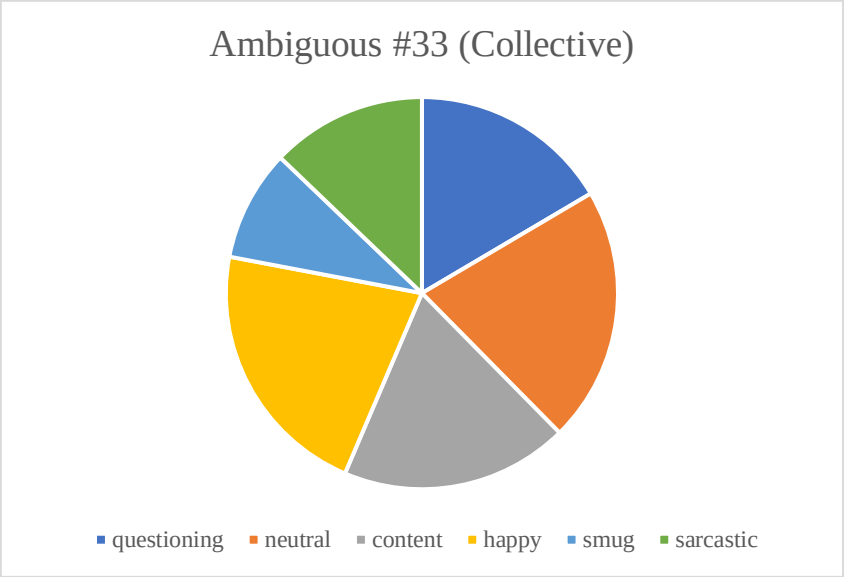


Figure 88: Chart Depicting Collective Responses to “Ambiguous #33”

Figure 88 depicts the findings that none of the responses to this question holds a significant majority. The most common response is “happy” (22%), which is followed very closely by “neutral” (21%). More subdued terms such as “content” (19%), “questioning” (17%) and “neutral” (19%) are also quite significantly present in the data. This question also introduced multiple responses that include new terms such as “smug” (9%) and “sarcastic” (13%), which have not prominently featured in previous questions.

The following figure depicts the responses, as divided by geographical region:

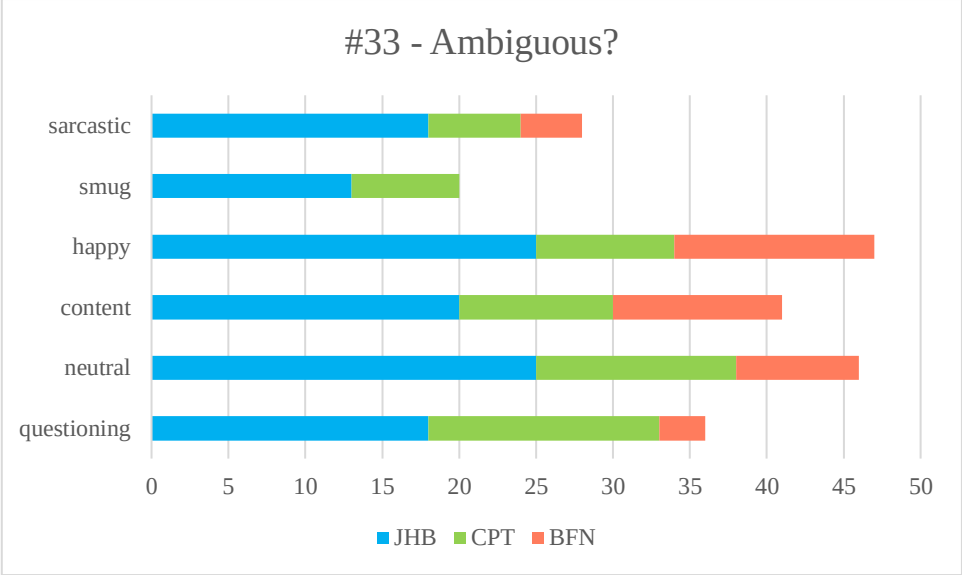


Figure 89: Graph Depicting Geographical Responses to "Ambiguous #33"

The responses to "#33 – Ambiguous" represent some of the most evenly-divided results, with participants being split on the interpretation of this particular response, both in terms of the individual terms, and the general categories under which they fall.

4.2.7.5. Responses to Ambiguous #38

The following figure depicts the collective responses for this question:

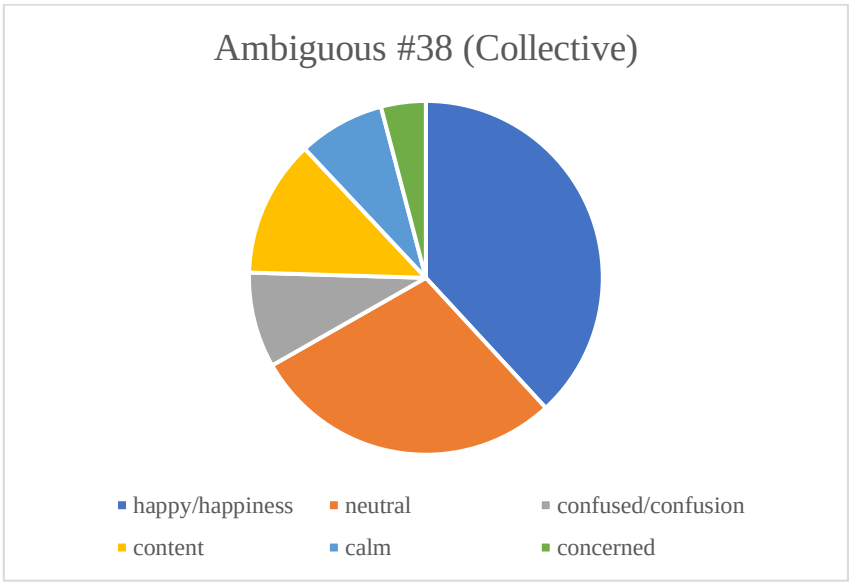


Figure 90: Chart Depicting Collective Responses to "Ambiguous #38"

The most dominant response for this question was "happy/happiness" (38%). The second most responses stated that this emotion could best be described using the term "neutral" (29%), indicating that many participants viewed this as being somewhat lacking in emotion. Recurring

terms such as “content” (13%) and “calm” (8%), which have appeared elsewhere in this section, are also found in the common responses to this question.

The following figure depicts the responses, as divided by geographical region:

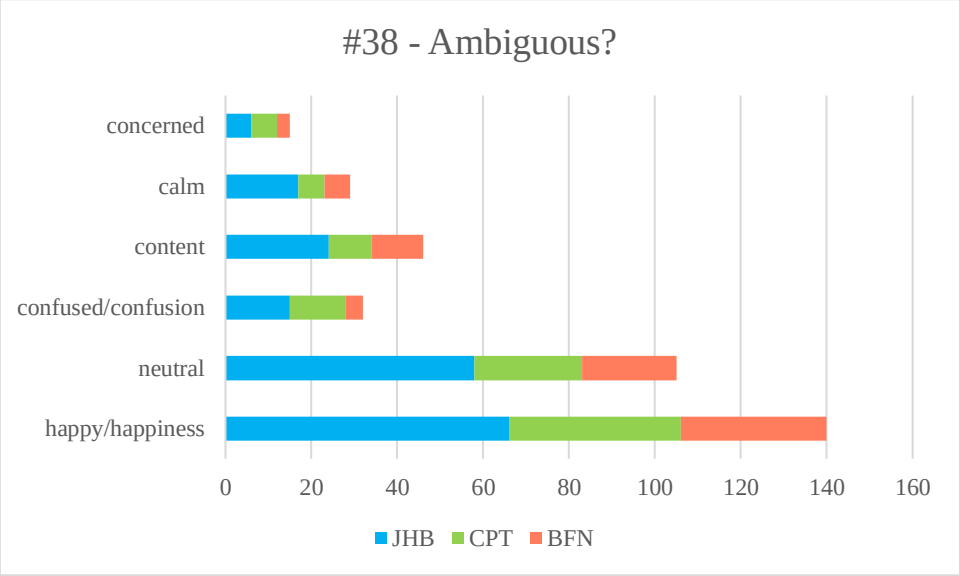


Figure 91: Graph Depicting Geographical Responses to “Ambiguous #38”

The results for “38 – Ambiguous” tend to lend towards the term “happy/happiness”, which holds a slight majority. Other terms relating to more subdued or ambivalent states are found in the common responses, many of which recur throughout all the questions in this section.

4.2.7.6. Responses to Ambiguous #41

The following figure depicts the collective responses for this question:

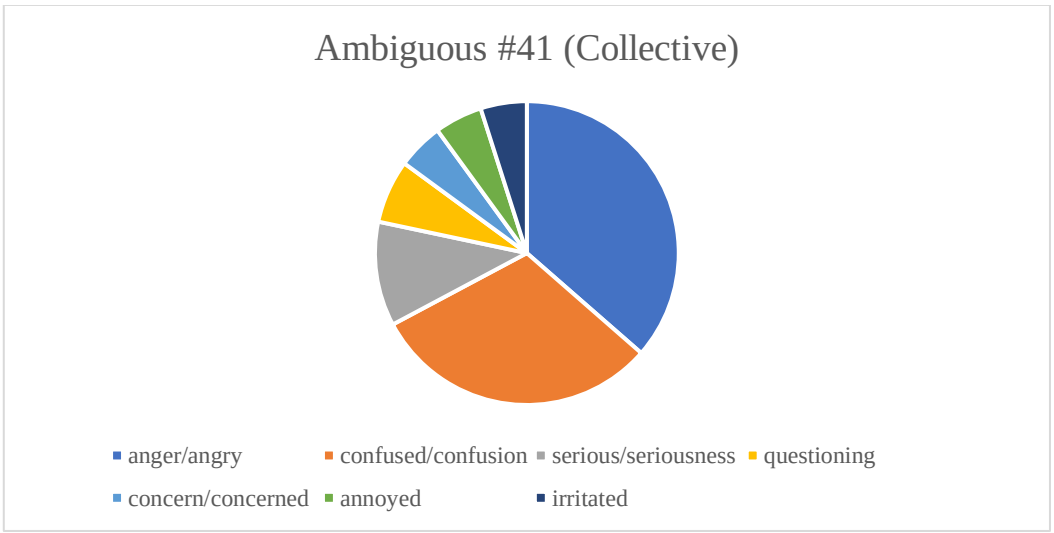


Figure 92: Chart Depicting Collective Responses to “Ambiguous #41”

Figure 92 depicts another example of participants having a general agreement on the emotion being depicted in this ambiguous image, with the dominant response being "anger/angry" (36%), one of the basic emotions. This is followed closely by "confused/confusion" (31%), which is not one of the officially proposed basic emotions, but has appeared as a response in several questions, which demonstrates its potential to be categorized as such, should future researchers seek to redefine what constitutes a basic emotion. This is the same case as "concern/concerned" (5%), another instance of a potential basic emotion based on its prominence in several questions.

The following figure depicts the responses, as divided by geographical region:

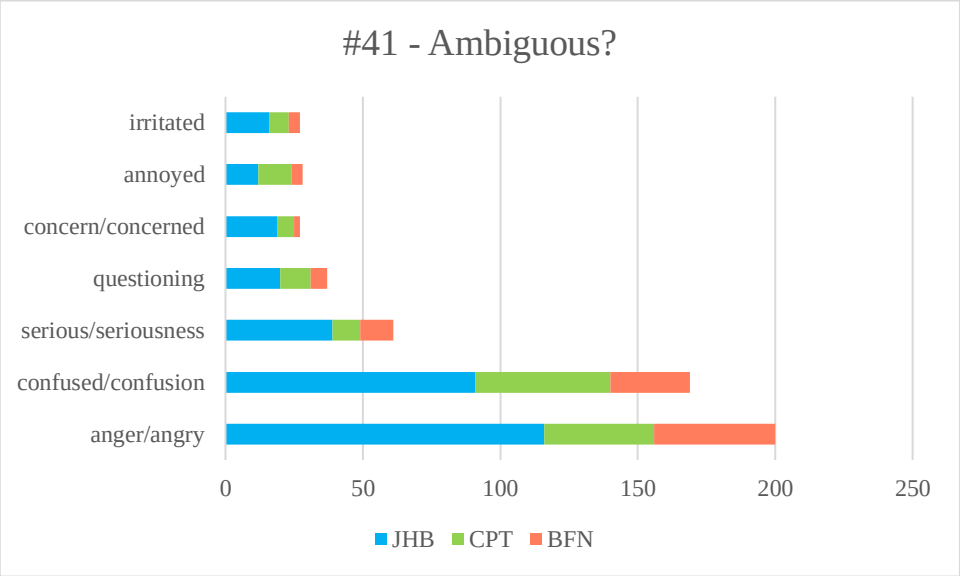


Figure 93: Graph Depicting Geographical Responses to "Ambiguous #41"

The image depicted in "#41 – Ambiguous" evoked a few common responses, the most notable being split between "anger/angry" and "confused/confusion", indicating that participants were able to more easily attribute this image to an existing emotion, rather than defaulting to more ambiguous terms such as "neutral", which is not featured on this lost of common responses.

4.2.7.6. Summary of Findings for Ambiguous Emotions

This section explored ambiguous expressions, looking at images in which the emotion depicted was not particularly clear, and challenged participants to assert their own interpretation of more vague emotions. There were several findings that contributed to our understanding of how participants engaged with these expressions. One of the most significant findings was that participants often made use of more vague terms in their descriptions. In several of the questions, the term "neutral" was extremely prominent, often being one of the most common

responses. Terms such as “calm” and “serious”, while slightly more evocative, were also regularly used in place of more intensely emotional terms. However, a few of the basic emotions (such as “sadness”, “happiness” and “anger”) did manifest as prominent responses in some of the questions, indicating that many participants were still able to use these fundamental terms to describe more vague expressions. Another observation was that respondents would often resort to more narrative answers when engaging with these images, providing descriptive analyses of the action they believe is being depicted, or a description of an imagined scenario they associate with that particular image. Such responses were common across all emotions, but in particular, the ambiguous expressions evoked the most significant example of this response type.

4.2.8. Masked Emotions

As mentioned in Chapter 2, the COVID-19 pandemic has provided fascinating insights into the process of interpersonal communication, with the mandatory wearing of face masks (which cover the entire lower region of the face when worn correctly) preventing the face from being fully utilized in the expression of emotion. To explore this new development in the interpretation of facial expressions, two images were selected that featured individuals wearing common surgical face masks and included in the questionnaire to determine the extent to which participants can interpret the emotions being expressed. Figure 94 features the two images selected.

4.2.8.1.	4.2.8.2.
	

Figure 94: Images Depicting Masked Individuals Expressing Emotion

4.2.8.1. Responses to Mask #31 (Sad)

The following figure depicts the collective responses for this question:

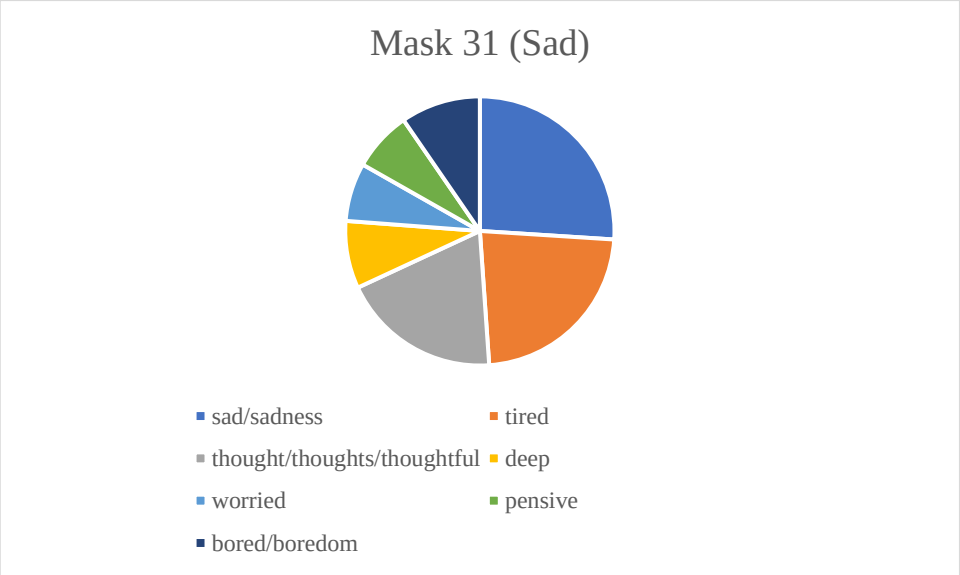


Figure 95: Chart Depicting Collective Responses to "Mask #31 (Sad)"

As shown above, the responses for this question were divided mostly between three major terms. The target emotion, "sad/sadness" (26%) is in the lead, followed by "tired" (23%) and "thought/thoughts/thoughtful" (19%), which is complemented by the presence of similar terms such as "deep" (8%) and "pensive" (7%), which appear commonly as well. While there is a division between a few different terms, the general finding for this question is that respondents almost universally consider this image to depict a more negative or subdued emotional state.

The following figure depicts the responses, as divided by geographical region:

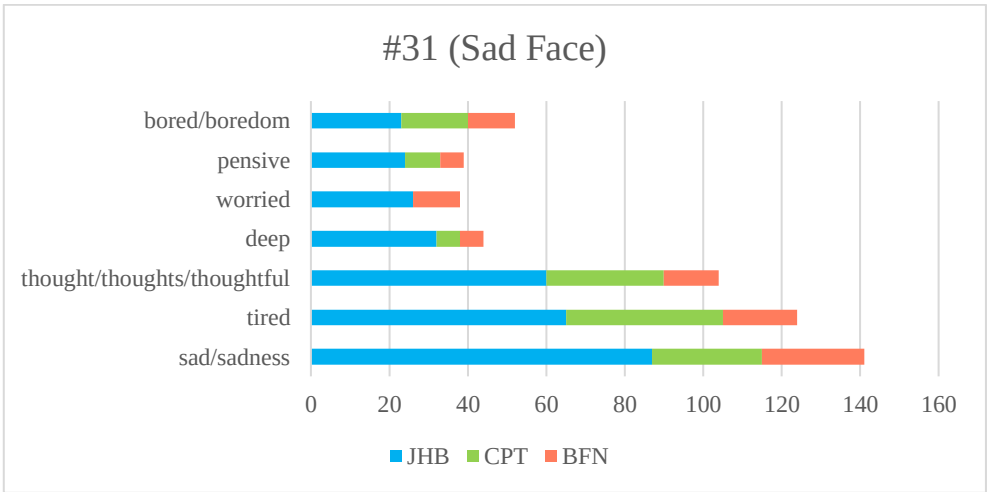


Figure 96: Graph Depicting Geographical Responses to "Mask (#31) - Sad"

Figure 96 shows the distribution of responses for the first image of an individual wearing a mask, which depicts someone in a supposedly more negative or reflective state. Three terms in particular were most prominent amongst the populations, proving that the responses to this question were quite evenly divided amongst respondents.

4.2.8.2. Responses to Mask #44 (Happy)

The following figure depicts the collective responses for this question:



Figure 97: Chart Depicting Collective Responses to "Mask #44 (Happy)"

As made clear in Figure 97, there is overwhelming support for "happy/happiness" (76%) in the interpretation of this image. If we take into account the synonymous terms that appear in the common responses, this becomes almost universal, with answers such as "smile/smiling" (8%), "joy/joyful" (6%), "content/contentment" (3%), "friendly/friendliness" (3%), "welcoming" (2%) and "cheerful" (2%) providing evidence that the emotion depicted in this image is recognized as being indicative of a positive emotion across all three participating groups.

The following figure depicts the responses, as divided by geographical region:

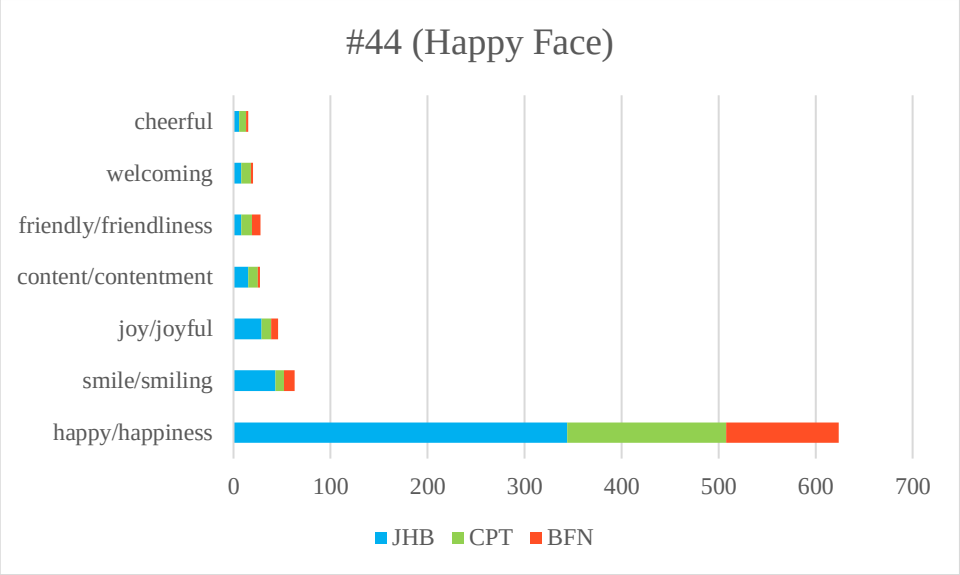


Figure 98: Graph Depicting Geographical Responses to "Mask (#44) - Happy"

In contrast to the other image of a masked individual, the responses for this question are dominated by one emotion in particular, which correlates to the vast majority of respondents across the three groups having the same interpretation of this emotion.

4.2.8.3. Summary of Findings for Masked Emotions

Despite the presence of the surgical masks, which cover the entire lower portion of the subject's face, there are clear correlations between certain emotions and the frequency of responses from participants across the three groups. In the first image, the responses were mostly divided between a few major categories, all of them negative or more serious. Terms such as "sadness", "tired" and "thoughtful" are most prominent. For the second image, there was clear consistency in how nearly all respondents attributed the term "happy" or one of its many synonyms to the image, showing a universal preference for this emotion in relation to this particular image.

This presents the research with a fascinating discovery, whereby it confirms that the entire face is not entirely necessary in the recognition of certain emotions. For the first image, the responses were divided, but there was still some consistency in the kinds of terms used. In the second image, there was an overwhelming majority towards the recognition of "happiness", which correlates with the previous second dedicated to this emotion, whereby responses were heavily weighed towards recognition of happiness or one of its closely related terms. This provides credence to the belief that there are several additional factors that go into the interpretation of an emotion than just the face, with posture and positioning being of paramount importance. In the first image, the bowed head (leaning against a surface) and aloof gaze

directed away from the camera implies a more melancholy or pensive mood, while the upright posture, direct gaze and use of muscles around the eyes demonstrate a more positive, exuberant expression. These findings are particularly interesting considering the previously-mentioned discourse around whether the mandatory wearing of face masks would impact interpersonal communication, since the prior belief that the full face needs to be visible to fully interpret emotions has been somewhat challenged by these results, which contribute to this steadily growing area of emotional inquiry.

4.2.9. Emoji

This study looked at both photographs of emotions, as well as their digital manifestations in the form of emoji. As mentioned in the previous chapter, emoji have become one of the most widespread methods of expressing emotion non-verbally as a result of the rise of technological advancement, providing the research with a set of data towards how individuals interpret these digital expressions of emotion. Seven were chosen in total. Figure 99 depicts the images selected for this emotion.

4.2.9.1.	4.2.9.2.	4.2.9.3.	4.2.9.4.	4.2.9.5.	4.2.9.6.	4.2.9.7.
						

Figure 99: Images Depicting Emoji

As part of the Unicode Consortium, all emoji are required to have an official label, in order to differentiate them from each other and for ease of reference. The inventory of emoji, particularly those featuring faces, are divided into either those that describe the particular expression in structural terms, or provide a specific emotional term with which the image is associated. In this study, we considered these individual, specific names to be the official label of the emoji.

4.2.9.1. Responses to Emoji #3

The official label for this emoji is “Face with Uneven Eyes and Wavy Mouth” (Emojipedia, 2021)

The following figure depicts the collective responses for this question:

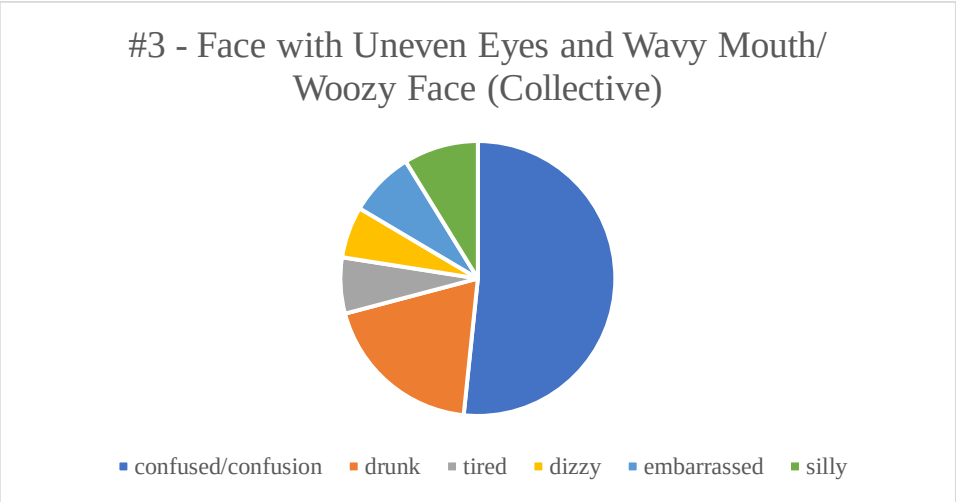


Figure 100: Chart Depicting Collective Responses to “#3 (Face with Uneven Eyes and Wavy Mouth/Woozy Face)”

The most common response as depicted in Figure 100 is “confused/confusion” (52%) which we have previously seen mentioned in other questions in previous sections. While this response does hold the majority, there were other terms that are of considerable interest, such as “drunk” (19%), which is further evidence for some participants to default to describing a particular scenario or situation in lieu of clear emotional cues.

The following figure depicts the responses, as divided by geographical region:

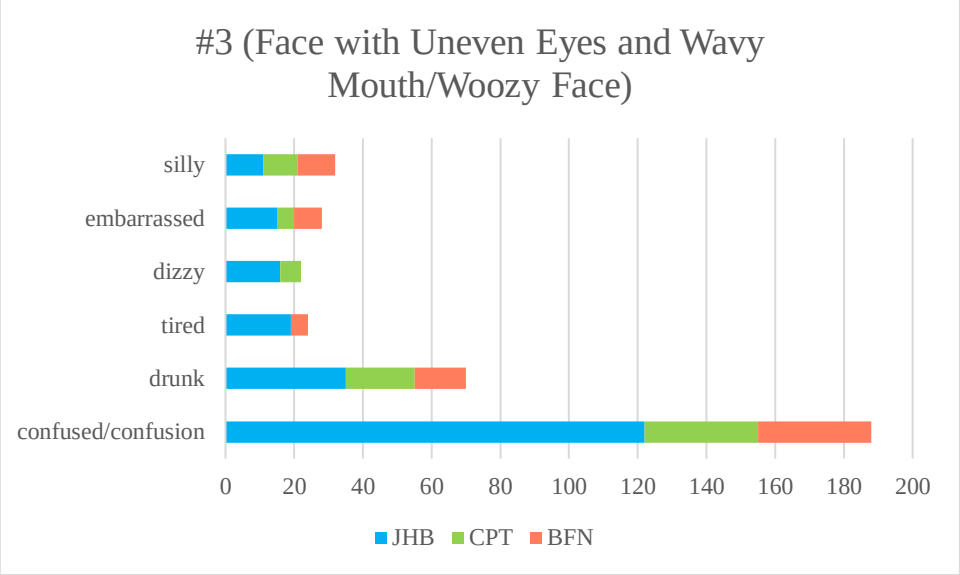


Figure 101: Graph Depicting Geographical Responses to "#3 (Face with Uneven Eyes and Wavy Mouth/Woozy Face)"

The responses for "Face with Uneven Eyes and Wavy Mouth", alternatively known as "Woozy Face" demonstrate a few different common terms, with one in particular being dominant over the rest. The term "woozy" does not feature in the list of common responses at all, as its status as an emotion is not clear. However, there are terms that can be considered quite similar.

4.2.9.2. Responses to Emoji #8

The official label for this emoji is "Grimacing Face" (Emojipedia, 2021)

The following figure depicts the collective responses for this question:

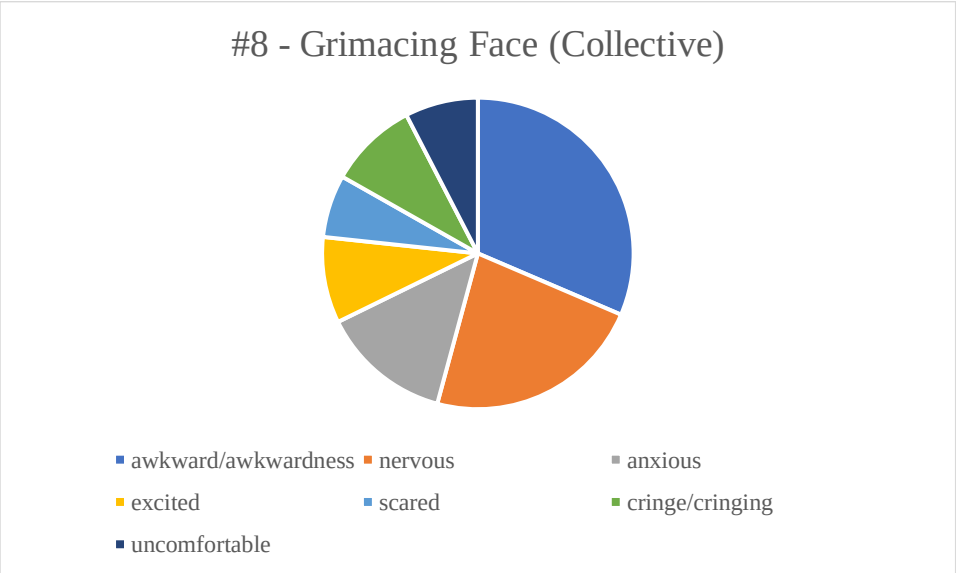


Figure 102: Chart Depicting Collective Responses to "#8 (Grimacing Face)"

As seen in Figure 102, the dominant response is “awkward/awkwardness” (31%), which was a common term in the previous section that investigated responses to the emotion of “disgust”. These responses often co-occurred with “cringe/cringing” (9%) and “uncomfortable” (8%), both of which appear in the common responses to this question. The second most common term, “nervous” (23%) was previously seen in the section on “fear”, as were “anxious” (14%) and “scared” (7%). Finally, an additional term that evoked multiple responses was “excited” (9%), implying that some participants viewed this emoji to have a meaning quite different from the original label and description.

The following figure depicts the responses, as divided by geographical region:

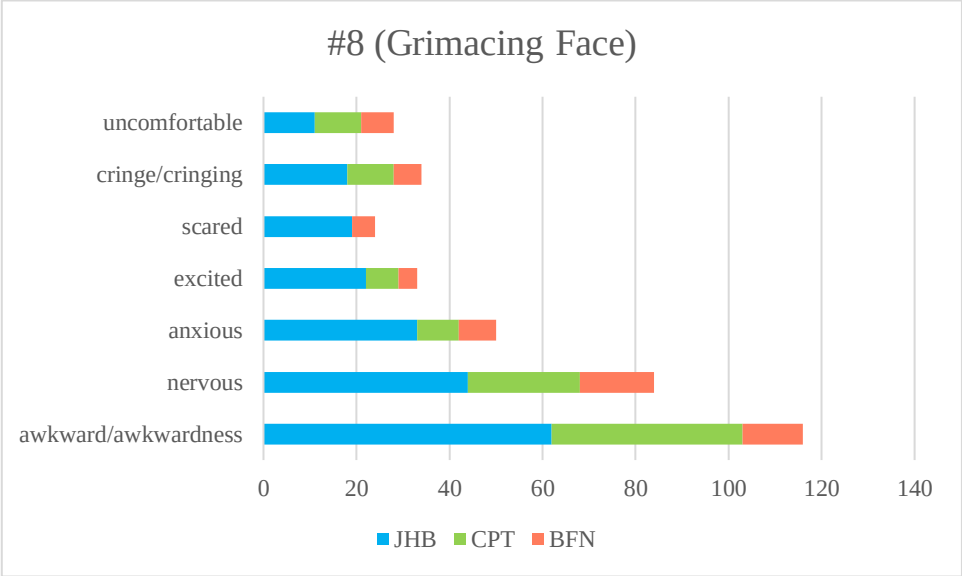


Figure 103: Graph Depicting Geographical Responses to “#8 (Grimacing Face)”

As mentioned previously, the emotion of “disgust” is often manifested physically through the presence of a particular shaping of the mouth, referred to as a “grimace”. We can relate the emotional implications of this emoji with similar terms. As seen in the above figure, there was some correlation between similar terms and the label for the emoji.

4.2.9.3. Responses to Emoji #17

The official label for this emoji is "Confused Face" (Emojipedia, 2021)

The following figure depicts the collective responses for this question:

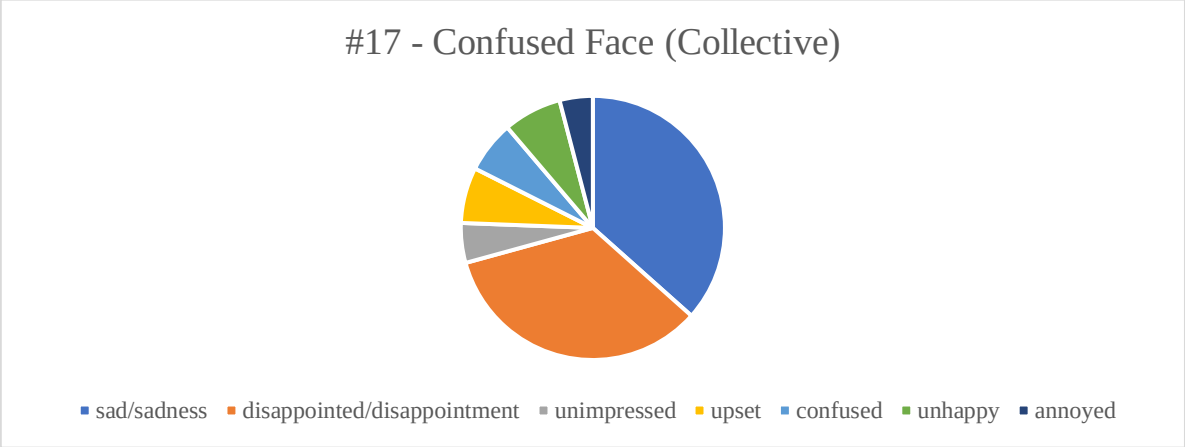


Figure 104: Chart Depicting Collective Responses to "#17 (Confused Face)"

As demonstrated by Figure 104, responses for this question are roughly equally divided between "sad/sadness" (37%) and "disappointed/disappointment" (34%), both of which have appeared previously, particularly in the section on sadness. Despite referencing an emotional state in its official label, the term "confused/confusion" (6%) receives much fewer responses. Terms previously remarked as being related to both sadness and anger, such as "upset" and "unhappy" (both 7%) also appear, as does "annoyed" (4%), another term that appeared often in the section on anger above.

The following figure depicts the responses, as divided by geographical region:

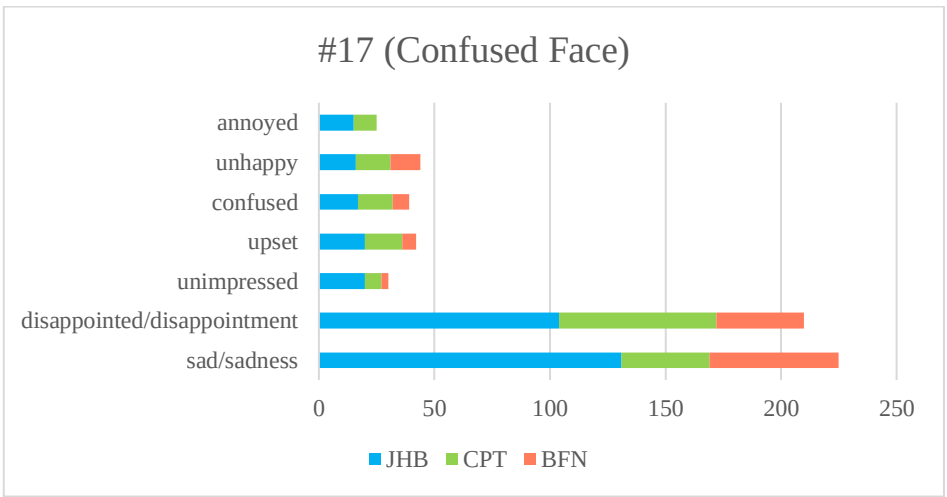


Figure 105: Graph Depicting Geographical Responses to "#17 (Confused Face)"

The responses for “Confused Face” across the groups are mostly shared between two dominant responses, neither of which is directly related to the original label, which instead appears quite low in the list of common responses.

4.2.9.4. Responses to Emoji #25

The official label for this emoji is “Upside Down Face” (Emojipedia, 2021)

The following figure depicts the collective responses for this question:

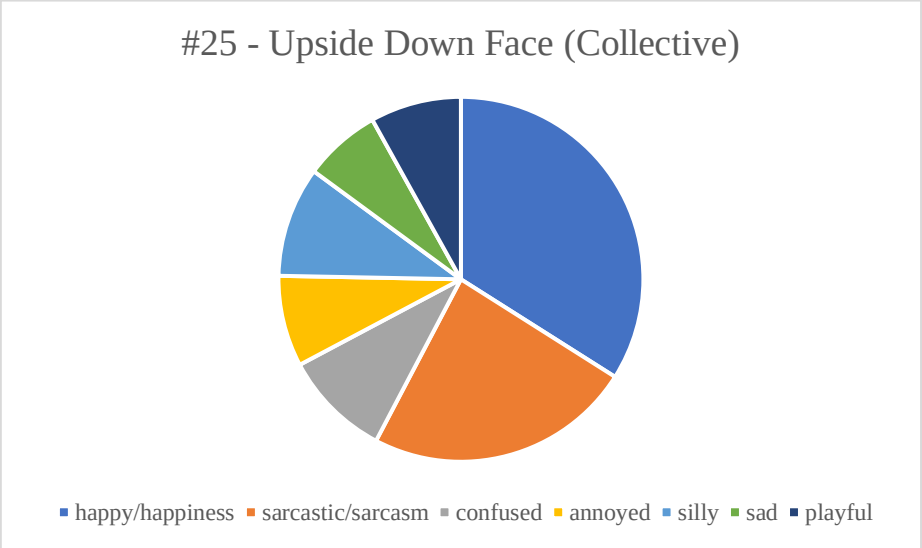


Figure 106: Chart Depicting Collective Responses to “#25 (Upside Down Face)”

Structurally, there is very little variance between this emoji and the more common smiling emoji, with the only difference being that this one is rendered upside down, which supposedly adds further meaning. As a result, it is interesting to note that the most prominent response to this question remains “happy/happiness” (34%), indicating that even when appearing in a different position, a smile still evokes this response. However, in the additional responses, a few other notable terms are used that indicates the flexibility of this image. “Sarcastic/sarcasm” (24%) is quite prominent. Other responses that veer towards the positive include “silly” (10%) and “playful” (8%), while more negative terms such as “annoyed” (8%) and “sad” (7%) also receive several responses.

The following figure depicts the responses, as divided by geographical region:

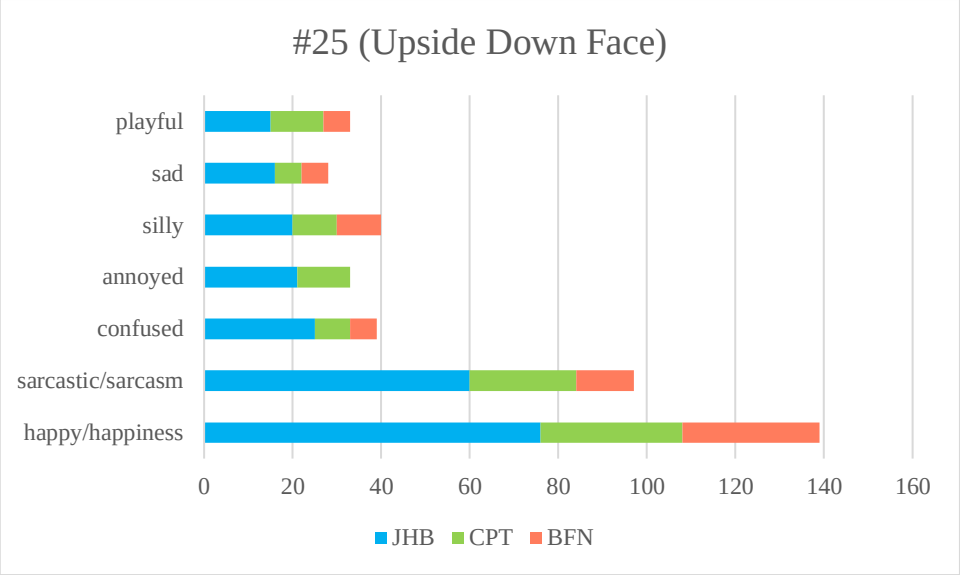


Figure 107: Graph Depicting Geographical Responses to "#25 (Upside Down Face)"

As its label does not only lack an emotional description, but also very scant structural remarks, it is not clear what the original intention of "Upside Face" would be, in terms of its emotional target. However, as seen above, there are a few notable terms that regularly appeared in the responses to this question, with "happy/happiness" and "sarcastic/sarcasm" being the most dominant.

4.2.9.5. Responses to Emoji #28

The official label for this emoji is "Weary Face" (Emojipedia, 2021)

The following figure depicts the collective responses for this question:

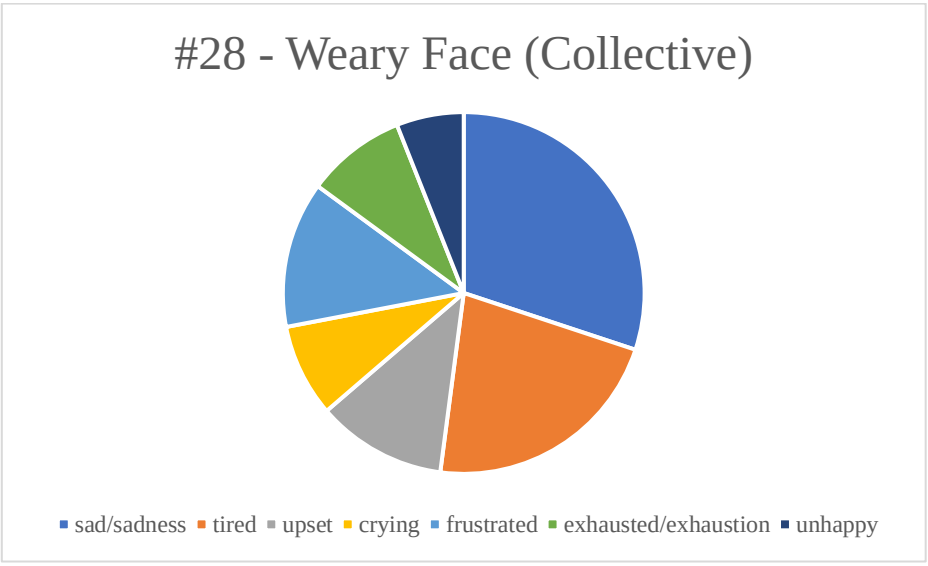


Figure 108: Chart Depicting Collective Responses to "#28 (Weary Face)"

As depicted in Figure 108, “sad/sadness” (30%) is the most prominent response, followed closely by “tired” (22%), both of which are terms that are often considered similar to the one in the emoji’s label, indicating a notable level of consistency in participant’s interpretations. The term “exhausted/exhaustion” (9%), another synonym for weary, is present in the data as well. Further terms include “upset” (12%), “crying” (8%) and “unhappy” (6%), all of which were present in the responses to questions relating to sadness in the previous sections.

The following figure depicts the responses, as divided by geographical region:

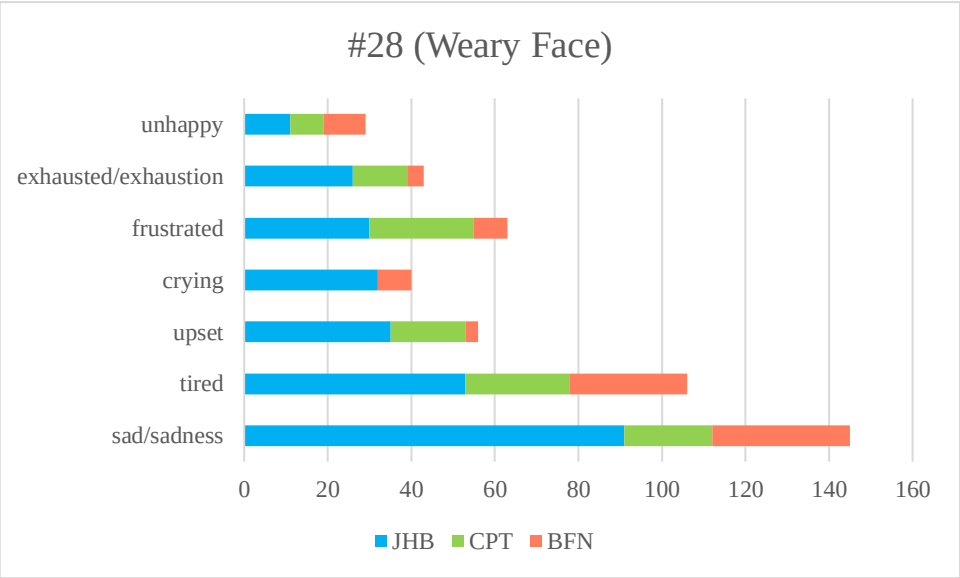


Figure 109: Graph Depicting Geographical Responses to “#28 (Weary Face)”

The term “weary” is often compared to emotions such as sadness, or used as a synonym for tiredness, often depending on context. As demonstrated in the figure above, the responses to the emoji labelled as “Weary Face” seem to show some analogy to these terms, particularly in the structural similarities between this image, and typical depictions of sadness, which feature similar facial configurations, such as downturned eyebrows and frowns.

4.2.9.6. Responses to Emoji #35

The official label for this emoji is "Face with Look of Triumph" (Emojipedia, 2021)

The following figure depicts the collective responses for this question:

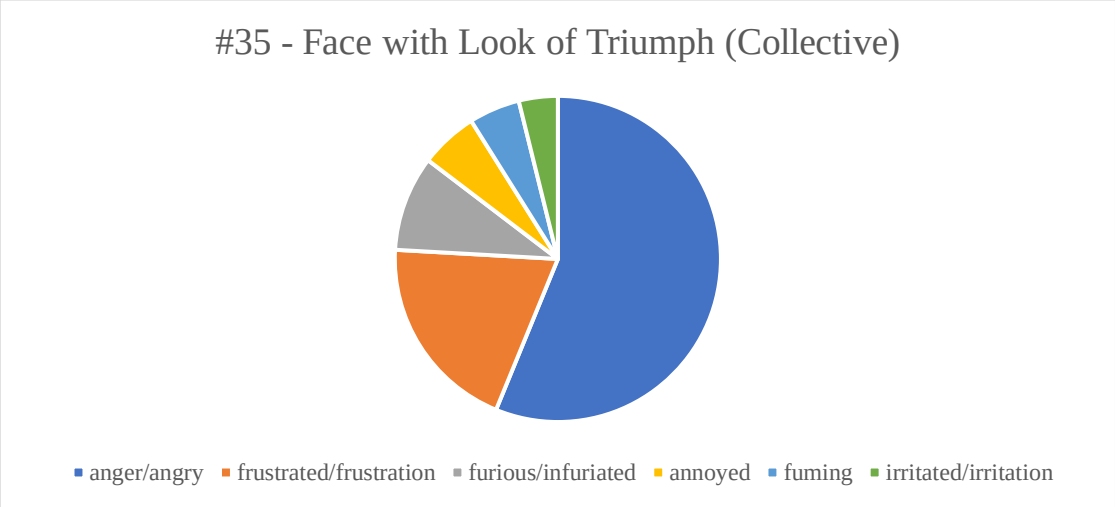


Figure 110: Chart Depicting Collective Responses to "#35 (Face with Look of Triumph)"

"Anger/angry" (56%) is the most common response, featuring in over half of the total number of responses. A similar term, "frustrated/frustration" (20%) trails behind it, as do other synonyms such as "furious/infuriated" (9%), "annoyed" (6%) and "irritated/irritation" (4%). Interestingly, another common response is "fuming" (5%), which is a frequent way to describe immense anger, derived from the classic trope of steam exuding from someone when they are extremely upset, which is depicted quite literally in the image. Overall, as demonstrated in Figure 110, not only do the participants not manage to align with the original label of the emoji, which uses a word like "triumph" to imply a more positive emotion, their responses are almost universally related to the emotion of anger.

The following figure depicts the responses, as divided by geographical region:

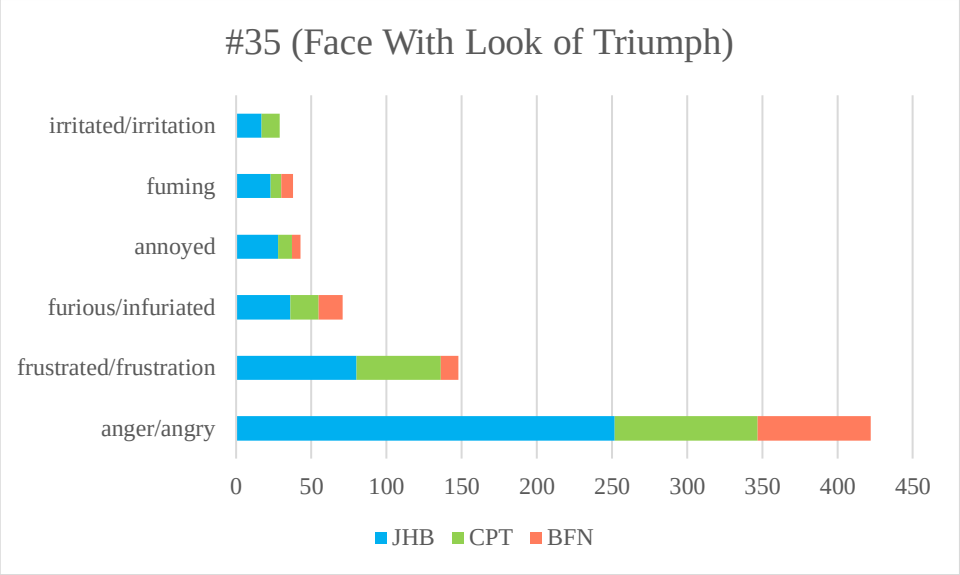


Figure 111: Graph Depicting Geographical Responses to "#35 (Face with Look of Triumph)"

The label for "Face with Look of Triumph" does not include a direct emotional term, but rather a scenario in which the designers envisioned this could be used, with the term "triumph" implying a more positive emotion. However, the responses are not consistent with this, as they are all uniformly quite negative in how participants have interpreted this image.

4.2.9.7. Responses to Emoji #40

The official label for this emoji is "Face with Raised Eyebrow" (Emojipedia, 2021)

The following figure depicts the collective responses for this question:

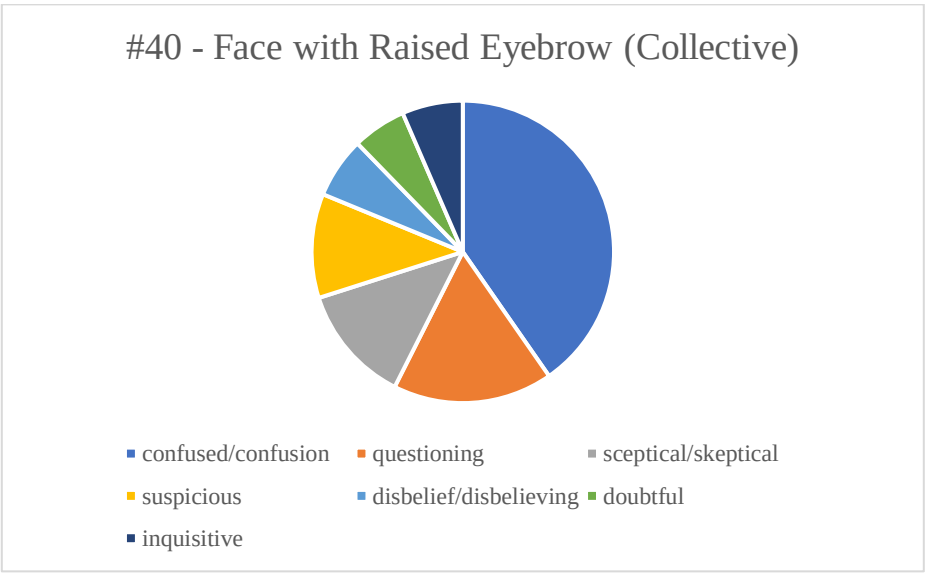


Figure 112: Chart Depicting Collective Responses to "#40 (Face with Raised Eyebrow)"

The interpretations for "Face with Raised Eyebrow" indicate several diverse responses. The most common response was "confused/confusion" (40%), which holds the slight majority. However, the most frequent responses all refer to a general group of terms that relate to cynicism or lack of belief, as evident in the prominence of "questioning" (17%), "sceptical/skeptical" (13%) and "suspicious" (11%) as common responses. This is supported by lower-achieving responses, such as "disbelief/disbelieving" (7%), "doubtful" (6%) and "inquisitive" (7%), all of which are separate terms, but convey similar ideas, to the point of being considered somewhat synonymous to one another.

The following figure depicts the responses, as divided by geographical region:

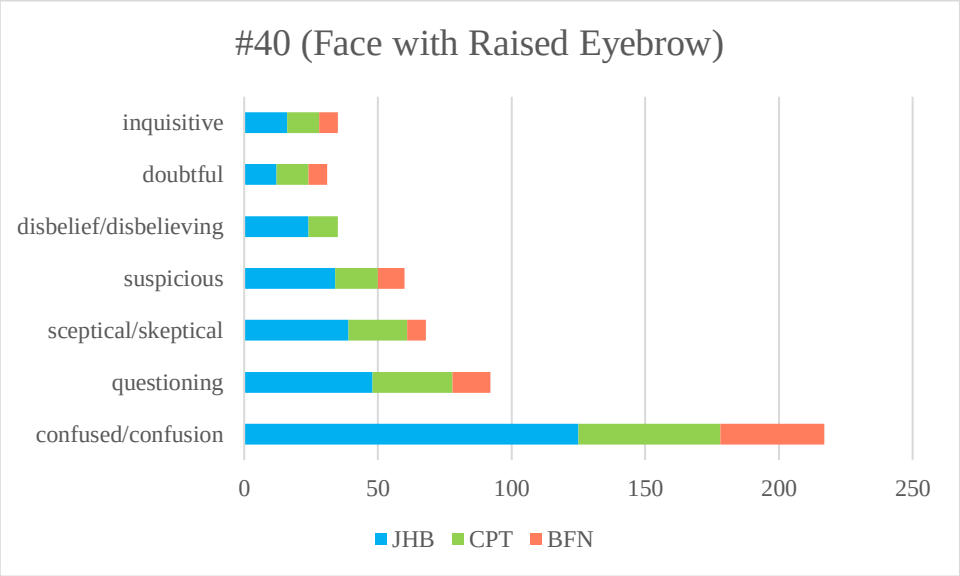


Figure 113: Graph Depicting Geographical Responses to "#40 (Face with Raised Eyebrow)"

The description for "Face with Raised Eyebrow" is purely structural, with all implications as to what it was intended to mean being ambiguous. However, there were certain emotional terms that were quite consistently used to describe the emoji.

4.2.9.8. Summary of Findings for Emoji

The most significant finding of this section on digital representations of emotions is the confirmation of our hypothesis that emoji are somewhat more malleable than their real-life counterparts when it comes to how individuals interpret the emotion being depicted. Considering that most emoji are designed without a particular emotion in mind, but rather to replicate particular facial expressions that can complement or replace concurrent text, the belief that there would be more flexible meanings associated with these images was quite likely, as made evident by the responses to these questions. There was a wide range of responses, and

unlike previous sections, where there was notable dominance by particular emotional terms, most of the responses here were quite varied, particularly in terms of the lexical items chosen in the participants' descriptions.

However, despite the wide range of results, these responses do imply that emoji elicit are capable of eliciting similar responses, as the interpretations indicate that many participants perceive emoji in similar ways, often only deviating in the specific terms used to describe these emotions, often veering towards synonymous terms. Most of them relate in some way to the basic emotions, mainly happiness, sadness and anger (which we can therefore surmise are the most fundamental emotions), often only deviating in the specific terms, which indicate that most participants interpret these digital depictions of emoji in similar ways, but rather make use of lexical diversity, which can make it appear like there is not a distinct majority for one emotion. As seen in the responses for "Face with Look of Triumph" and "Face with Raised Eyebrow", there was a near-universal level of similarity in terms of the categories of terms used, most of them being relatively interchangeable. In other instances, even when responses were relatively evenly divided between individual terms, there was a clear correlation with a set of key themes, indicating that while the words themselves may differ, the general meaning behind these images remains somewhat consistent.

4.3. Types of Responses

In the process of collecting data, it was decided that constricting respondents to one particular form of answer would be too restrictive, as the research emphasizes free interpretation of the stimulus, to allow for as diverse and honest a rate of responses as possible. Despite not requiring respondents to answer in a specific language, the vast majority of responses were provided in English, with only one instance of a non-English answer being found in the data. As evident by the above analysis, all of the responses can be divided into three key categories:

4.3.1. Emotional Terms

These responses included terms associated with emotions (eg. "happy", "she is sad", "he looks angry"). Regardless of whether the participant included only a single word, or framed their response in the form of a sentence, these answers included keywords associated with some emotional term, whether those associated with the Basic Emotion Theory (Ekman and Friesen, 1969; 1971), or additional terms not found in the original studies. Emotional terms hold a majority in terms of the responses. These were labelled as **Response Category A**.

4.3.2. Description of Emotion/State

These responses were focused on describing the image, normally entailing constructing a particular scenario (eg. “this is the face you make when someone wakes you up”, “he is watching someone in danger”). While these responses can be associated with some emotion, they are mostly descriptions of a particular state or experience, rather than a specific emotion. This is remarkably similar to what Fridja and Tcherkassof (1997) referred to as “cognitive or instrumental responses”, which they state as being more abstract or narrative responses to facial expressions, referring to terms such as “deep thought” to a more neutral expression, or “water is splashed on her face” (p. 83) as a response to a disturbed or shocked reaction. These were labelled as **Response Category B**.

4.3.3. Expressive Terms

Several responses made use of more direct, expressive terms, whereby participants appeared to be imagining what the individual depicted in the image would be saying or verbally expressing. These can be further divided into the following three categories:

- Direct speech, such as “I don’t feel good about this” or “I have bad news”.
- Expressive terms or exclamations that are normally associated with particular emotional states, such as “what the hell?” (anger or confusion), “Oh no! (fear)” or “yuck” (disgust) etc.
- Distinctly South African terms, such as “eish!”, “yoh!”, “haibo” etc. These are separated from more general exclamations as they demonstrate a cultural specificity that is not present in previous similar studies, which strengthens this study’s reasoning for looking at these theories from a local perspective.

These responses were rarer, but still frequent enough to be of interest, particularly in looking at more ambiguous emotions, which often featured more abstract responses. These were labelled as **Response Category C.**

4.3.4. Hybrid Responses

As this research asked participants to provide their own original responses, the data did reflect several instances where different categories were combined. This often occurred when participants would indicate the emotion using one of the common terms (such as “happy”, “sad” etc.), and subsequently add either more narrative elements to their answer whereby they are elaborating on their opinion or describing the scenario (“frustration – she looks like she is

on the brink of tears" or "shocked and disbelief after seeing something positive"), or they add a more expressive term to amplify their selection of a particular emotional term ("*What the hell?* This person is clearly angry" or "*Wow!* This person is happy"). A further hybrid includes combining both narrative and exclamations ("*WTF?"*, this person is trying to start a fight"), or combines all three categories ("Embarrassed and feeling silly, *oops*!"), a much rarer occurrence. These were labelled as **Response Category AB** (for responses that combined emotional terms with narrative details or analysis), **AC** (for responses that combined emotional terms with exclamations or direct speech) or **BC** (for responses that combined narrative details with exclamations or direct speech).

4.4. Analysing Response Categories

Based on the intriguing data, a brief analysis of the response categories was conducted to determine the extent to which these responses varied between the respondent groups. Ten questions were chosen at random, with the responses divided into the categories, as outlined above, in order to demonstrate how widespread the results were, showcasing the varied range of responses from the participants in the three populations.

The following figure indicates the distribution of responses across each of the categories:

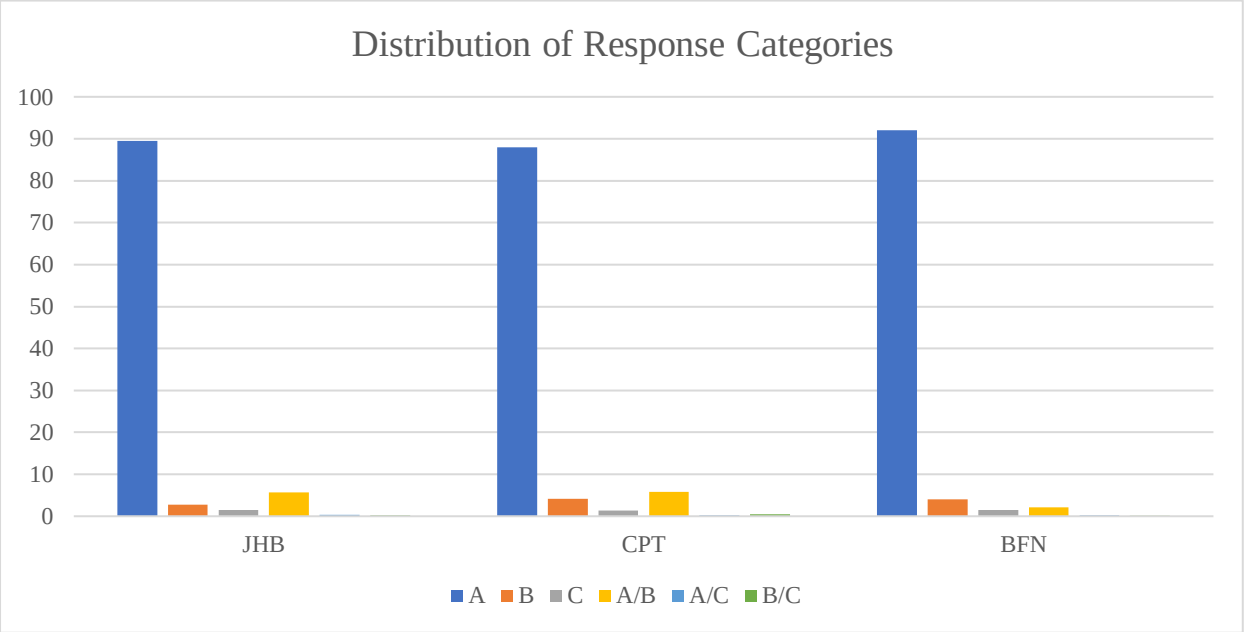


Figure 114: Distribution of Response Categories for Sample

As seen in the figure above, most responses lean heavily towards the direct use of emotional terms (Category A), which was quite evident from the data from the outset, a common occurrence across the three groups – Johannesburg (90%), Cape Town (88%) and Free State

(92%) all featured dominance within this category. The hybrid responses that combined emotional terms with narrative details (Category AB) were also common in the samples from both Johannesburg and Cape Town, occupying the second place, while Free State had narrative responses (Category B) in the second position. Approximately 90% of responses across the participating groups simply labelled the emotion using common terms, while more descriptive or hypothetical explanations collectively make up the remaining 10%, indicating a significant preference for participants to make use of more simple labels, rather than complex descriptions.

Only a few questions were selected for analysis here, as this is an area in which the research can develop in subsequent studies, since it not only depicts the general interpretations participants in these three different national groups had for specific emotions but also demonstrates the specific kind of language respondents use to describe them. This is particularly interesting from a linguistic standpoint, as it demonstrates far more than just the labelling of images with a preconceived set of terms, instead focusing on lexical and semantic diversity. This provides potential for future studies into this particular aspect of emotional research since it is out of the scope of this study and its established research questions.

4.5. Conclusion to Data Analysis

This section focused on conducting a qualitative analysis of the data provided by participants from three distinct regions of South Africa, to determine the extent to which emotional expressions are recognized across different populations. Participants were asked to provide interpretations of various images, which consisted of human faces (depicting the basic emotions, as well as more ambiguous emotions) and emoji, as well as a pair of images showing individuals wearing masks. Our findings indicate that, regardless of whether looking at human faces or emoji, participants demonstrated consistency in how they interpreted many of these emotions. There were instances where the majority of responses deviated from the anticipated emotion (such as in the instance of "shock" and "confusion" being quite prominent responses), and the use of more ambiguous faces in certain questions evoked further observations about how participants perceived particular emotions.

As can be seen in the results, it is quite clear that certain emotions are more frequently recognized than others, which is the foundation of the Basic Emotion Theory (Ekman and Friesen, 1969; 1971). The following figure depicts the six basic emotions, arranged in the form of a hierarchical structure, representing the rate of consistency in the responses for these particular terms. This indicates that, while the six emotions proposed as being fundamental

across populations may suggest universality, the rate at which they are recognized does vary. It also suggests that further research must be done in order to potentially expand the criteria for qualification as a basic emotion, as there were terms that appeared quite consistently, but are not included in this hierarchy as a result of not being initially considered as basic emotions in the original research.

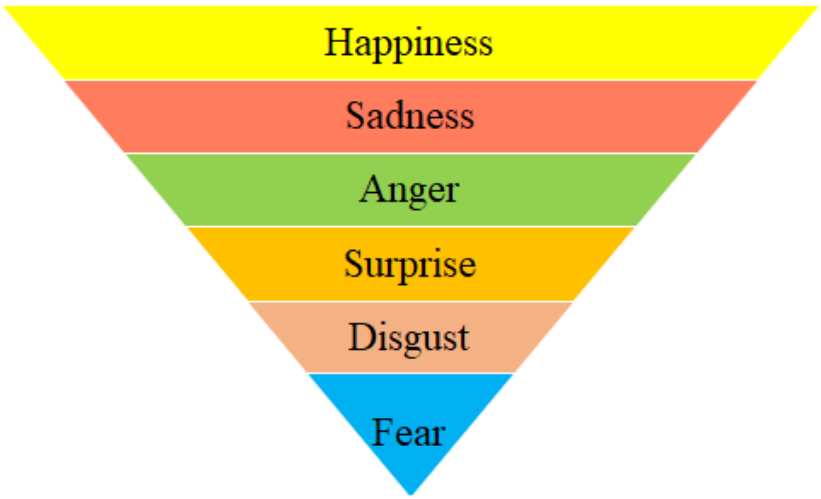


Figure 115 – Hierarchy of the Recognition of Basic Emotions

This figure depicts the collective responses from the three participating groups, as this remained consistent, with very little deviation when each group was analysed individually, leading us to conclude that the rate of responses between the three regional groups demonstrates a form of universality in the general recognition of these terms. The forthcoming section will discuss the findings in further detail and provide observations derived from this robust corpus of data, in an effort to answer the central research questions.

Chapter 5: Discussion and Conclusion

5.1. Summary of Study

As the field of gesture and non-verbal communication has demonstrated, there is more to language than just spoken words. The human face has demonstrated immense communicatory significance as a mode of non-verbal communication, particularly in terms of the expression of different emotional states, which has spurred an expansive field of inquiry into how different individuals perceive these signals. Based on the wealth of work done in the field, this research was inspired by the following broad problem statement: are facial expressions universal, or shaped by our environment? As discussed previously, Ekman and Friesen (1969; 1971) proposed that there are six emotions that are universally recognized. This has formed the foundation for most contemporary research into emotional expression. This study sought to determine whether their theory, as well as their subsequent findings amongst various groups were still applicable from a South African perspective. To explore this contentious issue, the present study was based on the following questions, which guided the research:

1. Is the perception of emotional expressions influenced by diversity in geographical location?
    a. What emotions are commonly perceived amongst the target population, and which are perceived differently?
    b. How do facial health masks that cover the lower half of the face (a requirement of the recent COVID-19 pandemic) impact the perception of emotions?
2. Is there a universal trend in the recognition of emotions in the contemporary digital space?
    a. Which emoji are commonly perceived amongst the target population, and which are perceived differently?

In order to answer these questions, this study engaged in a qualitative study, in which participants from three different regions of South Africa were surveyed by means of an online questionnaire.

5.2. Findings of the Study

In this section, we will be focusing on the findings, starting with the Basic Emotions (as they serve as the foundation for the research), which also entails looking into masked emotions (images where the individual depicted is wearing a mask), and ambiguous emotions, concluding with an analysis of the data on emoji. Our findings indicate that some emotions, such as "happiness", are more universally recognized, as opposed to others, which are considered either more malleable in the terms used to describe them, or an instance where an entirely separate term leads the responses to the point where it incites discussion around redefining the classification system of Basic Emotions. One of the most significant findings of this study was that the Basic Emotion Theory is mostly supported by the results in terms of the majority of the responses indicating favour for many of the terms proposed by Ekman and Friesen (1969; 1971). While their theories are undeniably relevant to analysing contemporary perceptions of facial expression in relation to a few key emotion terms, there is an argument to be made, based on the findings of this research, that there is a higher rate of recognition and perception for certain emotions than others.

5.2.1. Basic Emotions

The baseline research into this area of facial expressions claims that there are six fundamental emotions, namely "anger", "disgust", "fear", "happiness", "sadness" and "surprise" (Ekman and Friesen, 1969; 1971). The present study used this as a theoretical framework and investigated whether there is credence to the original claims that these six emotions are all universally recognized, when taken from a distinctly African perspective.

In analysing the data, we can confirm without any hesitation that, based on the images used in this study, the most frequently recognized of the Basic Emotions amongst the three target populations is "**happiness"**. Across every sub-section of question, this particular emotion is the only one that yielded the most common response in every instance. The vast majority of participants, when presented with an image selected to elicit this emotion, made use of the terms "happy" or "happiness", making this the overwhelmingly dominant response. However, there were additional responses that strayed from these terms, namely in using words such as "joy/joyful" and "exuberant" to describe images in some cases where the emotion was clearly very positive, or more passive but still positive terms such as "content" and "satisfied" in instances of a more subdued representation of the emotion. As these are all considered

synonymous with the term to a large extent, this was not considered a significant deviation, but rather an instance of lexical creativity. These findings remained consistent across the three groups, providing evidence that "happiness" is an emotion significantly recognized by the different populations.

Another widely recognized emotion is that of **"sadness"**, which yielded results that provide evidence to it being perceived in similar ways across the three populations, slightly deviating in specific lexical items used to describe the emotion but remaining relatively consistent. The discrepancies in the recognition of this emotion come in the form of questions where "sadness" was not the most prominent response, but rather further down in the list, with terms such as "serious" and "thoughtful" (otherwise considered to be only marginally related to the target emotion in terms of meaning) being more dominant in those instances. However, while it may not be as consistent in returning the same overwhelmingly favourable results in support of the Basic Emotion Theory as demonstrated in the section on "happiness", the responses for questions targeted at this emotion do indicate favour for "sadness" to be relatively well-perceived across the participating groups, since the majority of responses do gravitate towards this term or those with which it is synonymous.

In order to further explore the effectiveness of both "happiness" and "sadness" as basic emotions, two images were selected that featured individuals wearing masks. One was associated with a more positive emotion, the other a more negative or subdued one. The data returned results that were almost entirely favourable towards the positive emotion, with all three participating groups returning responses such as "happiness" or "joyful". This correlates with the results found in questions relating to "happiness", whereby there was an overwhelming majority towards the targeted emotion, which we can conclude indicates that this emotion is nearly universally recognized, as these results are uniformly favourable to this particular depiction, whereby even an image where half the face is covered still yields significant results in support of this finding. The second masked image, which was slightly less intense in terms of showcasing one particular emotion, still returned results that indicate favour towards widespread recognition, with terms such as "sadness" and "thoughtful" being massively prominent amongst the participants' responses.

In focusing on the section on "**anger**", the data indicates that most respondents agree on the physical manifestation of this emotion, as well as being relatively well-equipped to recognize it in the survey. Of the five images selected to elicit this emotion, "anger/angry" was returned

as the most common response in four instances, while still being present in the fifth, albeit slightly lower. In many of these instances, this term received at least half the total number of responses. Additionally, synonymous terms such as “furious” and “annoyed” were commonly found amongst the data. This indicates that participants were able to accurately recognize and label this emotion, albeit with a slightly larger breadth of potential responses. The only instance where “anger/angry” was not the dominant response was in an image that featured someone facing away from the camera, accompanied by a concurrent hand gesture, which resulted in participants gravitating towards the terms “confused/confusion” more than the target emotion. However, the data suggests that "anger" is relatively well-preserved as a consistently recognized emotion amongst participants across the three groups.

Additionally, “anger/angry” appears as a common response to images that were not designed to elicit this emotion in a few instances, such as in the section on “disgust”, and the one targeted towards more ambiguous emotions. The images that compelled participants to make use of the terms “anger” or “angry” were considered somewhat structurally similar to those in this section (featuring furrowed eyebrows and an intense gaze), which indicates some malleability to this expression, as well as the emotional terms participants associate with it. One of the motivations for changing the structure of this research (moving from the forced-choice, quantitative model of previous studies to a qualitative approach focused on free responses) was to allow for open interpretation, which provided the opportunity for observations into the often-narrow boundaries between emotional expressions, as made evident in the instances of crossover between sections dedicated to the well-established Basic Emotions Theory model.

While it is seemingly well-perceived across the three groups, the reasoning behind “**surprise**” being relatively more divisive in comparison to other emotions explored in this study is due to the presence of the term “shock” in close proximity to it in nearly all cases, as indicated in the section dedicated to that emotion, which indicates some degree of similarity in how they are interpreted by participants, the data indicating a notable amount of conflation between the two terms, albeit with a few differences (such as “shock” being used for more negative depictions of emotion, while “surprise” is more common in images that tend to be more positive). Our findings indicate that “surprise” is a common term used to describe images chosen to elicit those emotions amongst the three groups, but rather than holding a dominance (as was the case with emotions such as “happiness” or “sadness”), common responses are divided between “surprise” and “shock”, which slightly weakens the argument that the former can be considered

an individual emotion, especially in the absence of the latter, which has as much of a presence in the data, and should be considered for future revisions of the Basic Emotion Theory.

Based on the data, there is an argument to be made that “shock” should be considered one of the primary emotions, as across the three groups, there is consistency in how many participants interpret the emotion, even when this particular term is not present in the original theoretical framework, as well as not being semantically similar enough to be considered an offshoot of “surprise”. As mentioned above, while there is a trend towards the two being slightly conflated, participants did veer towards using "shock/shocked" in more explicitly negative contexts, while "surprise/surprised" was used for images that are more notably positive. The data also shows that “shock/shocked” is present in other sections, such as the one targeted towards “fear”, proving that this qualitative method of gathering more diverse responses shows support for finding analogy in how participants from the three different groups perceive emotions.

The responses for the images chosen to elicit the emotion of “**disgust**” indicate that, while it may not be as commonly recognized as those in other sections of the research (which imply that it is slightly less well-defined than other common expressions), participants still do gravitate towards using the term and its synonyms in particular contexts, as well as some fascinating results that came about as a result of the open-ended response structure. One of the most notable observations is the comparison between “disgust” and “confused/confusion”. The latter term is particularly notable, considering how it was previously dominant in one instance in the section on “anger”, despite not being officially recognized as one of the six fundamental emotions that form the basis of the study. Unlike “shock”, which can be argued to be somewhat similar to “surprise”, the presence of “confused/confusion” as a common response in instances where “anger” or “disgust” are being targeted, without being directly associated with either term in terms of semantic meaning, once again supports a revision of the Basic Emotion Theory, buttressed by further instances of “shock/shocked” as a common response here.

Of the six basic emotions, “**fear**” is the one that received the most unstable results, proving it to be the least recognized amongst the six emotions that were investigated here. The data demonstrate a tendency for respondents to use a much wider range of terms to describe images chosen to elicit this emotion, with many of them not being synonymous or similar enough to be considered under the same emotional category. Of the common terms, “fear” does appear regularly (while rarely holding the majority), mainly sharing responses with synonyms such as “scared” and “frightened”, which are found often in the data. Slightly more unrelated terms

such as “worry” and “anxiety” are present, which leads us to question whether these terms can be considered subordinates of “fear” or stand as emotions all on their own. “Surprise/surprised” and “shock/shocked”, as mentioned previously, are also seen quite significantly in the data, which we can attribute to the structural similarities (wide-eyed gaze and a rounded, open mouth). “Shock/shocked” is ultimately the most common response in this section, which leads us to theorize that "shock" may be a more common emotion, especially since the term "fear" (or any of its synonyms) are not present elsewhere in the responses. This lends further credence to the proposal around defining this as an additional basic emotion on its own, rather than considering it synonymous to “surprise”, despite their close semantic proximity.

5.2.2. Ambiguous Emotions

In designing the study, the visual stimulus used to construct the questionnaire were quite traditional in how they were associated with one of the six basic emotions, even if the results indicated that there was space for more open-ended interpretations. However, to allow for a broader analysis, images that did not relate directly to those emotions were included, to determine if there was consistency in how participants perceived these emotions. The general finding, as indicated in the section on ambiguous emotions, is that when participants are presented with images that feature emotions that are not easily identifiable, there is slightly less reliability in the kinds of responses provided by the participants. Common responses are slightly more vague, with terms such as “neutral” and “serious” being most frequent, as well as occasional instances of terms relating to the Basic Emotions (such as “happiness” and “anger”), albeit not enough to indicate a significant majority for any of these emotions throughout this section, indicating that some emotional expressions may be too pliable to hold a majority.

However, this does not indicate that there is a lack of consistency in the results, as there are clear patterns found in the responses across the three groups. The most common of these can be found in a tendency demonstrated by many participants, whereby, when unsure of what particular emotional label to assert on an image, an individual will either begin to describe imagined scenarios in which they believe such a facial expression would be useful (evoking a range of hypothetical scenarios), or add more expressive terms, either in the form of exclamations (eg. “Wow!” or “WTF?”) or imagined phrases they would expect would occur concurrently (eg. “I can’t believe this!” or “Please go away”). This was a common tendency across the three participating groups, which demonstrates the trend for participants to still assert

their own perception, even when provided with a stimulus that does not fit into a particular emotional category. Therefore, even when challenged to assert their own individual interpretation of more vague emotions, participants do share similar methods of describing emotions, even if it entails resorting to more verbose explanations, which (as demonstrated in the data analysis section) accounts for roughly 10% of the total number of responses. The general finding of the questions relating to ambiguous emotions is that there is some consistency in certain responses when it comes to emotional labels (albeit at a much lower rate), with the more reliable data coming in how common it is for participants, when unsure of what specific label to use, to default to more evocative or expressive explanations.

5.2.3. Emoji

In an effort to bring this research to the contemporary space, the study included non-human expressions of emotion, namely in the form of emoji, which we have previously indicated have become one of the most widespread forms of non-verbal communication, due to their frequent use over social media and instant messaging. There was not a shortage of potential images that could be used, but the seven that appeared in the questionnaire were selected due to their more ambiguous qualities, to determine whether participants were able to demonstrate similarity in their interpretations of the emotion supposedly depicted in each image, and whether the perceptions remained consistent across the three geographical regions. This endeavour was only made more complex by the fact that, unlike with the photographs selected for the study (which are often directly labelled according to one or more emotional terms), the vast majority of emoji are labelled with more structural or circumstantial names, such as "Face with Raised Eyebrow" and "Face with Look of Triumph", therefore separating these images from specific emotional labels, and promoting flexibility in terms of individual interpretations.

As discussed in the analysis section, one of the more notable findings was that emoji are much more malleable than photographs of human faces, which supports the theorists that stated that the appeal of using emoji in text-based communication was that they allowed for a wider range of meanings. Across all the questions based around emoji, participants returned results that indicated a much wider breadth of responses than those found in the sections that used photographs. However, there was a clear crossover between the two, with several terms that were used in relation to human photographs also being used to describe emoji. Terms such as "happiness", "anger" and "sadness" (three of the most commonly perceived Basic Emotions, as outlined above) were prominent in the responses, as were terms such as "awkwardness" and

"confusion", which may not be present in the Ekman and Friesen (1969; 1971) classification, but were common enough to be regular responses in sections based around both photographs and emoji.

The section on emoji, much like the one based on photographs depicting ambiguous photographs, did present findings that indicate two clear trends. The first was that, despite anticipating a much more scattered series of interpretations, there were many terms that proved to be quite consistently mentioned, many of them being emotional terms, indicating that across the three groups, there was still a significant number of participants that perceived these images as depicting a particular emotional expression, some of them even holding a considerable majority. The second trend is associated with another frequent occurrence, particularly in the same section on ambiguous emotions, whereby participants, when presented with an image that is slightly less obvious in the emotion it is portraying, would resort to a more narrative or expressive description, either describing the scenario in which they would expect such an emotion to manifest, or using direct speech or exclamations in lieu of more concise descriptions of the emotion. These trends were present across all three geographical groups with very little discernible deviation between the populations.

The investigation into emoji returned results that were broadly favourable to the hypothesis that individuals utilize the same mechanism in the interpretation of emoji as they do human faces. Not only are many of the lexical terms and categories shared between the two across the participating groups (with several emotional terms being found throughout the data in terms of both question types), but the tendency to make use of more elaborate or expressive descriptions in situations where the emotion depicted is not entirely clear is consistently demonstrated. This reflects the findings of the aforementioned neurological studies, which stated that, based on cognitive research, the same areas of the brain were activated when an individual is looking at a photograph and an emoji. This further endorses the steadily growing field of psycholinguistic research into the communicatory significance of emoji as more than just digital images, proving that these are not just disposable pictographs used to supplement the text, but rather an active and engaging form of non-verbal communication on their own, which our findings wholeheartedly support, particularly in the clear correlations between recognition of human faces and emoji.

5.2. Limitations of Study

This study did return favourable results in terms of the questions surrounding the communicatory impact of facial expressions as a mode of non-verbal communication it was focused on exploring. However, there were a few limitations with the present research, which future work could potentially rectify to further expand on the main theoretical tenets that inspired this research.

While the research was inspired by previous work into this field, it was decided that the older models of data collection and analysis were slightly too stifling in terms of facilitating lexical diversity and more independent interpretation of emotion, which were deemed to be invaluable in exploring the perceptions of emotions across the populations. Much of the previous research has depended on quantitative analysis, with very few instances of qualitative research in this area. While this method did yield strong results, the decision to overhaul the method of data collection does require further development in terms of setting the groundwork for future similar studies, particularly in the methods of data collection, which can consistently be refined to ensure responses are more consistent, as allowing participants freedom of interpretation (rather than a forced choice model) has demonstrated the value of this form of research in gathering contemporary perceptions of emotion.

In an effort to bring this research to an African space, our study focused primarily on South Africa, since the majority of previous research had not taken this continent into account, often seeing "African" as indicative of a homogenous cultural entity. However, the population sample of this study could be considered limiting, particularly in how the targeted group were university students across three distinct regions of South Africa. While this did offer a strong database of responses, it does not account for the entirety of the country, both geographically (only focusing on three regions) and in terms of participants, as focusing solely on university students does not allow for insights into the perspectives of those outside the group, with university students only making up a small percentage of the national population. Future research should make a concerted effort to expand it to a broader population, as exploring this subject from the perspective of a larger group will most certainly yield fascinating results and provide further insights into how South Africans perceive emotion.

Finally, further research was required in terms of determining the extent to which responses were guided by contextual information, particularly in questions relating to the use of face masks, in which context is imperative to determining the emotion being expressed.

5.3. Future Research

This research was designed to pioneer a new area of enquiry, whereby the fundamental tenets of the Basic Emotion Theory (Ekman and Friesen, 1969; 1971) were employed in a study that used their general framework as a guideline, altering the methodological structure and analysis to both contemporize the research (both in the methodology and the specific definitions that guide it) and bring attempts to resolve this contentious debate to a new geographical space, which had previously not been significantly present in the majority of earlier research. However, this was only the start of what will hopefully become a thriving field of study in the future, whereby the perspectives of the multicultural African continent will become part of the research into the debate between universality and cultural conditioning. The latter should be more widely-explored, in order to determine the extent to which we can see cultural specificities in the expression and perception of emotions of participants in both South Africa and other parts of the continent.

In terms of the original theoretical framework, our data demonstrated that there may be a need to revise some of the foundational terms that anchor the original studies. Ekman and Friesen (1969; 1971) state that there are six basic emotions (“anger”, “disgust”, “fear”, “happiness”, “sadness” and “surprise”), a belief to which most subsequent theorists have aligned themselves to a certain degree. The results of our study demonstrated the need for a slight revision of this broad definition, particularly in the potential addition of certain terms. The original Basic Emotion Theory has rarely been viewed as entirely inviolable, with Ekman (1992) noting the potential for future emotions to be added to his framework, granted there is evidence to support it. However, while Ekman (1992) mentioned the potential for emotions such as "contempt" to be considered a further addition to his framework of Basic Emotions, our study found that the term "shock" was far more widespread in terms of common emotions that are not part of the original six-component framework. Future research can hopefully determine whether this is the term that should be added to the original framework as proposed by Ekman and Friesen (1969; 1971), since there is enough evidence here to support such an amendment.

Additionally, more research should be done in terms of the relationship between certain emotions. As our findings demonstrate, there is considerable crossover between certain terms, such as the conflation of particular emotions, some of which can be considered quite similar when placed alongside each other, with the context in which participants believe they are used often being the ultimate factor in deciding which emotion is categorized under a particular

label. The regular occurrence of “surprise” and “shock” in close proximity already presents potential for an insightful study into these terms and the context in which participants would likely use them as emotional descriptors. By allowing participants to freely interpret emotional expressions, the research found unique insights into how they perceive these emotions, which would allow for more comprehensive research into how different populations engage with these non-verbal cues, something that was slightly lacking in the more restrictive models that previously dominated this particular field.

Finally, as this study focused solely on South Africa, it can be considered as having been limited to only one particular country, which was done to stimulate a field of research that previously did not pay much attention to the African perspective outside of a few marginal references to “Africa” as a single, homogenous entity, rather than a continent occupied by innumerable cultural perspectives. While far from comprehensive, this study was an effort to start an exploration of emotional expression within this continent, laying the groundwork for more research, both from within the African continent, and from a global scale. There is likely value in taking these theoretical principles and looking at them from the perspective of a much wider group, comparing and contrasting the production and interpretation of emotional expressions with populations from beyond our borders, while will hopefully provide further insight into whether the recognition of emotions is as widely common as our findings would suggest, and expanding on the question of whether emotions are innate or mediated by different social groups based on cultural specificity.

5.4.**Conclusion**

This research set out to determine whether we can consider emotional expressions to be a universally recognized phenomenon, or if they are the product of culture-specific conditioning. To explore this issue, a study was conducted that explored how three population groups from different regions of South Africa perceived emotions, both human (photographs) and digital (emoji), and whether there was consistency in the responses. This method was designed to update the research, bringing it to the modern era, as theorists over the past decade have found that emoji serve to be a robust source of emotional expression, being comparable to real facial expressions in terms of cognitive processing.

The first research question endeavoured to analyse whether the perception of emotional expressions is influenced by diversity in geographical location, as well as determining which

emotions were perceived in similar ways by the target population, and which ones were perceived differently. The data collected indicates that amongst the three groups, there was very little difference in how participants interpreted these emotions. Across the wide set of responses taken from the distinct population groups, there was significant consistency in how each group perceived each individual emotion. In instances where one or two terms were the dominant responses to a particular question, the results demonstrated considerable similarity across the three groups. These findings lend support to a theory that states that the recognition of facial expressions triggers an innate emotional mechanism, as the results are favourable towards widespread consistency amongst the surveyed population.

Certain emotions were more consistently recognized amongst the three participating populations. The most prominent were “happiness”, “sadness” and “anger”, all of which returned results that were mostly quite reliable, indicating that they were the most commonly recognized emotions. "Surprise” was often conflated with “shock” and “disgust” is often conflated with “confusion", We have previously mentioned these emotions should be the subject of further research into the classification of Basic Emotions. Surprisingly, “fear”, which was previously noted as being frequently recognized in prior research, is the least recognized of the basic emotions based on the data in this study, indicating a deviation from earlier findings that proposed it as a widespread, commonly recognized emotion. This is mainly due to the images chosen to elicit this emotion being mostly interpreted as “shock”, as well as a range of other lexical items that are not directly related being used to describe it.

In looking at the influence of emoji on modern communication, the study asked similar questions, particularly in determining whether emoji are recognized in much the same way and with the same consistency as human facial expressions. Using more ambiguous stimuli in the form of emoji that are not ascribed to a particular emotional description (mainly being labelled through structural components, separating it from a particular emotional context), our research demonstrated clear consistency in how respondents engaged with these images. Common responses were significant amongst the groups, with very little deviation between the populations, indicating broad support for the theory that we perceive emoji in the same way that we perceive human expression, with the same cognitive region being alerted when looking at either stimulus. Much like the photographs, the recognition of emoji is not defined by geographical location, as responses from all three groups do not deviate in a way that could be considered significant.

Another meaningful finding of this study was related to images in which the full face of the individual could not be seen, as it has been covered by a mask, which is an area of interest due to current events surrounding the COVID-19 pandemic. Despite not being able to see the individual's entire face, participants produced similar responses on an overwhelming scale. This is particularly significant considering how there have been active discussions over the previous two years, where many theorists have attempted to explore the impact of face masks on interpersonal communication. As evident by the two images that depict individuals wearing masks (which cover most of their faces), participants were still able to accurately discern the emotion depicted in each one of them. Of the two, the image depicting a more positive emotion had the most significant majority in terms of responses, with an overwhelming amount of responses indicating that this image depicted "happiness" or a closely related term. Considering how the wearing of face masks is not only mandatory but has become a new aspect of the global culture, exploring the ways in which we perceive emotional cues in spite of the presence of these facial coverings, these findings are extremely relevant, and indicate merit for future research into this particular subject.

In comparing the data from the various sections of this study, a significant finding was around the extent to which the responses between the three groups that were surveyed as part of this research remained consistent, rarely deviating in any noteworthy instance. In nearly every question (representing human faces, masked individuals and emoji), respondents shared similar interpretations of the emotion being depicted, directly correlating to the number of responses received from each surveyed group, indicating that there was frequent consistency in how participants from the groups engaged with each individual image. These findings consistently demonstrate a significant preference for the theory that facial expressions are recognized amongst the multicultural population that was surveyed, which suggests evidence for a theory of universality in how populations interpret various forms of emotion.

Despite being a field of study that has had its origins in the late 19th century, this subject is one that continues to further develop over time. As demonstrated throughout this study, emotional expressions hold significant importance in terms of non-verbal communication, as they convey information that can either supplement or take the place of language, in terms of both human-to-human interactions, or those taking place through the virtual domain, in which social media has become one of the primary channels of communication. The theoretical principles introduced over half a century ago still remain relevant and insightful, but like any form of

language, new contexts arise, and should be examined thoroughly to understand the extent to which this particular aspect influences contemporary communication.

This study has contributed to the research by not only adapting previous work and updating the methodological principles to be more reflective of contemporary methods of communication but also situating it within Africa, which has previously not been the subject of such a study. Therefore, this study has contributed to narrowing a significant gap in the research that will hopefully spur further studies into this multicultural continent and how its populations perceive and interpret facial expressions, which we have determined may lean towards a form of universal recognition.

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Appendix A: Questionnaire

Revisiting Emotions: An Analysis of Contemporary Perceptions of Facial Expression

Dear Participant

Thank you for taking the time to take part in this study!

This questionnaire was created to assess how contemporary South African students perceive the emotions shown in facial expressions, to determine whether there is analogy between the different interpretations each individual asserts onto different facial expressions.

Throughout this questionnaire, there are 45 individual images, consisting of photographs and emoji. Below each one is a question and a space to type your response. Kindly provide your interpretation of the emotion shown in each image - the length of the response should be as short and concise as possible, between one word and a short sentence, depending on your interpretation.

By taking part in this questionnaire, you are contributing to an exciting new study on the relationship between different emotions in the digital space. By agreeing to submit your responses, you are providing consent to be part of this study and have your responses used for analysis. Furthermore, all personal information will be kept private, and you will be afforded complete anonymity.

Should you require more information on the study, you can contact the researchers as follows:

Researcher - Matthew Joseph Jenner (820959@students.wits.ac.za)
Supervisor - Dr Ramona Kunene Nicholas (Ramona.KuneneNicolas@wits.ac.za)

You may also contact the Wits Human Ethics Research Committee (Non-Medical) for further grievances, or to elevate any concerns or complaints.

HREC Protocol Number: H20/11/23

Once again, thank you for taking the time to lend your interpretations to this study!

Matthew Joseph Jenner

Please confirm that you are a registered student at the University of the Witwatersrand *

- [ ] I am a student at the University of the Witwatersrand

Please select your age from the options provided below *

- ( ) 18 - 19
- ( ) 20 - 25
- ( ) 26 - 34
- ( ) 35 - 42
- ( ) 43 - 50
- ( ) > 50

Question 1

How would you describe the emotion(s) shown in the image below?



Short-answer text

Question 2

How would you describe the emotion(s) shown in the image below?



Short-answer text

Question 3

How would you describe the emotion(s) shown in the image below?



Short-answer text

Question 4

How would you describe the emotion(s) shown in the image below?



Short-answer text

Question 5

How would you describe the emotion(s) shown in the image below?



Short-answer text

Question 6

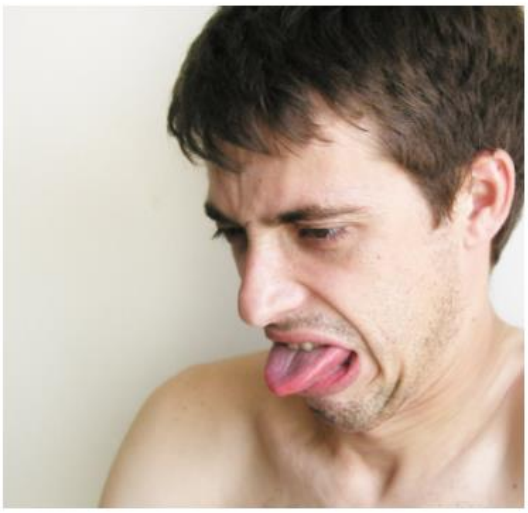
How would you describe the emotion(s) shown in the image below?



Short-answer text

Question 7

How would you describe the emotion(s) shown in the image below?



Short-answer text

Question 8

How would you describe the emotion(s) shown in the image below?



Short-answer text

Question 9

How would you describe the emotion(s) shown in the image below?



Short-answer text

Question 10

How would you describe the emotion(s) shown in the image below?



Short-answer text

Question 11

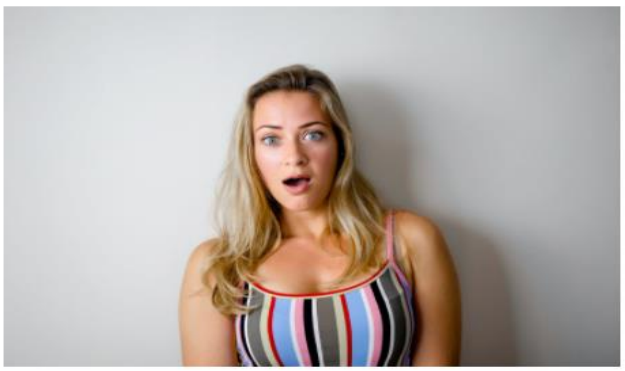
How would you describe the emotion(s) shown in the image below?



Short-answer text

Question 12

How would you describe the emotion(s) shown in the image below?



Short-answer text

Question 13

How would you describe the emotion(s) shown in the image below?



Short-answer text

Question 14

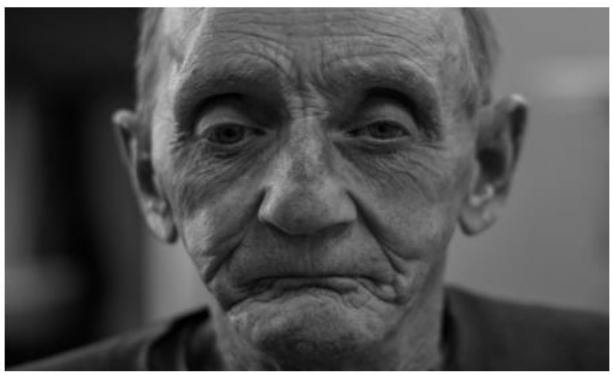
How would you describe the emotion(s) shown in the image below?



Short-answer text

Question 15

How would you describe the emotion(s) shown in the image below?



Short-answer text

Question 16

How would you describe the emotion(s) shown in the image below?



Short-answer text

Question 17

How would you describe the emotion(s) shown in the image below?



Short-answer text

Question 18

How would you describe the emotion(s) shown in the image below?



Short-answer text

Question 19

How would you describe the emotion(s) shown in the image below?



Short-answer text

Question 20

How would you describe the emotion(s) shown in the image below?



Short-answer text

Question 21

How would you describe the emotion(s) shown in the image below?



Short-answer text

Question 22

How would you describe the emotion(s) shown in the image below?



Short-answer text

Question 23

How would you describe the emotion(s) shown in the image below?



Short-answer text

Question 24

How would you describe the emotion(s) shown in the image below?



Short-answer text

Question 25

How would you describe the emotion(s) shown in the image below?



Short-answer text

Question 26

How would you describe the emotion(s) shown in the image below?



Short-answer text

Question 27

How would you describe the emotion(s) shown in the image below?



Short-answer text

Question 28

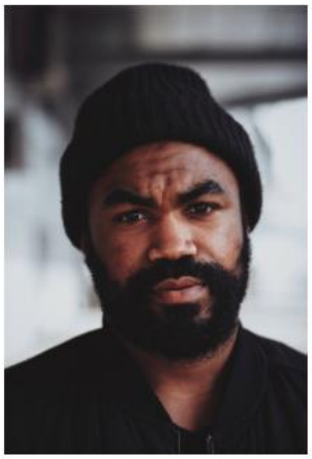
How would you describe the emotion(s) shown in the image below?



Short-answer text

Question 29

How would you describe the emotion(s) shown in the image below?



Short-answer text

Question 30

How would you describe the emotion(s) shown in the image below?



Short-answer text

Question 31

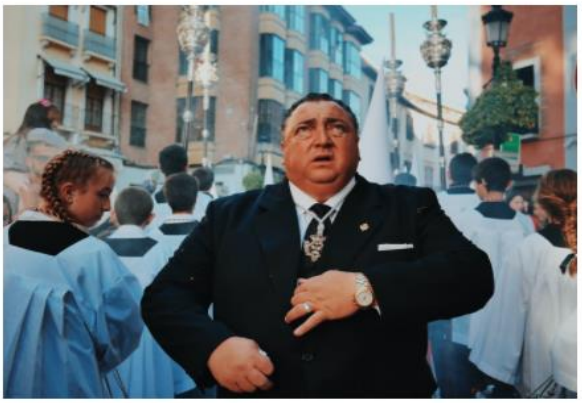
How would you describe the emotion(s) shown in the image below?



Short-answer text

Question 32

How would you describe the emotion(s) shown in the image below?



Short-answer text

Question 33

How would you describe the emotion(s) shown in the image below?



Short-answer text

Question 34

How would you describe the emotion(s) shown in the image below?



Short-answer text

Question 35

How would you describe the emotion(s) shown in the image below?



Short-answer text

Question 36

How would you describe the emotion(s) shown in the image below?



Short-answer text

Question 37

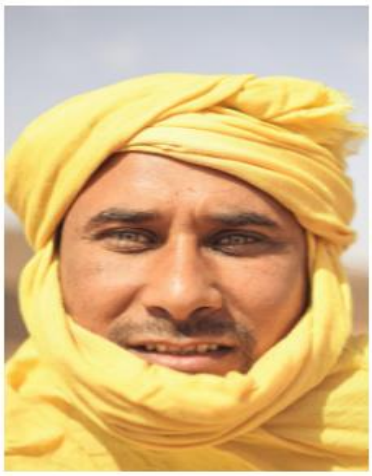
How would you describe the emotion(s) shown in the image below?



Short-answer text

Question 38

How would you describe the emotion(s) shown in the image below?



Short-answer text

Question 39

How would you describe the emotion(s) shown in the image below?



Short-answer text

Question 40

How would you describe the emotion(s) shown in the image below?



Short-answer text

Question 41

How would you describe the emotion(s) shown in the image below?



Short-answer text

Question 42

How would you describe the emotion(s) shown in the image below?



Short-answer text

Question 43

How would you describe the emotion(s) shown in the image below?



Short-answer text

Question 44

How would you describe the emotion(s) shown in the image below?



Short-answer text

Question 45

How would you describe the emotion(s) shown in the image below?



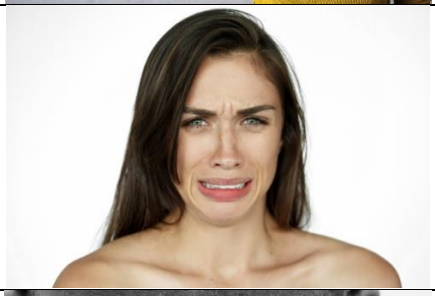
Short-answer text

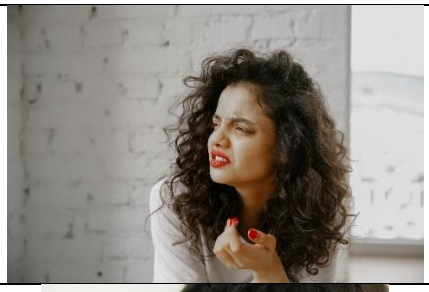
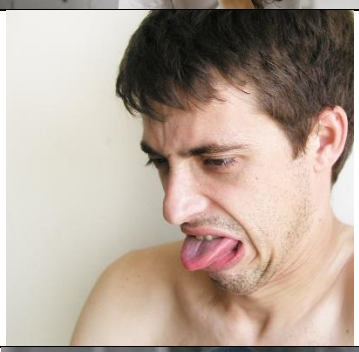
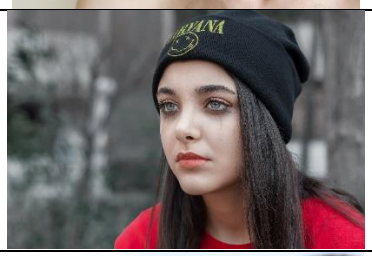
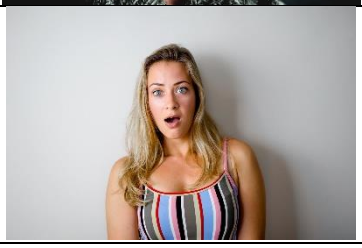
Appendix B: Images Used in the Study

The following sheet contains all the images that were chosen to be used in the final questionnaire, which was distributed to students at the four participating universities.

To meet the requirements of the study, and to prevent any unconscious copyright infringement, each one of these photographs was sourced from free stock photography websites, with the website and creator of the image being included next to each photograph, and if it is available, the year of publication. All images of emoji were extracted from Emojipedia (emojipedia.org), the online database that contains all past and present emoji.

Photographs Used in Study

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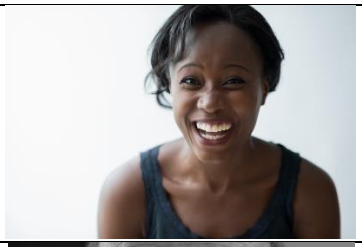
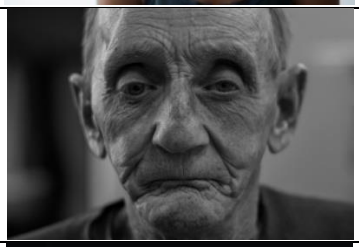
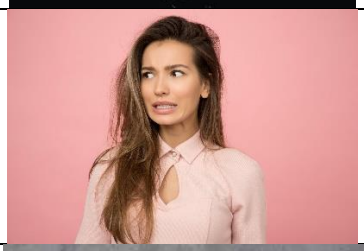
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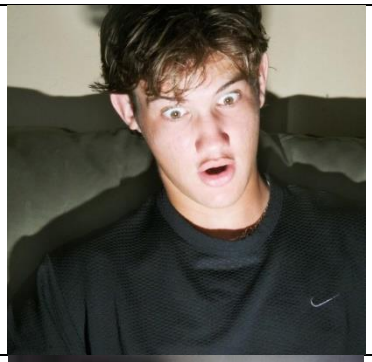
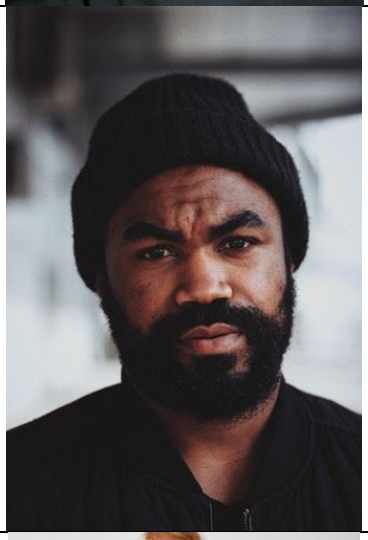
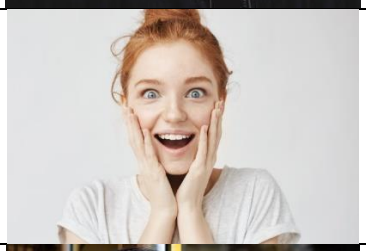
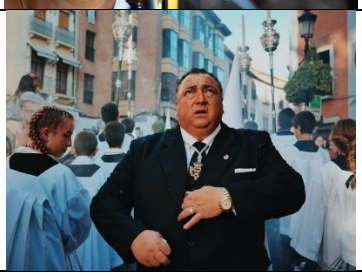
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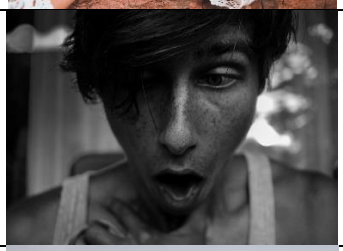
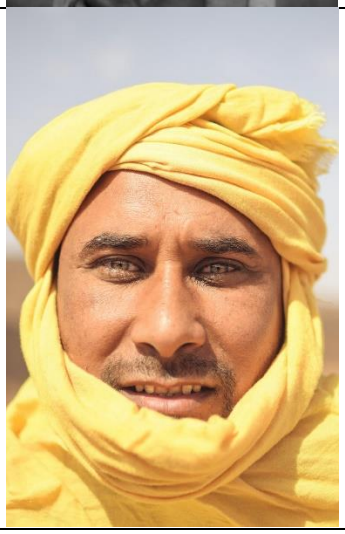
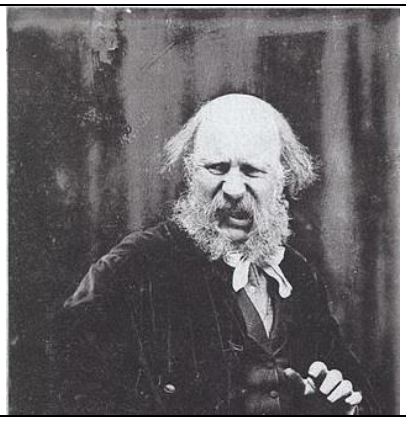
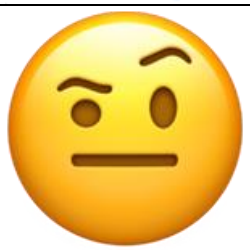
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Emoji Used in Study

Emoji	Official Title	Year Added	URL
	"Woozy Face" (Originally designed as "Face with Uneven Eyes and Wavy Mouth")	2018	https://emojipedia.org/woozy-face/
	"Grimacing Face"	2012	https://emojipedia.org/grimacing-face/
	"Confused Face"	2012	https://emojipedia.org/confused-face/
	"Upside-Down Face"	2015	https://emojipedia.org/upside-down-face/
	"Weary Face"	2010	https://emojipedia.org/weary-face/
	"Face with Steam from Nose" (Originally designed as "Face with Look of Triumph"	2010	https://emojipedia.org/face-with-steam-from-nose/
	"Face with Raised Eyebrow"	2017	https://emojipedia.org/face-with-raised-eyebrow/

Appendix C: Ethics Certificate

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

Research Office

HUMAN RESEARCH ETHICS COMMITTEE (NON-MEDICAL)
R14/49 Jenner

CLEARANCE CERTIFICATE	**PROTOCOL NUMBER: H20/11/23**
PROJECT TITLE	Revisiting Emotions: An Analysis of Contemporary Perceptions of Facial Expression
INVESTIGATOR(S)	Mr M Jenner
SCHOOL/DEPARTMENT	School of Literature, Language and Media/
DATE CONSIDERED	20 November 2020
DECISION OF THE COMMITTEE	Approved Risk Level: Minimal
EXPIRY DATE	09 December 2023

DATE 28 February 2022 **CHAIRPERSON** _____
(Professor J Watermeyer)

cc: Supervisor : Dr R Kunene Nicolas

DECLARATION OF INVESTIGATOR(S)

To be completed in duplicate and **ONE COPY** returned to the Secretary at Room 10004, 10th Floor, Senate House, University. Unreported changes to the application may invalidate the clearance given by the HREC (Non-Medical)

I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to submit an amendment of the protocol to the Committee. **I agree to completion of a regular progress report. For Minimal and Low studies, this is due annually on 31 December. For Medium and High Risk studies, this is due twice annually on 30 June and 31 December.**

Matthew Jenner
Signature

01 / March / 2022
Date

PLEASE QUOTE THE PROTOCOL NUMBER ON ALL ENQUIRIES