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Research Thesis

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Affective Touch in the South African context: Validation and Perspectives of the Touch Experiences and Attitudes Questionnaire

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Declaration

I, Courteney Puckle, declare that this research report is my own, unaided work. It is submitted for the degree of Master of Arts in Social and Psychological Research by Coursework and Research Report at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any other degree or examination at this or any other university.

Sign: __C. Puckle_____

Date: __15/04/2021

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Abstract

Touch is an essential part of human development. Recently, the motivational and emotional dimensions of tactile experience – affective touch – have been considered as fundamental to the construction of the bodily self. However, until recently, there was no formal assessment on the attitudes and experiences of affective touch over the life-course. The aim of this study was twofold. First, to validate the 57-item UK-Touch Experiences and Attitudes Questionnaire (UK-TEAQ) within the South African context. The secondary aim was to investigate differences in how individuals perceive, understand and interpret affective type touch, based on socio-demographic factors, such as gender, race, religion, relationship status and age. This research study can be described as a non-experimental, quantitative, cross-sectional and correlational study. The sample was collected through non-probability, convenience sampling method, as well as snowball sampling method. Of the analyses conducted the following results were found: (1) females perceive the sense of touch more pleasant as compared to male participants; (2) significant differences were found in the perception of touch between individuals with different relationship statuses; (3) different racial groups perceived the sense of touch differently, with the main differences being between White and Black racial groups; (4) small but significant differences were found between different religious groups and age groups and how they perceive touch; (5) a multiple regression analysis revealed that most socio-demographic factors were significantly good predictors of impacting affective type touch. This study has found that, how we interpret, perceive and understand the sense of touch, specifically affective touch, is impacted by various socio-demographic factors.

Keywords: affective touch; social touch; C-tactile afferents (CTs); bodily self; touch experiences.

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Abbreviation List

UK-TEAQ: UK – Touch Experiences and Attitudes Questionnaire.

PCA – Principal Component Analysis

fMRI – functional Magnetic Resonance Imaging

OFC – orbitofrontal cortex

SFS – superior temporal sulcus

FFT – Friend and Family Touch

CIT – Current Intimate Touch

ChT – Childhood Touch

ASC – Attitudes towards Self-Care

AIT – Attitudes towards Intimate Touch

AUT – Attitudes towards Unfamiliar Touch

AET – Affective Exchange Theory

SBT – Social Baseline Theory

RHI – Rubber Hand Illusion

KMO – Kaiser-Meyer-Olkin Measure of Sampling Adequacy

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Chapter One: Introduction and Literature Review

Touch is the first language of communication we as human beings experience (Lockhart, 2019). The sense of touch develops before any other sense and therefore is the medium through which individual's experience the external world (Burleson & Davis, 2013).

Human touch is an essential part of human development. Its role is present from infancy and its importance continues throughout the life span (Lockhart, 2019). Many researchers have shown that touch plays a crucial role in how we communicate with others, create social bonds, and convey different emotions (Burleson & Davis, 2013; Cascio et al., 2019; Jönsson et al., 2018; Papathanassoglou & Mpouzika, 2012; Von Mohr et al., 2017; Von Mohr et al., 2019). This sense of touch also plays a role in the development of bodily self-awareness, which will guide the theoretical framework for this study.

The importance of touch has long been proven and supported in animal research data. For instance, in a study conducted by Harlow (1958) it was found that infant monkeys preferred a surrogate mother made of cloth which provided the monkeys with comfort, compared to the other surrogate mother who just provided the infant monkeys with food. In comparison, a study conducted by Meaney and Szyf (2005) found that rat pups who received higher levels of grooming had lower stress responses, therefore providing support to the idea that touch plays a vital role in life.

This need for touch does not lessen with age as studies have shown that the use of touch is used in different areas of life, such as in nursing homes, hospitals, interpersonal relationships and clinical applications (see Doherty et al., 2006; Field, 2010; Gallace & Spence, 2010). Löken and Olausson (2010) highlights however that although touch has many different functions the importance, the pleasantness (i.e., affective nature) and experience of the touch can differ according to different contexts, cultures and gender. This introduction aims to provide an overview of the function and importance of affective touch and the prevailing theories that can be used to explain it.

1.1 The Physiology of Touch

Touch is perceived through the largest organ of the body - the skin - and can be defined as the direct contact that occurs between two physical entities (Gardner, 2001). The sensation of touch is regulated through a sensory transduction mechanisms which allows an individual to transform the physical sensation of touch to electrical signals; these signals are then sent to certain areas of the brain (such as the primary and secondary somatosensory cortex, the insular cortex and the right posterior superior temporal sulcus – brain areas linked to processing pleasure (Berridge & Kringerbach, 2016; Bjornsdotter et al., 2014)) through the central nervous system along peripheral nerves via sense organs called mechanoreceptors or afferent nerve fibres (Gardner, 2001; Kirsch et al., 2018; Liao et al., 2018; McGlone et al., 2014). These sensory receptors in the skin provides tactile information to certain parts of the brain that allows us to then identify the size, shape, temperature and texture of the objects we feel and most importantly whether this touch sensation produces or is perceived as pain or pleasure (Gardner, 2001; Kirsch et al., 2018; Liao et al., 2018; McGlone et al., 2014). In summary, our skin has receptors that preferentially detect and transmit emotional and hedonic qualities of tactile input (Burleson & Davis, 2013). In other words, the receptors within our skin that picks up on the sense of touch, detects pleasure or gentle type touch quicker as compared to harsh and rough type touch.

There are two types of mechanoreceptors or afferent nerves fibres that individuals have that processes the sense of touch, one is the Aβ afferents and then there are the C-tactile afferents (Jönsson et al., 2018; Kirsch et al., 2018; Papathanassoglou & Mpouzika, 2012). The Aβ afferents are thick myelinated afferents that are responsible for conveying the discriminatory properties of touch in terms of the velocity of the touch, the texture of the touch as well as the force and vibration of the touch (McGlone et al., 2014; Olausson et al., 2010; Von Mohr et al., 2019). C-tactile afferents on the other hand is thin unmyelinated afferents that can be found in the hairy skin of an individual and is said to relay a different type of tactile

sensation stimuli towards the brain (Ackerley et al., 2014; Jönsson et al., 2018; Kirsch et al., 2018; Olausson et al., 2010).

C-tactile nerve afferents, according to Ackerley and colleagues (2014), Jönsson et al. (2018) and Olausson et al. (2010) are said to only come forth on the hairy skin of an individual such as the forearms and work optimally when the individual perceives a light pressure type touch that is at neutral temperature (32 degrees) and also has a slow stroking velocity, i.e., between one and 10cm/s (Gardner, 2001; Gliga et al., 2019; Haggarty, 2018; Kirsch et al., 2018; McGlone et al., 2014; Von Mohr et al., 2019). According to Ebenezer et al. (2007) as well as Haggarty (2018) 90% of these C-tactile nerve fibres are unmyelinated and therefore responsible for interpreting affective type touch.

Based on the two different mechanoreceptors an individual has and the differences in how these mechanoreceptors perceive the sense of touch, it can therefore be presumed that there are two different types of touch, affective type touch and non – affective touch or discriminatory touch, each one activating one or the other mechanoreceptor. Discriminatory touch, or non – affective type touch is mainly processed through Aβ afferents nerve fibres and is responsible for detecting, discriminating and identifying external touch stimuli, with the goal of making rapid decisions that guide an individual's subsequent behaviour (McGlone et al., 2014). Affective type touch on the other hand, can be operationally defined as a tactile sensation that encompasses a hedonic or emotional component (Jönsson et al., 2018).

According to Olausson et al. (2010), affective touch can be described as slow, gentle type touches on hairy skin surfaces and are most likely to occur where the individual has close affiliation to another individual, such a parent to their baby, between siblings, between trusted associates and friends (Ackerley et al., 2014). Affectionate touch includes kissing, hugging, caressing, holding hands, stroking another person's back, arm, hair, face, legs or other non-sexual forms of physical contact (Lockhart, 2019). Concisely, affective touch which is signalled by C-tactile afferents are a tactile perception that conveys a motivational and arousal response, the purpose of which is hypothesised to encourage and elicit positive social

interactions between individuals (Ackerley et al., 2014; Gliga et al., 2019; Haggarty, 2018; Jönsson et al., 2018; Kirsch et al., 2018; Olausson et al., 2010).

This hypothesis is supported through numerous studies that found that the C-tactile afferent sends the touch information to the insula cortex areas of the brain; a part of the brain that links the sensory systems with the emotional systems in the frontal lobe of the brain (Bjornsdotter et al., 2014; Gordon et al., 2013; Jönsson et al., 2018; Kirsch et al., 2018; McGlone et al., 2014; Olausson et al., 2010). One function of the right insula is to convey socio-emotional type information to the individual, it therefore gives reason as to why affective touch is considered socially pleasant (Gordon et al., 2013). Functional neuroimaging (fMRI) and lesion mapping studies further revealed that that affective type touch activates different areas of the brain as compared to discriminative or sensory touch. Specifically, brain areas such as the insula and the parietal operculum, the orbitofrontal cortex (OFC) and the superior temporal sulcus (SFS) are significantly associated with processing affective touch through the C-tactile afferents (Bjornsdotter et al., 2014; McGlone et al., 2014; Schleip & Jäger, 2012).

A lesion mapping study using right hemisphere stroke patients conducted by Kirsch et al. (2020) further supported these findings. Kirsch and colleagues (2020) showed that the right anterior insula is a key brain area necessary for processing affective touch, as individuals with lesioned areas in the right anterior insula were unable to perceive affective touch - specifically, slow velocity stroking of the hairy surface of the right forearm. Additionally, Kirsch and colleagues (2018) conducted an earlier experiment to investigate whether damage to the right hemisphere- specifically the right posterior insula, the primary somatosensory cortex and the SFS - will influence an individual's ability to identify specific emotions experienced through affective touch. The study found that participants rated the different types of touches as the same feeling namely pleasant, therefore affective touch as well as non-affective touch was rated in the same way therefore indicating that individuals with damage to the right hemisphere cannot differentiate between affective and non-affective type touch as they struggled to differentiate between different emotions elicited through different types of touches (Kirsch et.

al., 2018). Based on the results of these studies it can be assumed that the right insula and the right cortical areas (i.e., parietal, temporal and orbital frontal) more generally are a key anatomical correlates that are used in the interpretation and experience of affect type touch (Bjornsdotter et al., 2014; Gordon et al., 2013; Jönsson et al., 2018; Kirsch et al., 2020; McGlone et al., 2014; Olausson et al., 2010; Schleip & Jäger, 2012).

In support of these findings, studies conducted by Morrison (2012) and Löken and Olausson (2010) found that affective touch releases oxytocin, a hormone in the brain that stimulates and generates affiliative type behaviours and emotions. In other words, they found that through the function of affective touch oxytocin is released within one's body (this is the physiological effect) and through this release it induces an automatic nervous system response that allows an individual to calm down and behave accurately even in the face of stress and anxiety. These results were supported by subsequent studies (see Burleson & Davis, 2013; Cong et al., 2015 and Crockford et al., 2013).

Additionally, Kirsch and colleagues (2018) conducted a specific experimental study to investigate whether C-tactile stimuli (slow, soft affective type touch) conveyed more positive type emotions and intentions than a fast-non-optimal type touch. The results revealed that soft, slow stroking type touch, on the hairy forearm of the skin, were reported to be more pleasant than fast stroking tactile touch (Kirsh et al., 2018). The results suggest that affective touch communicates more positive emotions, such as arousal and support, than the non-optimal type touch, which communicates fear or even warning intention.

1.2 Developmental Theories of Affective Touch

This C-tactile sensory processing mechanism is said to be present in adult individuals, however some studies have shown that such mechanisms are also present in young infants. For instance, a study conducted by Jönsson et al. (2018), found that infants of two-months old responded greater to slow, gentle type touches as compared to fast type touch. They also found that the infants showed stronger cortical activation in response to slow stroking touch in the insula cortex and the temporal lobe. Jönsson et al. (2018) explains these results

suggesting that the unmyelinated system or the development of the C – tactile nerve afferents have been a part of our evolutionary development with the purpose of helping us develop socially and emotionally.

From a different point of view, the importance of touch can be clearly seen from John Bowlby and Mary Ainsworth's seminal studies on attachment theory (Ainsworth et al., 1978; Bowlby, 1979; also see Kirsch et al., 2018; Krahe et al., 2018; Von Mohr et al., 2017). The attachment theory posits that there is an emotional bond or relationship that develops among individuals, specifically between a mother and her infant and this bond can have lasting effects throughout an individual's life (Bretherton, 1992). Throughout the years many researchers have built upon this attachment theory and found the main manner in which this attachment bond can develop is through the sense of touch (Cascio et al., 2019; Jakubiak & Feeney, 2016).

In support of this, Hertenstein, (2002) conducted a study to investigate the communicative functions of touch, specifically between a mother or caregiver and their infant. Hertenstein (2002), addressed two questions within his study: what is communicated to infants by touch from their mother or caregiver and how does this meaning come about? He found that a mother's touch can sooth a baby in distress and also regulate the infant's state, with the reasoning being that the function of touch is to communicate emotions. Therefore, the type of emotions the mother or caregiver is feeling can be communicated to the infant through touch (Hertenstein, 2002).

Intriguingly, a study conducted by Murgatroyd et al., (2015) revealed that maternal stroking can reverse the effects of prenatal and postnatal maternal depression therefore further demonstrating the importance of early experiences of touch. According to Cascio et al. (2019) the sense of touch is the very first sensory modality that develops in infancy and is a key factor that is needed in the development of a secure attachment of the infant to the primary caregiver (Jakubiak & Feeney, 2016). The importance of attachment is to gain security and trust from the individuals close to us and also serve as a survival advantage (Jakubiak &

Feeney, 2016). The function of secure attachment plays a crucial role in later life as it helps with social development and emotional regulation, therefore it can be argued that the role of affective touch mediates this role between attachment and social development (Jakubiak & Feeney, 2016; Narvaez et al., 2019).

In relation to the above-mentioned attachment theory, Jakubiak and Feeney (2016) assessed whether affectionate touch influences an individual's attachment security in adulthood and found that individuals who received touch experienced more security than individuals who did not receive touch. A similar study conducted by Krahe et al. (2018) investigated whether there is an association between individuals with different attachment styles (secure, avoidant and anxiety) and their ability to discriminate between affective type touch and non-affective type touch. The results revealed that individuals with insecure attachments, therefore individuals who have a preoccupation with their own emotions or avoid all types of emotional interactions (Belsky, 2002) have reduced abilities to discriminate between affective and non-affective touch, more so for those individuals who were anxiously attached (individuals who seek intimacy and are highly emotional and depend on others) (Krahe et al., 2018). In conclusion of the study, Krahe suggests a possible reason for the results hypothesising that insecurely attached individuals experience a low frequency of affective touch - or touch at all - and therefore could not discriminate between the different types of touches (Von Mohr et al., 2017). A study conducted by Spitoni et al. (2020) supported Krahe et al. (2018) and found that individuals with a disorganised attachment style did not perceive affective touch as pleasant, compared to individuals with an organised attachment style who found it to be pleasant. Spitoni et al. (2020) further hypothesises that the reason as to why disorganised attached individual's find affective touch unpleasant is because individuals with disorganised attachment styles are characterised by reduced emotional regulation that leads an individual to react towards certain situations with defensive behaviours. It can therefore be assumed that disorganised attached individuals interpret

affective type touching behaviours as threatening and for this reason they interpret touch as unpleasant.

These studies therefore further support the idea that touch, specifically affective type touch is an important developmental factor that impacts not only from early life experiences but has an impact throughout an individual's life. Affective touch can therefore be seen as functioning as an interpersonal homeostatic regulator, which helps individuals communicate with one another and also convey specific emotions with one another.

1.3 Theoretical Model of Affective Touch

There are several existing theories that address why affectionate touch is fulfilling and an intrinsic need found in all human beings (Lockhart, 2019). One popular theory is the affectionate exchange theory (AET) which posits that giving affection to others is not only physically rewarding but Floyd (2006) also theorises that physical affection is much like eating or sleeping – it is another avenue for surviving as human beings.

In comparison, Maslow (1943), proposed a hierarchy of needs and stated that once the basic physiological needs such as eating and sleeping has been met and an individual is not worried about safety, then another need would emerge that of belongingness and affection. Maslow further theorised that if the need for affection was unmet that the result would be equal to that of psychological malnutrition.

Another important theory relating to the relevancy of physical affection is Baumeister and Leary's (1995) 'need to belong' theory. According to Lockhart (2019) this theory has its roots in not only Maslow's (1943) motivational hierarchy of needs, love and belongingness, but also has roots in Bowlby's (1979) and Ainsworth's et al. (1978) need to form and maintain relationships in the attachment theory. Baumeister and Leary (1995) maintained that human beings are innately motivated to maintain interpersonal relationships, specifically relationships that include affectionate interactions as these are the ones that most satisfactorily meet one's needs to belong.

The social baseline theory (SBT), which posits that the human brain assumes that other individuals will be in close proximity and as long as the proximity maintained then there is less of a perceived threat or stress within that social environment, is another unique theory as to explain why affective touch is important (Beckes & Coan, 2011). If SBT is correct, then it would mean that physical affection from a partner may reduce stress responses as the immediate proximity of a trusted partner serves as proof that the environment is less stressful (Beckes & Coan, 2011; Lockhart, 2019).

The main theme that all these theories have in common, is the proposition that affective touch not only helps maintain close social relationships with others, but that it also helps relieves stress. Comparatively, these theories only theorise as to the reason why the need for affectionate touch is important and not *how* it becomes important us as individuals. Therefore, based on this notion as well as the components of affective touch, some researchers have also theorised that affective touch can form part of interoceptive (i.e., internal feelings of the body) information that individuals use to become physically aware of our own body (Crucianelli et al., 2018; McGlone et al., 2014; Schleip & Jäger, 2012). This will be the guiding theoretical model for this study, which will be outlined in detail below.

1.4 Theoretical Model of Interoception

It has been argued that the construction of bodily self-awareness transpires through the process of multisensory integration which combines external bodily signals called exteroception (e.g., vision, hearing) and internal bodily signals called interoception (e.g., hunger, heart beat regulation; Tsakiris, 2017; Fotopoulou & Tsakiris, 2017). Specifically, interoception can be described as a product of the central nervous system, with the function of integrating various different sources of information that are conveyed through afferent nerve systems – one of the systems being processing affective type touch (Ceunen et al., 2016; Craig, 2002).

The process of interoception allows an individual to perceive and become aware of their own body also referred to as bodily self-awareness (Ceunen et al., 2016; Craig, 2002;

Gardner, 2001). Schleip and Jäger (2012) defines interoception as the ability of the individual to perceive and detect changes within their body such as feeling pain, warmth, coolness, hunger, sexual arousal, heartbeat and also touch. These interoceptive sensations of touch that an individual feels or becomes aware of are triggered when the unmyelinated sensory nerves or C-tactile nerve afferents are stimulated which then sends a message to the insula cortex (Crucianelli et al., 2018; Tsakiris & Critchley, 2016).

The sense of bodily self-awareness also involves the feeling of body ownership – the feeling that my body belongs to me (Gallagher, 2000). The rubber hand illusion (RHI) is one experimental technique that allows researchers to manipulate the sense or experience of body ownership (Botvinick & Cohen, 1998). The RHI also demonstrates the process of multisensory integration. Based on Botvinick and Cohen's (1998) study, the RHI technique works where an individual's hand is stroked with a low velocity where thereafter a visual rubber hand is also stroked at the same velocity after which the individual experiences the touch applied to the rubber hand as their own. Studies conducted by Crucianelli et al., (2013) as well as van Stralen et al., (2014), conducted similar studies to Botvinick and Cohen (1998), however conducted further manipulations on the velocity of touch and then linking them to pleasant type touch. Specifically, the researchers provided different stroke velocities to the rubber hand with the aim of investigating which velocity would be more quickly interpreted by the individual. The results revealed that slow velocity stroking or affective type touch was more strongly involved in the modulation of body ownership than the faster stroking velocity type touch (van Stralen et al., 2014). Overall, Crucianelli et al. (2013) and van Stralen et al. (2014) concluded that affective type touch is an essential part that helps an individual gain a sense of body ownership and this occurs through when interoceptive signals are sent to an individual's brain in order to make the individual aware of their own body.

Jenkinson et al. (2020) took a different approach and investigated whether the affective type touch will still increase an individual's sense of body ownership when the individual has damage to their right hemisphere – which according to Jenkinson and colleagues can cause

impairment in an individual's ability to recognise some of their body parts as their own. Their study revealed that patients who had a right hemisphere stroke reacted positively towards affective type touch, therefore increasing their sense of body ownership (Jenkinson et al., 2020). These studies therefore further highlighting the importance of affective touch as well as its multifaceted functions that it can play in an individual's life.

1.5 Cultural Experiences of Touch

The perception, expectation, attitudes and acceptance of touch is dependent of many different social and cultural factors (Dibiase & Gunnoe, 2004; Löken & Olausson, 2010). In many of the research studies conducted on cultural and social differences of experiences of touch, the main focus was on how different cultural societies or countries differ from one another. For example, in some cultures, such as in the Middle East, Latin America and Southern Europe are considered high contact cultures as they greet others more with hugs and kisses. While in countries such as the Northern Europe, United States and Asia are considered to more non-contact cultures and prefer to greet others through waving, nodding of the head of even bowing rather than hugs and kisses (Dibiase & Gunnoe, 2004; Gallace & Spence, 2010). However, when looking into the definition of culture it does not have one simple definition and is ultimately linked to or defined according to multiple different concepts, such as gender, race, religion, relationships, languages and age groups just to name but a few (Eliot, 2010).

The function of touch can have many different roles as parts of research suggested that affectionate touch also plays an important role in the formation as well as the formation of adult relationships (Lockhart, 2019). Lockhart (2019) conducted a study to explore the relationship between affectionate touch and well-being in older adults and further examined the role of gender, age differences, stress and effects or perceived partner supports and biological factors on psychological and physical well-being among older individuals. Lockhart (2019) found that there was relatively high levels of affectionate touch between older married

individuals, however no significant difference was found between gender or age group with regards to affectionate touch.

In addition, a study conducted by Cartensen et al. (1995) found that individuals in long term marriages were more affectionate towards one another. According to Jakubiak and Feeney (2017) affectionate touch promotes 'felt security' in adulthood and this therefore projects feelings of safety and calm, a perception of being cared for and the development of trust. Moreover, it was found by Gallace and Spence (2010) that belonging to a certain gender or falling in a certain age group can also have an effect on how touch is interpreted. For example: during preschool years and throughout high school it was found that individuals accept and touch more when from the same-sex gender, with females being more comfortable with the touch than with males. Interestingly, this relationship changes as the individual matures, with cross gender touching increasing. Furthermore, it was found that males would be the gender that would more commonly initiate the touching of a female (Gallace & Spence, 2010).

Supporting this notion is a study conducted by Bendas et al., (2017), Croy et al. (2019) and Russo et al. (2020) who investigated sex differences in the perception and interpretation of affective touch. It was found that there was a significant difference in the perception and interpretation of affective touch between males and females, with females interpreting the sense of affective touch as more pleasant as men. Uniquely, the study conducted by Croy et al. (2019) focused their study on young boys and girls as compared to adults and based on this age difference Croy and colleagues' (2019) challenges Russo and colleagues' (2020) conclusions about how the above mentioned factors that could affect the difference in gendered perceptions of affective touch.

Croy and colleagues (2019) alternatively suggest that because these were young children, social and cultural factors could not bias their behaviour. Willis et al. (1976) conducted a study on interpersonal touching behaviours among high school students and investigated whether there were any differences in toughing behaviours according to age, race

and sex. Willis and colleagues found that during primary school ages both Black and White children engaged in touch behaviours with one another and as they grew older the touch was less frequent, however they found that black children remained or engaged in more frequent touching behaviours as compared to the white children. Although this study was conducted in 1976 and is considered a very old study, it can still be seen as highly relevant – further also showing that not much research has been conducted in this area with regards to race and the sense of touch.

Another possible area in which the sense of touch can play a vital role in, is religion or religious tradition (de White, 2011). According to Brown (2009) one of the reasons that the sense of touch can be so powerful in religious traditions is because the sense of touch works on an affective level. According to Christian and Buddhist philosophies the sense of touch can contribute to motivating ethical behaviour, such as empathy and compassion (Brown, 2009). Certain religions restrict certain affective type behaviours such as promiscuity, sexual inter-course etc. which therefore indicates that religion to an extent predicts the scope of affectionate type behaviours between individuals (Sorokowska et al., 2021).

On that account, individuals in more religious countries or whom have strong religious believes are less likely to engage in touching type behaviours as compared to individuals whom are not seen as so religious (Sorokowska et al., 2021). Religion can therefore be seen as playing a crucial role in shaping perceptions and attitudes towards affective touch. In summary, even though many religions use the sense of touch as a communicator, many different religious traditions use the sense of touch differently and some religions also have very different attitudes towards the sense of touch (de White, 2011).

Overall, it can be seen that affective touch plays a significant role in various different social and cultural dimensions, with some of the main differences in perceptions of touch coming forth between different genders and individuals with different relationships statuses. The differences in perceptions of touch between race and different religions are far and vast in differences, with each race or religion adhering to different beliefs and social norms.

Noticeably, many of the studies conducted on the cultural differences in touching behaviours was conducted on countries other than South Africa, which therefore indicates that not much is known about the cultural differences in touching behaviours within the South African context. Based on these many different aspects and functions of touch as well as the limited research on affective touch done in South Africa, it is therefore important to investigate these different perceptions and interpretations that different social and cultural contexts could have on touching behaviour.

1.6 Affective Touch Assessments

Given the fundamental role of touch in the development of individuals as well as the social interactions and processes an individual engages in it is therefore essential to develop a screening tool that allows researchers to assess the role affective touch has on an individual's life (Gordon et al., 2013). Throughout the years multiple different psychometric tools and assessments were developed to measure and evaluate or research affective type touch. One manner in which to measure affective touch was through a quantitative assessment tool – the robotic tactile stimulation technique developed by Essick et al. (2010). This technique delivers a stroking stimuli to a participant allowing the researcher to make experimental observations about the touch. Another approach to measuring affective type touch was developed by Walker et al. (2017) who made use of five second videos that depicts different velocity strokes to different parts of the bodies, this method of assessment theory providing the researcher with the subjective views of the participants on the ratings of pleasantness of touch. Lee Masson and de Beeck (2018), took a similar methodological approach to Walker et al. (2017) and developed a Socio-Affective Touch Expression Database which allows the researcher to look into the social and emotional aspects that surround the sense of touch. Wilhelm et al. (2001) on the other hand took a more psychometric approach to measuring affective type touch and developed the Social Touch Questionnaire. This questionnaire includes 20 questions and participants are asked to characterise how true each

statement is on a scale of 0-4, therefore providing the researchers with information in terms of how the participant is affected by the touch and their attitude towards the touch.

Although many of these assessments measure different aspects and views of touch there are limited measures that focus on measuring an individual's attitude towards touch, specifically affective touch. Recently, a questionnaire called the Touch Experiences and Attitudes Questionnaire (TEAQ), was developed by Trotter, McGlone, Reniers and Deakin in 2018. The aim of this questionnaire is assessing an individual's attitudes and life experiences towards touching behaviours, this therefore making it the first questionnaire that looks at experiences of touch over a lifespan. This questionnaire was developed and validated in the UK, with the original questionnaire consisting of 117 questions and then after validation or structure analysis reduced to a total of 57 items (Trotter et al. 2018b). This questionnaire is divided into six different subscales; Friends and Family Touch (FFT); Current Intimate Touch (CIT); Childhood Touch (ChT); Attitude to Self-care (ASC); Attitude to Intimate Touch (AIT) and Attitude to Unfamiliar Touch (AUT). Trotter et al's. (2018b) validation study showed good internal consistency, good construct validity in terms of discriminant validity, known-group validity and convergent validity as well as good criterion-related validity in terms of predictive and concurrent validity.

1.7 Social and Cultural Applicability of the UK-TEAQ

Based on some of the cultural differences found in the literature regarding attitudes and experiences or interpretations of touching behaviours it is important to investigate the social and cultural applicability of the UK-TEAQ. A study conducted by Trotter et al. (2018a) set out to validate this UK-TEAQ in Russia through a manner of conducting four different studies. They made use of the original 117 items and then first translated the items into Russian and then assessed which items were considered the most appropriate for the Russian population. After gathering the most appropriate items they conducted an exploratory analysis in order to gain only items that would provide good content and construct validity. Trotter et al. (2018a) received a total of 37 items that were considered to provide the researchers with good content

and construct validity as compared to the UK-TEAQ which had 57 items. This therefore, illustrates that different countries with different social and cultural contexts view different items as appropriate compared to others. A third study was conducted to assess the internal consistency and validity of this 37 items version of the Russian TEAQ. The final study was to cross validate the Russian TEAQ version with other demographic type information such as personality and emotional intelligence (Trotter et al., 2018a). From this validation study, it is clear that social and cultural contexts influences perceptions, attitudes and experiences of touch and therefore it is important to develop socially and culturally valid measures as to ensure that researchers capture the essence of that cultures experience.

1.8 Rationale and Study Aims

As argued above, a large body of literature has shown how touch plays a significant role in the many different aspects of an individual's life, culturally, socially and emotionally - specifically the significance of touch can be seen in the way individuals communicate with one another, create social bonds and convey different emotions (Cascio et al., 2019). Lockhart (2019) further highlights that although touch is essential at the beginning of human life, it becomes increasingly important as an individual grow older in life. However, past literature has shown that the perception, expectation, attitudes and acceptance of touch is dependent of many different social and cultural factors (Dibiase & Gunnoe, 2004; Löken & Olausson, 2010). This therefore leads to a difference in how different social and cultural groups view affective type touch, therefore also leading to a possible difference in how one would structure the psychometric tool used to assess touch (Dibiase & Gunnoe, 2004; Löken & Olausson, 2010). Consequently, it is important to create a tool, specific to the South African context as South Africa has great and different social and cultural diversity. Similarly, it is necessary to also explore the experiences and perceptions of touch in other cultural and social contexts, like South Africa, to further understand the role of environmental factors on touch experiences over the life course. Therefore, the aim of this study was to not only investigate the validity and reliability of the 57-item affective touch measure (UK-TEAQ) within the South African

context, but also to investigated whether there were any differences in the perception and interpretation of affective touch between different socio-demographic factors, specifically gender, racial, religious, relationship and age groups.

Chapter Two: Method Section

This chapter will focus on the type of research designed that was employed in this study. It will then describe the sample and the sample strategy used to recruit participants. Thereafter, the instruments used in this study will be explained and their psychometric properties will be specified. Following that the procedure for this study will be provided as well as a discussion of the ethical considerations. Lastly an overview of the type of data analysis methods used to obtain the results (discussed in the next chapter) will be described.

2.1 Research Questions and Study Design

The main research question that guided this study were as follows: Are there differences in the attitudes, interpretation and perceptions of affective type touch in other social and cultural contexts as shown by different socio-demographic factors, specifically, gender, race, religion, relationship status and age? Based upon past research, the general hypothesis guiding this study was that there would be specific differences in the attitudes and perceptions towards affective type touch between different gender, racial, religious and age groups as well as between individuals with different relationship statuses, based upon what past research has found.

As the aims of this study was to firstly validate the 57-item UK-TEAQ questionnaire and then to investigate differences in social and cultural perceptions of touch within the South African context based on religion, race, age groups, relationship status and gender, this study followed a quantitative methodology. Specifically, this research study can be described as a quasi - experimental, cross-sectional and correlational study. This study can be seen as quasi - experimental as no control groups were assigned to the validation part of this study; there was also no manipulation within the groups and there was also no random assignment, however inferential statistics were used to look at differences between groups based on social-demographic factors and therefore the second component of this study can be seen as quasi-experimental. This study was also defined as cross-sectional as the study did not take place over a long period of time and the data was collected at one point of time during a specific

timeframe. Lastly, this study can be described as a correlation study as the study attempted to explore and describe the relationships between the different socio-demographic or group variables and the subscales of the affective touch questionnaire (Thompson & Panacek, 2007).

The main objective of this research design is to describe the data gathered and determine the strengths of the relationships between the variables (Thompson & Panacek, 2007). This research design cannot be used to determine or establish causality between the different variables and can also not be used to inform the reasons as to why these variables are related to one another. Importantly, the cross-sectional and correlational nature of the research design allowed for the investigation of the primary aim of the study on the perceptions and variations of affective touch.

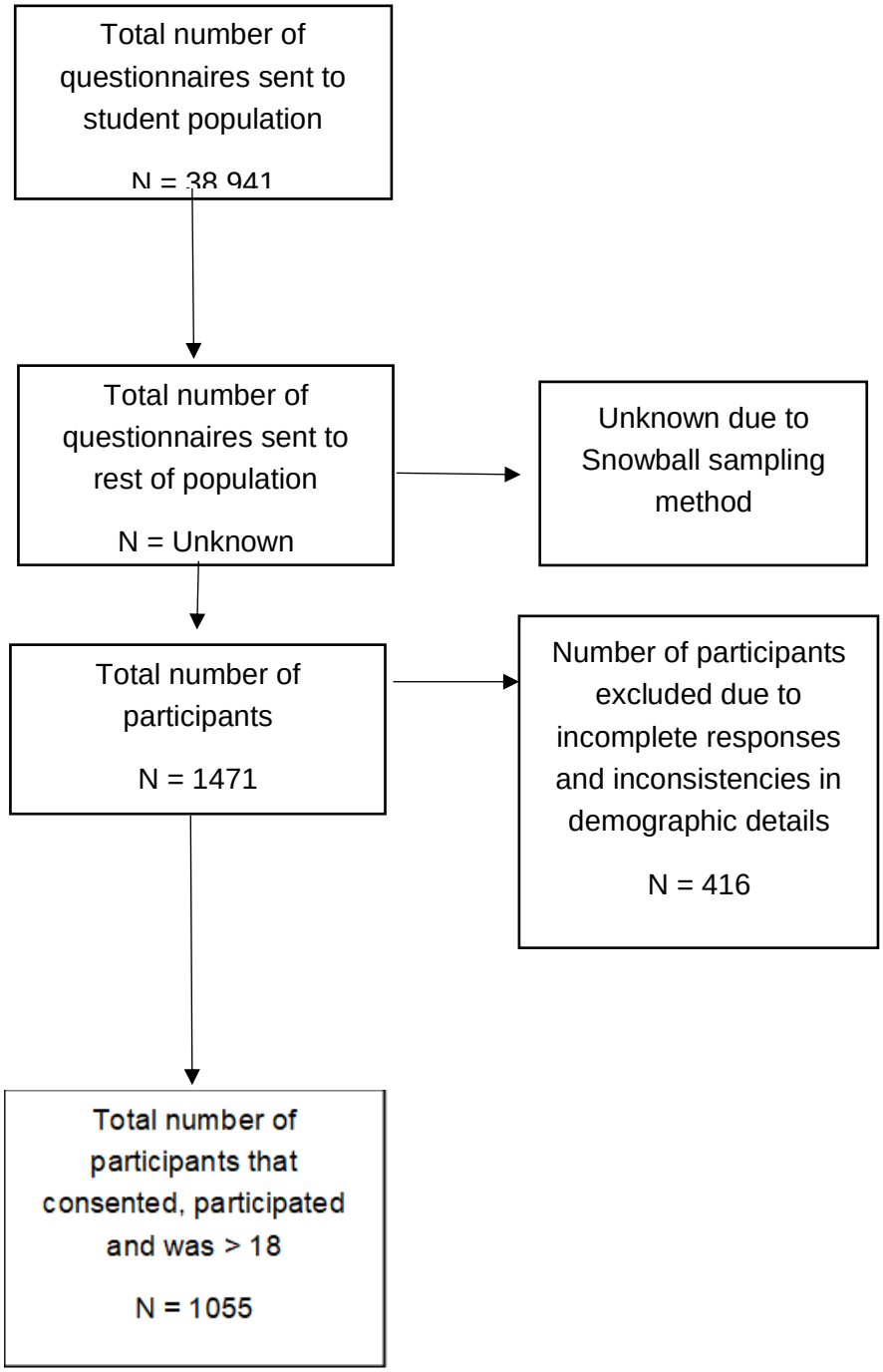
2.2 Sample and Sampling Strategy

A combination of non-probability, convenience and snowball sampling was adopted to recruit a minimum of 100 participants, from the University of Witwatersrand and individuals through social media platforms and personal contacts. This method was an affordable option and provided easier access to the population (Etikan et al., 2016). Importantly, this sampling strategy relied on voluntary participation and required individuals to be over the age of 18 years as well as residing in South Africa, there was no other inclusion or exclusion criteria for participating in this study. The main focus on recruitment of participants for the research was based on the student population, specifically the University of the Witwatersrand students. The reasoning for this was that these individuals were easy to access (convenient), they were also over the age of 18 and would provide a great diversity of perspectives on touch within the South African context.

Using the above mentioned sampling strategies, a total of 1471 questionnaires were received of which 416 had to be discarded due to incomplete responses, and inconsistencies in demographic details. In total, the final sample consisted of 1055 participants. A description of the sampling process can be seen in Figure 1.

Figure 1

Sampling Process



Recruitment of participants were mainly done through multiple different online platforms, where and email invitation or equivalent was sent out to the participants, detailing what the research project is about as well as how to participate (see Appendix D). When

individuals decided that they would like to participate, they were asked to click on a link which would provide the participants with a document regarding detailed information about the study as well as a document informing them about consent and confidentiality (see Appendix C). After participants consented, through clicking on a link that stated whether or not they agreed to the terms of the study, they were redirected to a demographic questionnaire. The demographic questionnaire gathered information about their age, racial demographics, religious beliefs, relationship statuses, genders, employment status and such, as well as the UK-TEAQ questionnaire, which gathered their responses towards the individual's perceptions and attitudes towards affective type touch (see Appendix A & B).

2.3 Instruments / Measures

This research study utilised an electronic or computer based platform, called Survey Monkey, to collect data through two online self-report questionnaires, which included a self-report demographic questionnaire and the Touch Experience and Attitudes Questionnaire (UK-TEAQ) (see Appendix A & B).

2.3.1 Self-report Demographic Questionnaire

Firstly, participants were asked to complete a self-report demographic questionnaire (refer to Appendix A), which gathered information from the participants in terms of their age, race, religion, gender, language, education level, occupation, relationship status, marital status as well as employment status and residence status. This data was used to describe the sample as well as for correlational analysis with the UK-TEAQ.

2.3.2 UK – Touch Experience and Attitudes Questionnaire

Participants were then asked to complete the UK-TEAQ (refer to Appendix B). This is a 57-item self-report scale developed by Trotter et al (2018b) which measures an individual's perceptions towards affective touch and was used to explore the social and cultural appropriateness of the questionnaire. This questionnaire can be divided into six different subscales each subscale with the aim of tapping into the different aspects or situations in which affective touch can happen. These different subscales are or can be described as: (1)

Childhood touch; (2) Attitude to self-care; (3) Attitude to intimate touch; (4) Attitude to unfamiliar touch; (5) Family and friends touch and (6) Current Intimate Touch.

The first structure which Trotter et al. (2018b) termed the Friends and Family Touch (FFT), relates to the interpersonal physical touch experiences and attitudes with friends and family. Then there is the Current Intimate Touch (CIT) structure which relates to touch that is experienced between individuals who are romantically or emotionally close with one another (Trotter et al., 2018b). The third structure is the Childhood Touch (ChT) which looks into the experiences of touch during childhood. The fourth structure relates to an individual's attitudes and behaviours towards their own self-care (ASC), while the fifth structure relates to an individual's attitudes towards intimate type touch (AIT), in other words how much do individuals enjoy the touch experience that occurs between close or romantic partners (Trotter et al., 2018b). The last structure is measuring an individual's attitude towards unfamiliar touch (AUT), where an individual has to rate their attitude and experience based on being touch by another individual to whom they are not closely related or familiar with (Trotter et al., 2018b).

The questionnaire was measured on a five-point Likert type scale with 1 being strongly disagree and 5 being strongly agree. The questionnaire scores were calculated by first reverse score items 1, 3. 9, 23, 28, 37, 39 and 53, where thereafter the means score were calculated for each subscale. Trotter et al. (2018b) reports satisfactory convergent and predictive validity of the UK-TEAQ, with good reliability across all subscales, the lowest Cronbach alpha score was 0.77 for the subscale Childhood Touch.

2.4 Ethical Considerations

In order to conduct this study and gather data, consent was obtained from the Human Research Ethics Committee (non-medical) from the University of the Witwatersrand, in order to assure and ensure that the ethical principles and standards were upheld (Protocol Number: MASPR/20/10 – see Appendix F). Permission was then also sought after by the University of the Witwatersrand, specifically the University Registrar, in order to gain access to the staff and

the participants (see Appendix E). Ethical training was received through the master's seminars and through online ethics training courses (see Appendix G).

Once ethical clearance was obtained, the participant information sheet and the informed consent (see Appendix C) as well as the questionnaires were created on a database named Survey Monkey (see Appendix A & B). The participant information sheet provided participants with an explanation of the purpose of the study, the voluntary nature of the participation in this study as well as the confidentiality and anonymity of the data that was obtained. The information sheet also provided the contact details in the event that the participants had any questions or queries and further stated that there were no foreseeable direct risk or benefits for participating in the study. The main purpose of the information sheet was to obtain informed consent of the participants and also ensure the welfare and protection of the participants partaking in the study.

Through the online questionnaire platform SurveyMonkey participants were asked to first read through and consent to the information sheet where thereafter only the participants who consented to be part of the study was connected or relayed or sent to the questionnaire that they must answer. Participants had the right to withdraw, with no adverse consequences from the study up to the point of submission as they could use their own discretion as to whether they would want to submit a completed survey or not.

In order to ensure confidentiality and anonymity, participants were not asked to fill in their names anywhere on the online questionnaire and after submission of the online questionnaire no IP addresses were recorded. No identifying information was requested therefore the data remained anonymous. Data was stored in a secure, password protected spreadsheet and was only accessible to the researcher and the research supervisor.

2.5 Procedure

The questionnaire was completed online by all participants using electronic devices most convenient to participants (e.g., smart-phone, iPad, computer or laptop). This online

version of the questionnaires can be considered a sensitive subject to some and therefore for individuals to answer the questionnaire in their own time and their own space and privacy was more convenient and a way to get more honest and real answers from the participants.

The order of the blocks remained the same, with the demographic questionnaire being completed first, followed by the UK-TEAQ. The items of the UK-TEAQ was presented in the same published item order of the UK-TEAQ (Trotter et al. 2018b), using the same standardised order – for all participants as to limit order effects and to allow for meaningful comparative analysis of missing items

The majority of the participants were recruited through email communication through the University Registrar, through Wits University staff and student emails – in total 38941 questionnaires were sent out to the students and staff of the University (convenience sampling). Moreover, other recruitment strategies was used to try and gain participation from the more general public, including, posting a mass link of the questionnaire on different social media platforms, such as Class WhatsApp groups, Facebook groups, personal email communication and personal recommendations. Participants were also asked to forward the online questionnaire link to any other contact or individual that they might know of who would be interested in taking part in the study. This form of sampling can therefore also be seen as snowball sampling. Participants were invited to follow a link to the online questionnaire following an email or personal invitation (see Appendix D), which would be completed voluntary and anonymously in their own time. A gate keeping question was asked at the very beginning to determine if the participants are 18 years or older. If the participants indicated that they were indeed 18 years or older, the questionnaire continued to the participant information sheet with informed consent (see Appendix C). After participants completed the questionnaire, they will be thanked for their participation.

2.6 Data Analysis

Once an adequate number of questionnaires were completed, the questionnaire was closed and data analysis commenced. Following the completion of the data collection, the

raw data was captured into a Microsoft Excel spreadsheet via Survey Monkey, where the data was transferred to SPSS, where the data was cleaned and analysed. Due to the quantitative nature of the data, constructs and the questionnaire it was necessary to employ statistical procedures in the analysis of the collected data using IBM SPSS Statistics version 26 (IBM Corp, 2019).

Before statistical analyses were conducted, descriptive statistics were used to summarise each variable by means of measures of central tendency, percentages and frequencies. Subsequently, inferential statistics were used to assess the validity of the UK-TEAQ questionnaire within the South African Context as well as investigate whether there were any relationships or differences between socio-demographic factors and the different UK-TEAQ subscales on affective type touch.

In order to meet the first aim of this study, a Principal Component Analysis (PCA) was conducted in order to assess the factor structure of the questionnaire and to see whether the factor structure obtained from the analysis matches the factor structure of the original UK-TEAQ as proposed by Trotter et al. (2018b). Once the factor structure was revealed, the validity and reliability, specifically in terms of the internal consistency of the questionnaire was assessed through running a Cronbach Alpha analysis and assessing the internal consistency reliabilities of all the UK-TEAQ subscales (Allen et al., 2014). Internal consistency is estimated when a researcher was test whether the measuring instrument is actually measuring what it is supposed to measure. Cronbach's Alpha is the most common estimate and is a number that ranges from 0 to 1; typically, values of .75 and greater are considered reliable (Brown, 2002).

Once the UK-TEAQ questionnaire is found to be reliable and valid, descriptive statistics such as the mean and standard deviation was calculated in order to describe the scores obtained on each scale respectively. It was also appropriate to assess the normality of the data to determine whether or not it met parametric assumptions.

In order to determine whether the variables were normally distributed skewness and kurtosis coefficients were calculated for each of the main variables and histograms were assessed. Data was considered to be sufficiently normally distributed when skewness coefficients fell between -1 and 1 and when kurtosis values did not exceed 3 or -3 (Field, 2009). Based on the histograms the skewness coefficients and kurtosis values that were obtained it was established that the data was sufficiently normally distributed and therefore that parametric analysis could be run. Furthermore, the sample size was fairly large (N = 1050) and based on the Central Limit Theorem a sample size greater than 30 participants is sufficient for data to be considered to follow a normal distribution (Field, 2009). In order to meet the second aim of this study, which was to determine the relationships or differences between different demographic variables on the perceptions of touch through the UK-TEAQ questionnaire, one-way ANOVAs were run for each demographic variable, where thereafter effect sizes were used to determine how big a difference was found between the various demographic variables. Importantly, ~~a~~ Bonferroni adjustments (Armstrong, 2014) were applied to each of the differing analyses in order to control for the multiple comparisons of the different groups. Based on past literature only specific demographic variables were used to look at the differences in touch perceptions based on the UK-TEAQ questionnaire. These variables include: gender, age, race, religion and relationship status.

Lastly, a multiple regression analysis was conducted in order to determine whether the selected continuous demographic variables best predicted the scores on the UK-TEAQ subscales. This would allow for an overview on how different demographic variables, therefore different individuals perceive the sense of touch.

Chapter 3: Result Section

The following chapter will present an analysis of the statistical results obtained from the data collected for the present study on affective touch.

3.1 Socio-demographic Variables

A summary of the socio-demographic variables can be found in Table 1 below. Although the demographic questionnaire included questions regarding many different aspects, not all the demographics were included within the result section, due to insufficient data (missing data). The socio-demographic variables that were identified of interest were: gender, racial groups, religious groups, relationship status and age groups.

Table 1

Socio-demographic Characteristics of the Study Sample

Sample Socio-demographics	N (%) Total N = 1055
Gender, n (%)[a]	
Female	731 (69.3)
Male	311 (29.5)
Intersex	5 (.5)
Other	6 (.6)
Race Group, n (%)[a]	
Black	548 (51.9)
White	318 (30.1)
Coloured	53 (5.0)
Indian	97 (9.2)
Other	31 (2.9)
Age Groups, n (%)[a]	
18-28	756 (71.7)
29-39	181 (17.2)
40-50	77 (7.3)
51-61	27 (2.6)
62-72	3 (.3)

Table 1 (Continued)

Sample Socio-demographics	N (%) Total N = 1055
Religion, n (%)[a]	
No Religion	158 (15.0)
Christianity	677 (64.2)
Hinduism	31 (2.9)
Islam	64 (6.1)
Judaism	40 (3.8)
Baha'i	1 (.1)
Buddhist	8 (.8)
Zoroastrian	1 (.1)
Taoism/ Confucius	3 (.3)
Traditional African Religion	39 (3.7)
Other	29 (2.7)
Marital Status, n (%)[a]	
Yes	156 (14.8)
No	894 (84.7)
Relationship Status, n (%)[a]	
Yes	475 (45.0)
No	550 (52.1)

[a] Missing data within socio-demographic variables.

Demographic statistics revealed that of the final 1055 participants, there were slightly more females (N = 731; 69.3%) than males (N = 311; 29.5%) within the study with 5 participants (.5%) indicating that they ascribe to an intersex gender and 6 participants (.6%) ascribing to other genders. The average age of the participants was 26.15 (SD = 9.12), with the youngest participant being 18 years old and the oldest participant was 69 years old. For the purpose of this analysis the participants were also grouped into different age groups. The division of the different age groups were based on a 10 year time frame. Based on the different age groups, it was found that the majority of the participants were between the ages 18-28 years old (n = 756; 71.7%). One hundred and eighty-one (17.2%) participants were between

the ages 29-39 years; 77 (7.3%) participants were between the ages 40-50 years old; 27 (2.6%) participants were between the ages 51-61 years old and 3 (.3%) participants were between the ages 62-72 years old.

In terms of relationship and marital status most of the participants indicated that they were single, with 894 (84.7%) indicating that they were not married; 156 (14.8%) were married. Furthermore, 475 (45.0%) participants indicated they were in a relationship and 550 (52.1%) participants were not in a relationship.

In terms of race, 318 of the participants were White (30.1%); 548 participants were Black (51.9); 53 were Coloured (5.0%); 97 of participants were Indian (9.2%) and 31 ascribed to another race (2.9%). Participants were also asked to indicate their religion and it was found that the majority of the participants ascribed to the religion Christianity (N = 677; 64.2%). Interestingly, 158 (15.0%) participants did not identify with any religion; 31 (2.9%) participants ascribed to Hinduism; 40 (3.8%) ascribed to Judaism; 8 (.8%) ascribed to Buddhism; 3 (.3%) ascribed to Taoism or Confucius; 1 (.1%) participant ascribed to Baha'i with another participant ascribing to Zoroastrian; 39 (3.7%) ascribed to the Traditional African Religion and 29 (2.7%) ascribed to other religions. The above mentioned demographic variables were the main variables used to assess whether there were any differences between the perception and attitudes of touch.

3.2 Descriptive Statistics and Normality of UK-TEAQ Subscales

In order to ascertain the characteristics of the sample in terms of their perceptions on affective touch descriptive statistics were calculated (mean, standard deviation and range). These are presented in Table 5 below.

Table 5

Descriptive Statistics and Normality for Subscales of the UK-TEAQ

Variable	N	Mean (Standard Deviation)	Min.	Max.	Skewness	Kurtosis
FFT	1005	35.80 (10.09)	11	55	- .271	- .510
CIT	986	40.59 (12.89)	14	70	.043	- .886
ChT	1025	30.50 (8.86)	9	45	- .264	- .823
ASC	1017	17.52 (4.74)	5	25	- .337	- .635
AIT	990	50.88 (10.93)	14	65	- .815	.117
AUT	1015	13.01 (4.25)	5	25	.520	- .333

Note. UK-TEAQ: FFT = Friends and Family Touch; CIT = Current Intimate Touch; ChT = Childhood Touch; ASC = Attitudes Towards Self Care; AIT = Attitudes towards Intimate Touch; AUT = Attitudes towards Unfamiliar Touch. Maximum score for each subscale: FFT = 55; CIT = 70; ChT = 45; AIT = 65; AUT = 25; ASC = 25.

Based on the results in Table 5 above and the histograms in Appendix H, sample scores within the subscales FFT, CIT as well as ChT appeared to be approximately average with FFT (M = 35.80, SD = 10.090), CIT (M = 40.59, SD = 12.89) and ChT (M = 30.50, SD = 8.858). Furthermore, the AIT subscale appeared to be slightly high (M = 50.88,SD =10.934), which seemed to fit with the shape of the histogram presented in Figure 6 (see Appendix H). Conversely, the subscales AUT and ASC, appeared to be lower compared to the average of the other subscales within the TEAQ questionnaire, with AUT (M = 13.01,SD =4.249) and ASC (M =17.52,SD =4.735).

In order to determine the appropriate types of analyses (i.e., parametric or non-parametric) for addressing the research questions pertaining to this study, it was necessary to

first determine whether the data was normally distributed or not. As can be seen in Table 5 above, the skewness coefficients for all of the subscales was between -1 and 1 indicating that the data was relatively normally distributed (Allen et al., 2014). Similarly, the kurtosis values was also used to determine whether the data was normally distributed. According to Allen et al. (2014), if the kurtosis values are relatively close to zero, the data can be considered normally distributed. Based upon the kurtosis values summarised within Table 5, above, all of the subscales' kurtosis values scored relatively close to zero and therefore the data can be considered to be normally distributed. This was also supported by the histograms, which suggested that all of the variables followed a sufficiently normal distribution to be suitable for parametric analysis.

The sample size of the present study was fairly large (N = 1055) and therefore met the above requirement. The aforementioned information indicates that the data within this study sufficiently met the assumptions for normality and as such, parametric analytic techniques were utilised. Together with the mean, standard deviation and the range of the data, skewness coefficients and kurtosis values as well as the histogram that reflects the data's shape (Appendix H) was used to assess the assumptions of normality within the data.

3.3 Principal Component Analysis

In order to assess the first research question, a Principal Component Analysis (PCA) with oblique rotation was conducted, in order to assess and identify the factor structure of the UK-TEAQ questionnaire within the South African context. More specifically, the PCA was conducted in order to assess how closely the factor structure in the current sample aligned with the UK-TEAQ questionnaire established by Trotter et al. (2018b), which proposed that the questionnaire is comprised of six distinct factors, namely: Friends and Family Touch (FFT), Current Intimate Touch (CIT), Childhood Touch (ChT), Attitudes towards Self-care (ASC), Attitudes towards Intimate Type Touch (AIT), and Attitudes towards Unfamiliar Touch (AUT).

A PCA rather than an Exploratory Factor Analysis was used to analyse the structure of the UK-TEAQ questionnaire as the PCA analyses allowed for more information to be

retained and also focuses more on the variance between the different items rather than on the latent variables and information in which exploratory factor analysis does (Alavi et al., 2020; Fabrigar et al., 1999). Furthermore, an oblique rotation was conducted on the data, because conceptually the construct of touch can be seen as relating to or correlating to all types of touch that an individual might experience. Moreover, when looking at the Component Correlation Matrix presented in a Table image in Appendix I, it can also be seen that most of the variables have a significant correlation with one another, therefore further highlighting the use of the oblique rotation (Field, 2009).

Before conducting the PCA, a testing step is necessary in order to determine whether the dataset is suitable for conducting a PCA. In this respect the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) and Bartlett's test of sphericity was conducted. KMO measure of sampling adequacy was used to assess the appropriateness of using PCA analysis on the dataset, through comparing values of correlations between variables, while the Bartlett's test of sphericity was used to assess the strength of the relationship between variables (Hadi, Abdullah, & Sentosa, 2016). According to Hadi et al. (2016), if the Bartlett's test of sphericity reveals a p-value of below 0.05, the null hypothesis can be rejected and a PCA can effectively be performed on the dataset.

The KMO index ranges from 0 to 1 and the sample is considered to be suitable for PCA if the index is equal or higher than .50. The KMO index results for this dataset revealed a value of 0.93, which according to Constantin (2014) and Kaiser and Rice (1974) is an falls within an acceptable range in such a manner that the PCA can act efficiently (Allen et al., 2014; Field, 2009). All KMO values for individual items were also greater than 0.5, which is the acceptable limit according to Kaiser and Rice (1974). Furthermore, the Bartlett's test of sphericity revealed a significant value below .05 ($p < .05$), which according to Allen et al. (2014), Constantin (2014) and Hadi et al. (2016), indicates that the data is suitable to conduct a PCA.

When conducting the PCA an initial analysis was run to obtain eigenvalues for each factor in the data. These eigenvalues were then assessed based on the Kaiser criterion, which states the number of components retained within a PCA is based on the assumption that a retained factor should explain more variance than a single original variable (Allen et al., 2014; Field, 2009). There, the Kaiser criterion states that factors with an eigenvalue of more than one should be retained. When using the Kaiser criterion as a reference within the PCA analysis 11 factors had eigenvalues over Kaiser's criterion of 1 and in combination explained 25.205% of the variance. However, as is evident in Table 2 below, the first six factors had substantially higher eigenvalues than the rest of the factors, therefore indicating that the first 6 structures are more prominent factors in explaining the variance. This was also supported by the scree plot (please see Appendix J), which suggested six factors.

Table 2

Eigenvalues and Percentage of Variance explained for the 11-Factor Solution

	Eigenvalue	Total variance (%)	Cumulative Total variance (%)
Factor 1	14.44	25.34	25.34
Factor 2	4.75	8.34	33.68
Factor 3	3.34	5.85	39.54
Factor 4	2.59	4.55	44.09
Factor 5	2.45	4.97	48.39
Factor 6	1.78	3.12	54.51
Factor 7	1.60	2.82	54.33
Factor 8	1.37	2.41	56.74
Factor 9	1.21	2.13	58.87
Factor 10	1.09	1.92	60.79
Factor 11	1.05	1.85	62.65

In addition, as is evident in Table 2 above, factor one accounted for the largest proportion of variance explained (25.34%), followed by factor two (8.34%), factor three (5.85%), factor four (4.55%), factor five (4.97%) and then factor six (3.12%). The results

indicate that together these six factors explained or accounts for 51.5% of the total cumulative variance with the largest eigenvalue is for the first component (14.45). The latter components have very similar eigenvalues that range between 1.057 and 4.75. Taken all together, based on the large sample size, Cattel's scree plot test as well as the 6 large eigenvalues identified, a six factor structure was retained for this analysis.

Table 3

Oblique Rotation Factor Pattern for the UK-TEAQ Questionnaire

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Item 1	.36	.00	- .11	**.41**	- .19	-.10
Item 2	.03	- .01	.03	- .14	- .02	**.43**
Item 3	.02	.01	- .02	**.60**	- .12	- .02
Item 4	- .07	.04	.17	.22	**- .44**	.15
Item 5	- .04	**.75**	.06	.15	- .02	- .00
Item 6	.00	**.65**	- .01	.23	- .14	.08
Item 7	- .03	- .06	.10	.05	.01	**.71**
Item 8	**.58**	.04	- .08	.02	- .12	.10
Item 9	- .10	**.76**	.05	.16	.07	- .05
Item 10	**.62**	.06	.01	- .09	- .17	.03
Item 11	.32	.06	**.44**	- .01	- .15	.04
Item 12	**.67**	- .09	.21	.10	.21	- .00
Item 13	.06	- .00	.02	- .10	**- .75**	.04
Item 14	.08	.16	- .02	.16	**- .51**	.18
Item 15	.08	**.56**	- .01	.09	- .17	.06
Item 16	.00	- .05	.11	.26	**- .51**	.08
Item 17	**.50**	.03	.17	- .17	- .27	- .00
Item 18	.09	.29	**.34**	- .05	- .15	- .02
Item 19	**.64**	.06	.00	.10	.14	.08
Item 20	**.56**	.06	- .05	.08	- .07	.06
Item 21	.21	.13	- .01	.12	**- .53**	.06

Table 3 (Continued)

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Item 22	- .03	**.72**	.07	.17	.06	.06
Item 23	- .09	.23	**.68**	.03	- .05	- .04
Item 24	**.61**	- .02	- .01	.13	- .11	.09
Item 25	.11	- .08	**.57**	.01	.00	.12
Item 26	**.47**	- .08	.41	.12	.30	.02
Item 27	.09	- .15	**.77**	- .00	.18	.04
Item 28	.25	.05	- .00	**.37**	.00	.03
Item 29	- .00	.29	**.51**	.02	- .12	- .01
Item 30	.07	.16	- .04	.19	**- .57**	.15
Item 31	**.72**	.05	- .01	- .03	- .19	.00
Item 32	.09	**.60**	- .04	- .28	.06	.00
Item 33	.01	**.79**	.07	- .08	.04	- .06
Item 34	**.77**	.06	.06	- .02	- .00	- .02
Item 35	.12	**.68**	- .02	- .17	- .03	- .07
Item 36	- .06	.26	**.61**	.11	- .18	.02
Item 37	- .01	- .01	.06	**.70**	- .05	.00
Item 38	.08	.14	.11	.10	**- .56**	.00
Item 39	.02	- .03	- .01	**.66**	.01	- .09
Item 40	**.59**	.03	.08	- .16	- .31	- .11
Item 41	.29	- .03	**.68**	- .04	.09	- .00
Item 42	.04	**.56**	- .03	- .30	- .05	.15
Item 43	.03	.12	- .02	- .06	.05	**.72**
Item 44	**.68**	.04	.05	.03	.19	.12
Item 45	.18	- .03	**.64**	- .04	- .12	.05
Item 46	.33	- .01	**.46**	- .18	- .27	- .03
Item 47	**.70**	- .03	.10	- .00	- .09	.01
Item 48	.15	.07	- .02	.14	**- .47**	.04
Item 49	.21	- .02	**.53**	- .12	- .19	.02
Item 50	**.65**	- .00	.05	.02	- .17	.05
Item 51	.01	- .06	.13	- .06	**- .71**	-.05
Item 52	.03	- .04	.01	.04	.05	**.71**
Item 53	- .22	.20	**.59**	.22	- .01	.00
Item 54	- .08	- .05	**.56**	- .10	- .13	.10
Item 55	- .03	- .02	- .09	- .04	- .13	**.73**

Table 3 (Continued)

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Item 56	.21	.06	- .14	.23	**- .58**	.10
Item 57	- .05	- .00	.09	- .10	**- .79**	.04

Note. Bold items represent which items load highest onto which factors within the UK-TEAQ.

Table 3 above, presents the rotated factor pattern for the six different UK-TEAQ subscales used in the data collection. Conceptually, it was evident that Factor 1 represented AIT, Factor 2 represented ChT, Factor 3 represented CIT, Factor 4 represented AUT, Factor 5 represented FFT and lastly Factor 6 represented ASC. Items of the questionnaire loaded consistently onto the different factors based on a cut-off value of 0.162 or above, which according to Field (2009) is an acceptable cut-off value with regards to the large sample. Interestingly, items 4,13,14,16, 21, 30, 38, 48, 51, 56, 57 loaded negatively onto factor five, with items 5, 6, 9,15, 22, 32, 33, 35 and 42 loading positively onto factor two. Moreover, items 11,17,18, 23, 25, 27, 29, 36, 41, 45, 46, 49, 53 and 54 loading onto factor 3 and items 2, 7, 43, 52 and 55 loading onto factor six. Items 8, 10, 12, 19, 20, 24, 26, 31, 34, 40, 44, 47 and 50 loaded onto factor one and items 1, 3, 28, 37 and 39 loading onto factor four. Interestingly, item 17 cross-loaded on factor 1 and 3, but loaded slightly higher on factor one. However, conceptually it made more sense to retain Item 17 as part of Factor 3 (Current Intimate Touch). The structure obtained in the current sample therefore matched closely to the factor structure found by the Russian version and the UK-TEAQ (Trotter et al., 2018a; Trotter et al. 2018b). Therefore, the original UK-TEAQ was used to continue with the rest of the analysis.

3.4 Reliability Analysis

Following the establishment of the factor structures for the UK-TEAQ questionnaire, Cronbach Alpha Coefficients were calculated for all of the UK-TEAQ questionnaire as well as the respective subscales to establish internal consistency reliability (Allen et al., 2014).

Table 4

Internal Consistency Reliabilities for the UK-TEAQ Questionnaire and the Subscales

Subscales of the UK-TEAQ	Number of items	Cronbach's Alpha
FFT	11	.89
CIT	14	.90
ChT	9	.87
ASC	5	.72
AIT	13	.90
AUT	5	.71

Note. UK-TEAQ: FFT = Friends and Family Touch; CIT = Current Intimate Touch; ChT = Childhood Touch; ASC = Attitudes Towards Self-care; AIT = Attitudes Towards Intimate Touch; AUT = Attitudes Towards Unfamiliar Touch.

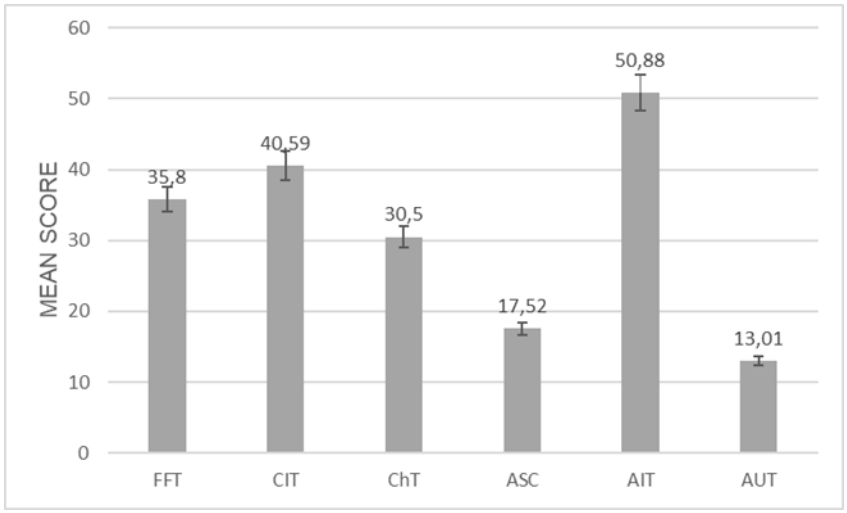
As is evident in Table 4 above, all of the subscales had excellent internal consistency (α = .87 and above), with the exception of two subscales – the Attitude to Unfamiliar Touch (AUT) and Attitude Towards Self-Care (ASC) (Allen et al., 2014). The Cronbach Alpha for these two subscales (ASC = .71 and AUT = .72) might have been slightly lower due to the fact that these two subscales only consisted of 5 items as compared to the other subscales, but it nonetheless had good internal consistency (Allen et al., 2014). This suggested that all of the subscales of the UK-TEAQ questionnaire were internally consistent.

3.5 Relationships between Scores on the UK-TEAQ Subscales

Based on Figure 8 below, it can be seen that there is significant mean differences between the different subscales of the UK-TEAQ questionnaire.

Figure 8

Differences on Mean Scores between the different Subscales of the UK-TEAQ



Note. UK-TEAQ: FFT = Friends and Family Touch; CIT = Current Intimate Touch; ChT = Childhood Touch; ASC = Attitudes towards Self-Care; AIT = Attitudes towards Intimate Touch; AUT = Attitudes towards Unfamiliar Touch.

Through looking at the different mean differences between the subscales it can be seen that there is a difference in how different individual's experience touch. For example: when looking at the mean difference between the subscales AUT, CIT and AIT it can be seen that individual's score significantly higher on the subscales AIT and CIT as compared to the subscale AUT. This would suggest that individuals enjoy or have a more positive attitude towards intimate touch as compared to unfamiliar touch. Similarly, individuals scores higher on the subscales FFT and the ChT and significantly lower on the ASC subscale.

3.6 The Effect of Gender on the UK-TEAQ Responses

An Independent samples *t* - test was run to see whether males and females score significantly differently on the different subscales of the UK-TEAQ questionnaire. The participants reporting their gender as 'other' or 'intersex' were not included in the analysis, as a single response did not enable any group comparisons and so the analysis compared responses of males and females.

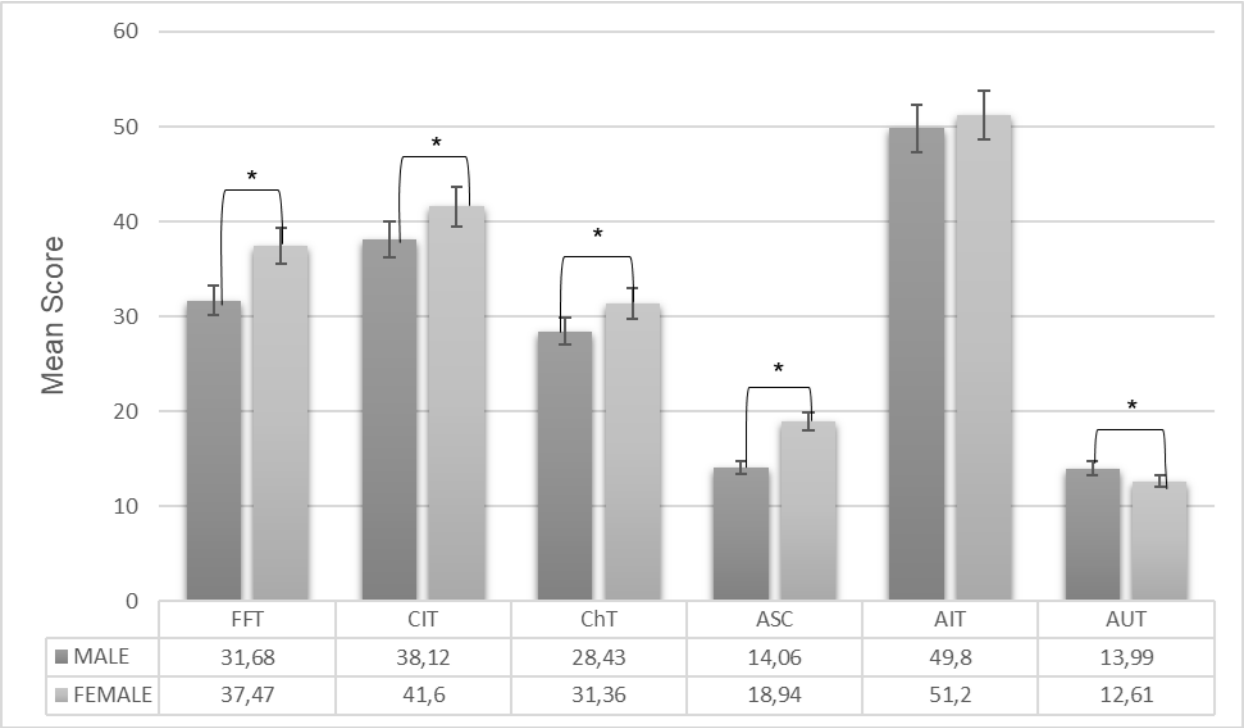
Due to the very large sample size, Cohen's *d* effect sizes were also calculated and effect sizes greater than .20 taken to be effects of interest (Cohen's *d*: .2 – small effect size; .5 = medium effect size; .8 – large effect size). The sample for the analysis of gender effects consisted of 731 females and 311 males.

As shown in Figure 9 below, independent sample *t*-tests revealed the UK-TEAQ FFT scores for females (M = 37.47, SD = 9.796) was significantly greater than males (M = 31.68, SD = 9.759), with a medium effect size (t_{990} = -8.461, p < .001, Cohen's *d* = - .592). UK-TEAQ CIT scores were significantly higher for females (M = 41.60, SD = 13.103) than males (M = 38.12, SD = 12.226), with a small effect size (t_{971} = -3.857, *p* < .001, Cohen's *d* = - .271). UK-TEAQ ASC scores were significantly higher for females (M = 18.94, SD = 4.156) than males (M = 14.06, SD = 4.275), with a large effect size (t_{1002} = -16.782, *p* < .001, Cohen's *d* = -1.164). Interestingly, the UK-TEAQ AUT scores were significantly higher for males (M = 13.99, SD = 4.206) than females (M = 12.61, SD = 4.201), with a medium effect size (t_{1000} = 4.740, *p* < .001, Cohen's *d* = .328).

The UK-TEAQ ChT scores did not meet the assumption for homogeneity of variance, therefore equal variances cannot be assumed, nevertheless the independent sample *t*-test revealed that females (M = 31.36, SD = 9.037) scored significantly higher than males (M = 28.43, SD= 8.005), with a small effect size ($t_{626.732}$ = -5.111, *p* < .001, Cohen's *d* = - .335). Finally, the UK-TEAQ AIT scores revealed a non-significant result between how males and females score upon this subscale of the questionnaire.

Figure 9

Differences between Male and Female on Scores of the UK-TEAQ Subscales



	FFT	CIT	ChT	ASC	AIT	AUT
MALE	31,68	38,12	28,43	14,06	49,8	13,99
FEMALE	37,47	41,6	31,36	18,94	51,2	12,61

Note. UK-TEAQ: FFT = Friends and Family Touch; CIT = Current Intimate Touch; ChT = Childhood Touch; ASC = Attitudes towards Self-Care; AUT = Attitudes towards Unfamiliar Touch.

∗ Significant at $p < .001$.

3.7 One-way Analysis of Variance (ANOVA) to Investigate Socio-demographic Influences in UK-TEAQ Subscales Scores

One-way ANOVAs were conducted in order to investigate whether different racial groups, religion groups as well as different age groups and gender groups or individuals identifying with a different marital status group influenced UK-TEAQ subscale scores. For each analysis, normality was assumed. Before conducting the ANOVA's, the assumption of homogeneity of variance (Levene's test) was assessed in order to determine that all the groups within the analysis have the same variance.

When the Levene's test was significant, meaning that the variance between groups were unequal, the Welch's F was reported with the Games-Howell post hoc test results. When variance between groups were equal, as determined by the Levene's test, Hochberg's GT2 post hoc tests were used.

For the ANOVA results, effect sizes (η^2) was calculated by calculating eta squared (Allen et al., 2014). Recommended cut-offs for η^2 are > .01 = small effect, > .09 = medium effect and > .25 = large effect. Thus, effect sizes < .01 were not deemed of interest, so post hoc results were not reported (Allen et al., 2014). For post hoc tests, Cohen's *d* effect sizes were calculated, with > .20 = small effect, > .50 = medium effect and > .80 = large effect size. A Bonferroni adjustment was applied to each of the differing analysis in order to control for the multiple comparisons of the groups (Armstrong, 2014).

3.7.1 One-way Analysis of Variance (ANOVA) between Relationship Statuses and UK-TEAQ Subscales

One-way ANOVAs were used to determine whether there was a different in UK-TEAQ subscales scores and individuals with different relationship statuses. The total sample size for this analysis was 1055 participants, with 156 participants indicating that they are married, 475 participants indicating that they are in a relationship and 550 participants indicating that they were not in any relationship. A Bonferroni adjustment was applied to correct for multiple comparisons; values < .016 were deemed of interest (Armstrong, 2014).

Following Bonferroni adjustment (uncorrected *p*-values are reported) (Armstrong, 2014), no significant effects of marital status was found on UK-TEAQ ChT subscale ($F_{2,1022}$ = 1.672, p = .188, η^2 = .003) or UK-TEAQ AUT subscale ($F_{2,1012}$ = .161, p = .851, η^2 = .0003). A significant effect of marital status was found for UK-TEAQ FFT subscale ($F_{2,1002}$ = 5.007, p = .007, η^2 = .009), however the effect size was not substantial.

Furthermore, significant, yet small effects of marital status was found for UK-TEAQ ASC subscale ($F_{2,1014}$ = 6.596, p = .001, η^2 = .01) and for UK-TEAQ AIT subscale ($F_{2,381.979}$ =

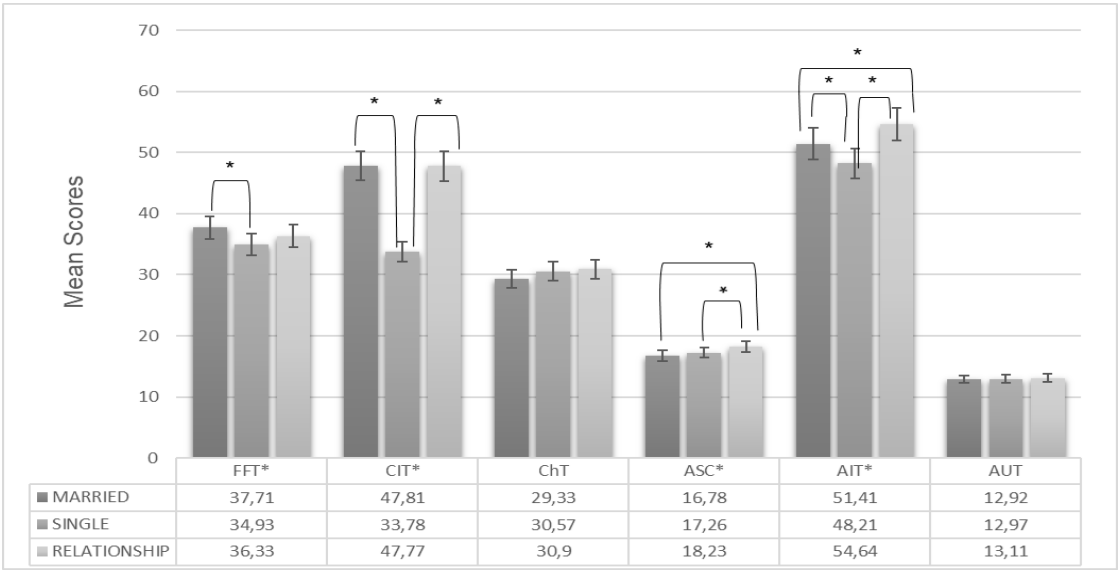
41.515, $p = .001$, $\eta^2 = .07$). Hochberg post hoc analysis as well as the Games-Howell post hoc analysis revealed that there was small significant differences between the individuals who indicated that they are married and individuals who are in a relationship or are single. Specifically, for the UK-TEAQ ASC subscale it was found that individuals who are single (M = 17.26, SD = 4.761) scored higher than the individuals who are married (M = 16.78, SD = 5.095). A significant difference was also found for individuals in a relationship and individuals who are single, however the effects size was not substantial, with Cohen's $d = .18$.

For UK-TEAQ AIT subscale, Games-Howell post hoc analysis revealed that there was a small, significant difference found between individuals who are married as compared to individuals who are single or in a relationship. Specifically, it was found that individuals who are married (M = 51.41, SD = 10.685), scored higher than individuals who are single (M = 48.21, SD = 11.366), however married individuals scored lower than those in a relationship (M = 54.64, SD = 9.115) on the UK-TEAQ AIT subscale.

Interestingly, a significant, large effect of marital status was found for UK-TEAQ CIT subscale ($F_{2,983} = 205.569$, $p = .001$, $\eta^2 = .29$). Hochberg post hoc analysis revealed that there was a large, significant difference between individuals who are married and single as well as individuals who indicated that they are in a relationship or are single. More specifically it was found that individuals who are married (M = 47.81, SD = 11.976) or in a relationship (M = 47.77, SD = 10.866) scored higher than individuals who are single (M = 33.78, SD = 10.480).

Figure 10

Differences on UK-TEAQ Subscale Scores for different Relationship Statuses



	FFT*	CIT*	ChT	ASC*	AIT*	AUT
MARRIED	37,71	47,81	29,33	16,78	51,41	12,92
SINGLE	34,93	33,78	30,57	17,26	48,21	12,97
RELATIONSHIP	36,33	47,77	30,9	18,23	54,64	13,11

Note. UK-TEAQ: FFT = Friends and Family Touch; CIT = Current Intimate Touch; ChT = Childhood Touch; ASC = Attitudes towards Self-Care; AUT = Attitudes towards Unfamiliar Touch.

* Significant at $p < .016$.

3.7.2 Analysis of Variance (ANOVA) between Racial groups and the UK-TEAQ Subscales

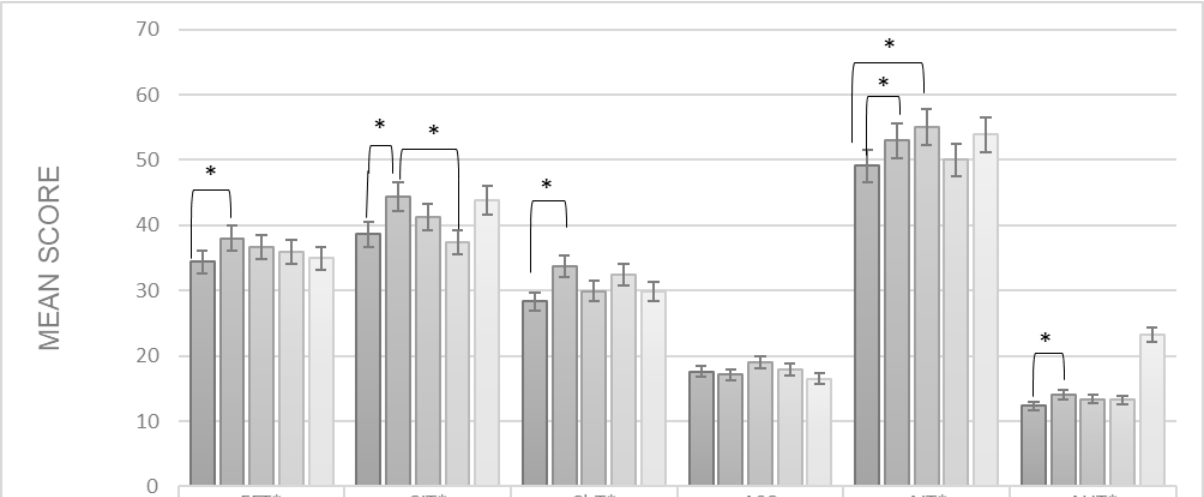
One-way ANOVAs were used to determine whether there was a different in UK-TEAQ subscales scores for different racial groups. The total sample size for this analysis was 1055 participants, with 548 participants indicating that they are Black; 318 participants White; 53 participants Coloured; 97 participants Indian and 31 participants indicating that they identify with Other racial groups. A Bonferroni adjustment was applied to control for multiple comparisons and only *p*-values < .01 were deemed significant (Armstrong, 2014).

Following Bonferroni adjustment (uncorrected *p*-values are reported) (Armstrong, 2014), significant effects were found on all the UK-TEAQ subscales between the different racial groups (all *p*'s > .001), but with varying effect sizes ranging from small to large, except for UK-TEAQ ASC subscale ($F_{4,1006} = 2.389$, $p = .049$, $\eta^2 = .009$). Significant differences in the CIT, FFT, AIT and AUT had weaker effect sizes (all $\eta^2 < .04$), with AIT showing the strongest significant difference ($\eta^2 = .08$). Hochberg post-hoc analysis as well as Games-Howell post-hoc analysis revealed that there was small to large, significant difference specifically between the White and Black population for all the different UK-TEAQ subscales, except for UK-TEAQ ASC subscale. It was found that the White racial group, scored significantly higher than the Black racial group on the respective UK-TEAQ subscales (see Figure 11 for details).

Interestingly, it was also found that there was a significant difference between the White racial group and the Indian racial group within the UK-TEAQ CIT subscale, based on the Hochberg post-hoc analysis, with the White racial group (M = 44.44, SD = 12.618) scoring significantly higher than the Indian racial group (M = 37.38, SD = 13.131), but with a small effect size (*d* = .30). Moreover, when looking at the Games-Howell post-hoc analysis for the UK-TEAQ AIT subscale, it was also revealed that there was a significant difference between the Coloured racial group and the Black racial group. Specifically, it was found that the Coloured racial group (M = 55.08, SD = 9.783), scored significantly higher than the Black racial group (M = 49.12, SD =11.443), with the effect size was found to be medium, with *d* = .70. Post-hoc analysis revealed no other significant differences between racial groups in the 5 relevant subscales (all *p's* > .01).

Figure 11

Differences on UK-TEAQ Subscale Scores for different Racial Groups



	FFT*	CIT*	ChT*	ASC	AIT*	AUT*
BLACK	34,4	38,65	28,32	17,6	49,12	12,33
WHITE	38	44,44	33,67	17,13	53	14,07
COLOURED	36,71	41,24	29,94	19	55,08	13,39
INDIAN	35,91	37,38	32,47	17,91	50,02	13,27
OTHER	34,97	43,9	29,83	16,48	53,87	23,23

Note. UK-TEAQ: FFT = Friends and Family Touch; CIT = Current Intimate Touch; ChT = Childhood Touch; ASC = Attitudes towards Self-Care; AUT = Attitudes towards Unfamiliar Touch.

* Significant at $p < .01$.

3.7.3 Analysis of Variance (ANOVA) Analysis on Religion and UK-TEAQ Subscales

One-way ANOVAs were used to determine whether scores on the UK-TEAQ subscales differ among different religion groups. The total sample size for this analysis was 1055 participants, there were 12 different religion groups that a participant could choose from. Religion groups Baha'i, Buddhist, Zoroastrian, and Taoism or Confucius were group together

with the participants identifying with other religions as the number of participants identifying with the different religions were below ten and therefore was not sufficient enough to conduct post hoc analyses.

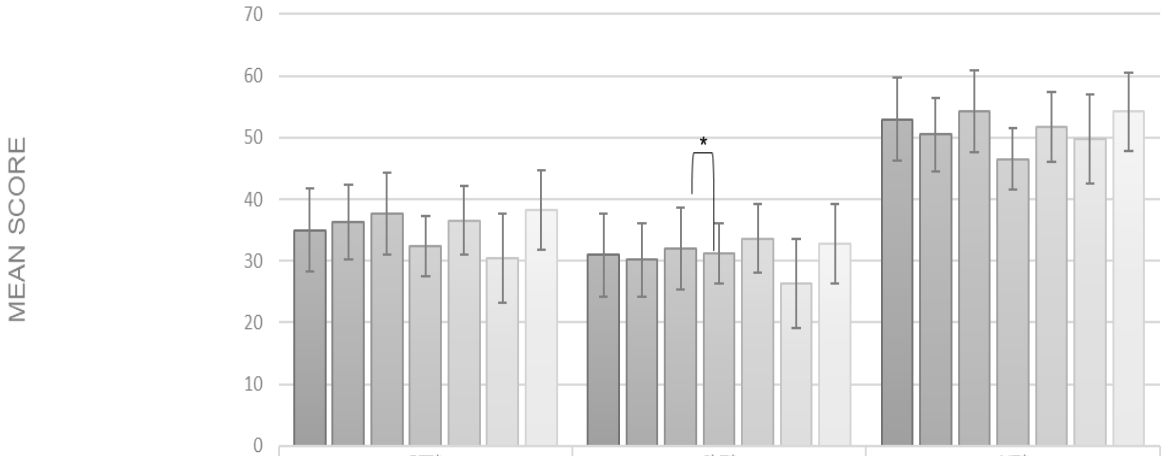
Based on this, the Religion variable was divided into 7 different groups, with 154 participants identifying with no religion, 641 participants identifying with Christianity, 29 participants identifying with Hinduism, 62 participants identifying with Islam, 38 participants identifying with the Traditional African Religion and 42 participants identifying with Other religions. A Bonferroni adjustment was applied to control for multiple comparisons and only *p*-values < .007 were deemed significant (Armstrong, 2014).

Following Bonferroni adjustment (uncorrected *p* – values are reported), no significant effect of religion group was found on UK-TEAQ ASC, AUT and CIT subscale (all *p*'s > .031) after Bonferroni adjustments were applied (Armstrong, 2014). Small, but significant effects were however, found between the different religion groups on UK-TEAQ FFT subscale ($F_{6,996}$ = 4.168, p = .001, η^2 = .02) and UK-TEAQ ChT subscale ($F_{6,1016}$ = 3.163, p = .004, η^2 = .02). A significant effect of religion groups were also found on UK-TEAQ AIT subscale; however, the effect size was not substantial ($F_{6,124.256}$ = 3.730, p = .001, η^2 = .002).

A Hochberg post hoc analysis as well as a Games-Howell analysis revealed that there was no significant differences between the different Religion groups within the UK-TEAQ FFT and UK-TEAQ AIT subscales (*p*'s > .007). Interestingly, the only significant difference was found within the UK-TEAQ ChT subscale between the Judaism and the Traditional African Religion groups. It was found that the Judaism religion group (M = 33.62, SD = 9.991) scored significantly higher than the individuals in the Traditional African Religion Group (M = 26.24, SD = 8.391). This difference was however found to be a small difference according to Cohen's *d* criteria, with an effect size of *d* = .23.

Figure 12

Differences on Significant UK-TEAQ Subscales between different Religion Groups



	FFT*	ChT*	AIT*
NO RELIGION	35,01	30,95	52,9
CHRISTIANITY	36,34	30,16	50,46
HINDUISM	37,66	31,97	54,21
ISLAM	32,37	31,17	46,52
JUDAISM	36,57	33,62	51,78
TRADITIONAL AFRICAN RELIGION	30,37	26,24	49,69
OTHER	38,24	32,71	54,17

Note. Only subscales with significant values were included in the figure for illustration purposes. UK-TEAQ: FFT = Friends and Family Touch; CIT = Current Intimate Touch; ChT = Childhood Touch; ASC = Attitudes towards Self-Care; AUT = Attitudes towards Unfamiliar Touch.

* Significant at $p < .007$.

3.7.4 One-way Analysis of Variance (ANOVA) for Age-groups and UK-TEAQ subscales

One-way ANOVAs were used to determine whether different age groups scored differently across the UK-TEAQ questionnaire subscale. Groups were created by dividing age as a continuous variable into four respective age categories: 18-28 years; 29-39 years; 40-50 years and 51-72 years. The total sample size for this analysis was 1055 participants, with 756

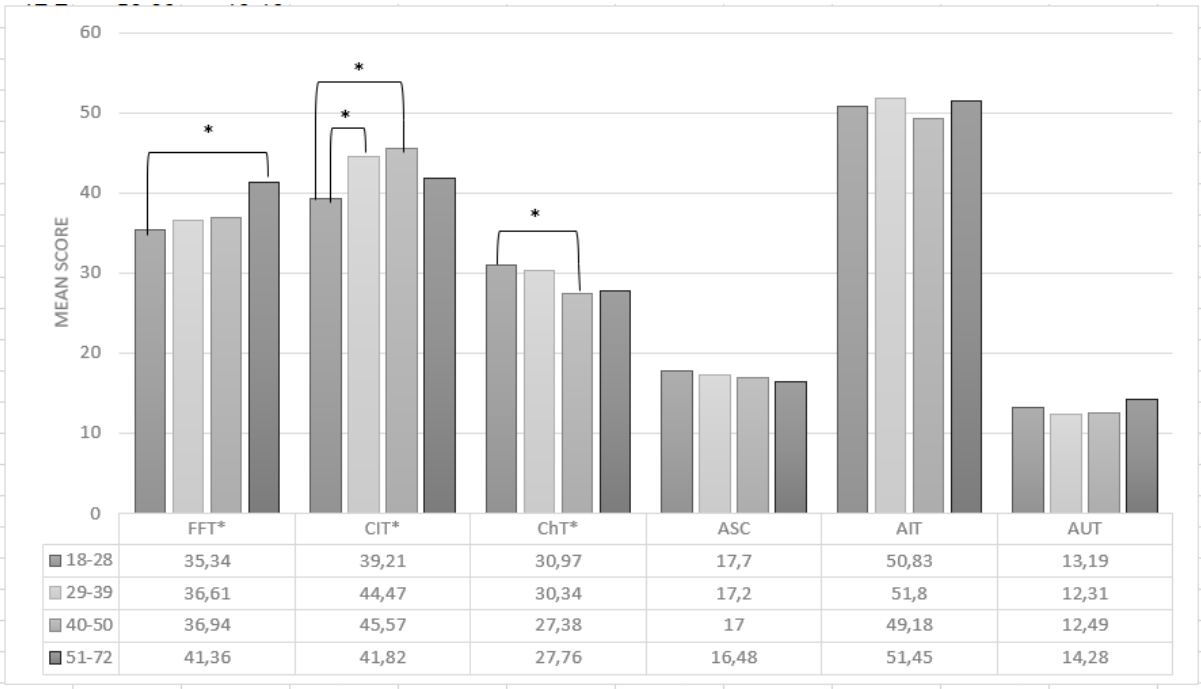
participants indicating that they fall within the 18-28 year age category, 181 participants being between the ages of 29-39 years, 77 participants being between the ages 40-50 years and 30 participants indicating that they fall within the 51-72 year old category. A Bonferroni adjustment was applied to control for multiple comparisons and only *p* – values < 0.0125 were deemed of significant (Armstrong, 2014). Following Bonferroni adjustments (uncorrected *p* – values are reported), no significant effect of age groups were found on UK-TEAQ ASC, AIT and AUT subscales (all *p*'s > .021). However, small, but significant effect sizes were found between the different age groups on UK-TEAQ FFT subscale ($F_{3,990} = 4.041$, $p = .007$, $\eta^2 = .012$); UK-TEAQ CIT subscale ($F_{3,971} = 11.750$, $p = .001$, $\eta^2 = .03$) as well as UK-TEAQ ChT subscale ($F_{3,1010} = 4.736$, $p = .003$, $\eta^2 = .013$).

Interestingly, Hochberg post-hoc analysis revealed that there was small significant differences between individuals falling within the 18-28 year age category and the rest of the age categories. Specifically, it was found that for the UK-TEAQ FFT subscale individuals within the 51-72 year age category (M = 41.36, SD = 9.210) scored significantly higher than individuals within the 18-28 year age category (M = 35.34, SD = 9.839). Moreover, it was found that for the UK-TEAQ subscale individuals within the 18 – 28 year age category (M = 39.21, SD = 12.666), scored lower than individuals within the 29-39 year age category (M = 44.47, SD = 13.192) as well as individuals within the 40-50 year age category (M = 45.57, SD = 12.479).

Interestingly, it was found that for the UK-TEAQ ChT subscale individuals within the 18-28 year age category (M = 30.97, SD = 8.755) scored higher than individuals within the 40-50 year old category (M = 27.38, SD = 9.594). Effect sizes for these four comparisons were *d* = .19, .30, .26 and .21 respectively.

Figure 13

Differences on UK-TEAQ Subscale scores for different Age Groups



	FFT*	CIT*	ChT*	ASC	AIT	AUT
18-28	35,34	39,21	30,97	17,7	50,83	13,19
29-39	36,61	44,47	30,34	17,2	51,8	12,31
40-50	36,94	45,57	27,38	17	49,18	12,49
51-72	41,36	41,82	27,76	16,48	51,45	14,28

Note. UK-TEAQ: FFT = Friends and Family Touch; CIT = Current Intimate Touch; ChT = Childhood Touch; ASC = Attitudes towards Self-Care; AUT = Attitudes towards Unfamiliar Touch.

* Significant at $p < .0125$.

3. 8 Regression Model revealing Relationship between different Socio-demographic Variables and the UK-TEAQ Subscales.

The purpose of this analysis a multiple regression is tell us about the relationship between the different factors (correlation) and further reveal which socio-demographic variables (e.g., age, race, relationship status, gender, religion) is a stronger predictor of experiences of touch.

Each of the six UK-TEAQ subscales was run separately within the multiple regression, with all the socio-demographic variables looking at each experience of touch separately, as

there is no combined touch score in the questionnaire and they are all seen as separate factors. Each subscale or component of the affective touch questionnaire (FFT, CIT, ChT, ASC, AIT, AUT) therefore, served as the dependent variable in the respective regression so that the effects of the various different socio-demographic information (age, gender, racial group, religion group and different relationship status) on each of the UK-TEAQ subscales could be investigated. To estimate the proportion of variance within the UK-TEAQ FFT subscale score that can be accounted for by different socio-demographic variables including gender, relationship status, age, racial groups and different religion groups, a standard multiple regression analysis (MRA) was performed. Prior to interpreting the results of the MRA, Mahalanobis distance was interpreted to see whether there were any multivariate outliers. It revealed that Mahalanobis distance did exceed the critical X^2 for df = 5 (at α = .001) of 20.515 (Brereton, 2014; Ghorbani, 2019) at a maximum of 43.864 for all the different subscales.

This therefore indicates that there are some multivariate outliers present in the analysis, however after assessing the Cook's distance, which measures the influence of the outliers, it revealed that there was no influential multivariate outlier (Cook's distance < 1). Based on this it was chosen to ignore the multivariate outliers as they do not have an impact on the predictive efficacy of the regression model as a whole. Furthermore, the analysis revealed that there were relatively high tolerances for all the predictors in the regression model, which indicated that multicollinearity would not interfere with our ability to interpret the outcome of the MRA.

In combination, age, gender, racial groups, religion and different relationship statuses accounted for a significant 8.4% of the variability on the scores of the UK-TEAQ FFT subscale, R^2 = .084, adjusted R^2 = .079, F(5,988) = 18.023, *p* = .001; 27,0% of the variability on the scores of the UK-TEAQ CIT subscale, R^2 = .270, adjusted R^2 = .267, F(5, 969) = 71.804, *p* = .001; 5.4% of the variability on the scores of the UK-TEAQ ChT subscale, R^2 = .054, adjusted R^2 = .049, F(5, 1008) = 11.488, *p* = .001; 19.2% of the variability on the scores of the UK-TEAQ ASC subscale, R^2 = .192, adjusted R^2 = .188, F(5, 1000) = 47.622, *p* = .001; 6.5% of

the variability on the scores of the UK-TEAQ AIT subscale, R^2 = .065, adjusted R^2 = .060, F(5, 973) = 13.566, *p* = .001 and 2.9% of the variability on the scores of the UK-TEAQ AUT subscale, R^2 = .029, adjusted R^2 = .024, F(5, 998) = 5.937, *p* = .001.

Interestingly, as seen in Table 6, the socio-demographic variable religion was the only independent variable that did not significantly predict any of the scores on the UK-TEAQ subscales. In more depth, it was found that within the UK-TEAQ FFT subscale, the UK-TEAQ CIT subscale as well as the UK-TEAQ AIT subscale, all the socio-demographic variables (age, gender, racial group and relationship status) except the variable religion group were found to be predictive of the subscale scores.

Within the UK-TEAQ ChT subscale it was found that only the socio-demographic variables, religion groups and relationship status, were not predictive of the subscale scores, while all the rest of the socio-demographic variables were predictive. Furthermore, it was found that within the UK-TEAQ ASC subscale, all the socio-demographic variables, except religion group and racial group were predictive of the subscale scores. Interestingly, within the UK-TEAQ AUT subscale there were only two significant predictors, gender and racial group.

Table 6

Significance Value of the Socio-demographic Predictors within the different UK-TEAQ Subscales

	Age Group	Gender	Racial Group	Religion Group	Relationship Status
FFT	.025*	.000*	.008*	.230	.031*
CIT	.001*	.000*	.007*	.671	.000*
ChT	.001*	.000*	.000*	.650	.295
ASC	.035*	.000*	.914	.127	.045*
AIT	.001*	.008*	.000*	.400	.000*
AUT	.201	.000*	.008*	.060	.594

*p = .05.

Chapter Four: Discussion Section

This study aimed to validate a 57-item UK-TEAQ questionnaire within the South African context. It further aimed to investigate difference in attitudes, interpretation and perceptions towards affective type touch in different social and cultural contexts, as shown by various socio-demographic factors (race, religion, gender, relationship status and age groups) based on the UK-TEAQ subscales.

It was found that the factor structure obtained within this current sample closely matched the factor structure found by the Russian version and the UK-TEAQ (Trotter at al., 2018a; Trotter et al., 2018b), therefore confirming the validity and reliability of the UK-TEAQ questionnaire within the South African context. Furthermore, our general hypothesis of our research question was confirmed of selective socio-demographic differences in the perceptions and experiences of affective touch through the UK-TEAQ subscales, detailed below.

Firstly, it was found that there was a significant difference on how male and female individuals perceive affective type touch, with differences identified upon all the subscales, except the AIT subscale. Furthermore, differences in attitudes and perceptions towards affective touch was also found between individuals with different relationship status' as well as between different racial groups, specifically Black and White groups. Interestingly, little differences were found between different religious and age groups in terms of their attitudes and perceptions towards affective type touch. Moreover, the multiple regression analysis revealed that most of the socio-demographic factors were good or significant predictors within the UK-TEAQ subscales, however religious groups was one factor that did not significantly predict scores within the UK-TEAQ subscales. This chapter will discuss these results of this study in reference to relevant literature and the overarching theoretical framework guiding this study of the interoceptive basis of bodily self-awareness. It will further, highlight the strengths and limitations of this study and lastly offer possible directions for future research.

4.1 Contextualising the Findings

4.1.1 Psychometric Properties of the UK-TEAQ (PCA)

Before, investigating whether there are any differences in touch perceptions among different social and cultural factors, it was first necessary to establish the factor structure of the UK-TEAQ questionnaire. The UK-TEAQ questionnaire was not developed within the South African context and although it had an existing factor structure, it was nevertheless important to determine how closely the pre-existing factor structure aligned within the South African sample for the present study.

This study identified a 6-component structure, which closely matched to the original factor structure proposed by Trotter et al. (2018b). The first component related to interpersonal physical touch and attitudes with friends and family, named friends and family touch (FFT). The second component related to the current levels of intimate touch experiences between people who are emotionally close of in a romantic relationship with one another (Current Intimate Touch, CIT). The third component related to positive childhood touch experiences (Childhood Touch, ChT). The fourth component related to attitudes to self-care (ASC), which involved rating how much individuals liked various skin care and grooming behaviours relating to positive self-care. The fifth component relates to attitudes to intimate touch (AIT), which looks into how much individuals enjoy touch experiences which usually occur between individuals who are emotionally close to or in a romantic relationship. Finally, the last component attitude to unfamiliar touch (AUT) relates to how people perceive and interpret touch from people the individuals are less close to, such as interpersonal touch from people who are not family, friends or those emotionally close to the individual.

Interestingly, the components identified provide a distinction between touch experienced in a variety of different contexts, touch between friends and family, touch between individuals known to be more intimately involved as well as touch experienced between individuals not known that well. These findings support studies conducted by Gazzola et al. (2012) and McCabe et al. (2008) who found that by altering the context in which touch is felt,

for example: feeling one's self being touched and seeing one's self being touch can influence how the individual interprets and perceives the pleasantness of the touch.

When looking into the different aspects or components of affective touch identified by the factor structure of the questionnaire, it can be seen that the only component not directly related to the sense of touch is the items relating to self-care. The term self-care does not have one definition and can combine or include many different strategies to maintain well-being. In basic terms, self-care is the process of improving one's well-being – be it mentally, spiritually or physically (Richards, et al., 2010). According to Richards et al. (2010) one major pathway to attain self-care is through self-awareness or knowledge about one's self, also known as the process of interoception (Ceunen et al., 2016; Craig, 2002; Gardner, 2001). In other words, the behaviour of self-care can be linked to affective touch through the basis of the theoretical model of this study. Bodily self-awareness or interoception, is a process that involves an individual becoming aware of their own body and bodily sensations (Ceunen et al., 2016; Craig, 2002; Crucianelli et al., 2018; Gardner, 2001; Schleip & Jäger, 2012; Tsakiris & Critchley, 2016). A study conducted by Richards et al. (2010), found that self-care plays an important role in developing bodily self-awareness. Based on this notion, it can be argued that although self-care behaviours are not directly linked to the sense of touch or affective touch it is related to the enhancement of bodily self-awareness. Therefore, through the behaviour of self-care an individual would enhance their bodily self-awareness, which would allow an individual to understand and interpret bodily sensations, such as touch, better or more easily. For this reason, it could further be argued that self-care behaviours are included within this questionnaire as it would determine whether individuals would better understand the sense of affective touch which contributes to increasing bodily self-awareness (Crucianelli et al., 2018; Richards et al., 2010; Tsakiris & Critchley, 2016).

Although the component structure of the UK-TEAQ appeared to be good in terms of face validity, further validation of the component structure was required. Cronbach Alpha Reliability Analysis revealed that each of the six subscales demonstrated good internal

consistency, therefore further validating the questionnaire within the South African context. These analyses indicated that the measures were psychometrically sound and more importantly suitable for the use within the South African context.

4.1.2. Gender Differences on UK-TEAQ Responses

Owing to the fact that the UK-TEAQ was found to be valid within the South African context the next aim of the study was to investigate whether different social and cultural factors have an impact on the scores of the UK-TEAQ six-subscales. As predicted, gender differences in UK-TEAQ responses were identified, with females having greater FFT, CIT and ChT scores than males. This suggests that not only do females experience more physical touch throughout their lifetime, but it also suggests that females interpret and perceive affective type touch as more pleasant as compared to male individuals.

This assumption that females experience more physical touch as compared to males has been supported by previous literature which has identified females to experience more positive touch both during childhood (Lockhart, 2019) and in adulthood (Major et al., 1990). According to Dean (1989) and Major et al. (1990), developmental studies have shown that women are more likely than men to be socialised from a very young age to be the recipients of touch. For example, it is believed that girls are more fragile and passive than boys and therefore the girls are often handled or touched more than boys within infancy. There is also the belief that boys should be more independent than girls and therefore due to the societal stereotypes the boys should have less social and intimate interaction (Dean, 1989). Due to these stereotypes being enforced on the child in infancy, these stereotypes may then produce behaviours in the child that are consistent with the stereotypes as they grow older (Lockhart, 2019). Moreover, it was also found that females are more likely to engage in self-care behaviours as compared to men and this can be seen in many different aspects of live, such as in hygiene practices as well as health practices (Lockhart, 2019).

Additionally , a study conducted by Croy et al. (2019) and Russo et al. (2020) found that there was a significant difference in the perception and interpretation of affective touch

between males and females, with females interpreting the sense of affective touch as more pleasant as men. A study conducted by Bendas et al. (2017) went further and found that men and women interpret the meaning of affective touch differently, with women interpreting the slow and gentle touch as a sexual cue while men tend to interpret is as a sexual reward. According to Russo et al. (2020), an individual's hormone levels can have a significant difference in how different genders interpret affective touch as men have more testosterone, which is more associated with hunting and dominant behaviour, therefore not associated with tactile sensitivity.

Russo et al. (2020) highlights another possible reason for the gender difference in the interpretation and perception of touch and states that the reason women interpret the sense of affective touch more positively might be related to the fact that females or women have evolved as caregivers and nurtures. In other words, females have been biologically designed to respond to and interpret the sense of touch more sensitively as to males as it is the mother's responsibility and ability to perceive and accurately interpret their infant's signals and respond appropriately (Ainsworth et al., 1978). Due to insufficient details received within the demographic questionnaire, it was not possible to investigate whether women with children perceived affective type touch differently as to women who have yet to have children.

Alternatively, studies conducted by Gallace and Spence (2010) and Whitcher and Fisher (1979), found that females responded more positively to touch than males, suggested a sex difference hypothesis to explain this difference in touch responses. According to the sex difference hypothesis when dependency cues are pervasive males and females will react or respond differently to touch (Gallace & Spence, 2010; Whitcher & Fisher, 1979). In other words, men have been socialised to be independent, in other words being more comfortable depending upon themselves. Based upon the findings of Whitcher and Fisher (1979), the sense of touch can be interpreted as a sign of weakness for male individuals, as it relates to a sign of dependency or needing help, hence the reason it is believed that males are uncomfortable with touch. Conversely females are socialised to be relatively affiliative and

comfortable with dependency and therefore interpret touch as a supportive gesture, therefore reacting more positively towards touch (Whitcher & Fisher, 1979).

In 1980, a psychologist Howard Friedman conducted a case study reviewing the findings of Whitcher and Fisher (1979) and stated that their findings were discriminatory based on sex in the sense of linking dependency with sex roles. Friedman (1980), however does not diminish the importance of their study and further states that future studies should take caution and not overlook sexism within their research.

Witcher and Fisher (1979) highlights another possible reason as to why females respond more positively towards touch and states that it is due to a female's tactile history. It is said that females are more often touched by mother, father or same sex friends than males; females are also exposed to more tactile experiences in medical settings such as gynaecological exams, giving birth etc. Therefore, it is suggested that, females respond more positively towards touch as compared to males (Witcher & Fisher, 1979). It should be highlighted however that Witcher and Fisher's (1979) findings were specific within a hospitalised setting, therefore limiting the generalisability of the finding. Furthermore, little research has been conducted upon looking into why females experience touch as more pleasant than males. Future research should therefore, further investigate why there is differences in perceiving touch across genders, specifically within wider societal and cultural settings.

Interestingly, attitude to intimate touch was not found to be significant between males or females, which could therefore indicate that males and females react the same way towards or have the same attitudes towards intimate touch. According to Harjunen et al. (2017) neurophysiological research individuals do not only react different towards invited and uninvited or familiar or unfamiliar touch, but we also interpret the sense of touch different depending on the context. Harjunen et al. (2017) conducted a study to investigate differences between behavioural inhibition systems and gender towards affective touch perceptions. It was found that emotional context is a primary factor in how touch is perceived. It was found

that individuals with higher or more sensitive behavioural inhibition system perceived the touch as more pleasant. This could therefore explain the reason as to why males and females reacted or rated the same towards intimate touch, because there was an emotional basis to how the touch was perceived.

In addition, it was also found that males had a more positive attitude towards unfamiliar touch as compared to females and this was supported by various different studies, in which it was found that females are more likely to avoid touch specifically when the touching behaviour is from an unfamiliar male. Whereas, males respond more positively towards unfamiliar female touch (Lockhart, 2019). According to Lockhart (2019) the avoidance of touch is determined by societal and cultural norms and stereotypes, therefore establishing the expectations of touch as well as the permission to touch.

Recent studies conducted by Grabauskaite et al. (2017); Murphy et al. (2019) and Longarzo et al. (2020), found that there were definite differences in how different genders perceive and understand one's bodily sensations such as touch – one modality of interoception. Specifically, the studies revealed that females were more perceptive and attentive towards their internal states or detecting bodily sensations (through affective touch) as compared to men. Murphy et al. (2019), present a possible explanation, suggesting that females experience more physical and hormonal changes (e.g., menstruation, pregnancy and menopause) as compared to men throughout life and therefore pay more vigilant to towards detecting and perceiving bodily sensations.

In comparison, Longarzo et al. (2020) took this notion further and conducted a study to see whether different brain structures could be responsible for the difference in interoception capabilities between men and women. It was found that females more so then men use several different, yet shared brain regions in order to participate in the process of interoception. A possible explanation for these findings was found in a study conducted by Sun et al. (2015), who stated that men demonstrates a higher global efficiency when interpreting bodily sensations, unlike women who are said to pay more attention to finer details. Based on the

above, it can be precluded that females have a stronger sense to engage in the process of interoception, through affective touch, as compared to men, which could contribute to understanding why females find the sense of affective touch as more pleasant than males. However, although some speculations have been made, the mechanisms behind this gender difference remain unknown.

4.1.3 Relationship Status on UK-TEAQ Subscales

Touch could help maintain and facilitate emotional bonds between all areas of individuals life from romantic relationships, to kinships and friendships (Dibiase & Gunnoe, 2004; Remland et al., 1995). As touch can be used to communicate feelings, emotions and intimacy, inversely, behavioural evidence has also shown that touch is also dependent on the emotional bonds between individuals (Dibiase & Gunnoe, 2004; Remland et al., 1995).

It was found that individuals who are in a relationship scored significantly higher on current intimate touch (UK-TEAQ CIT), as compared to those who are married and even more so for the individuals who are single. The same results were found on the attitudes towards intimate touch subscale (UK-TEAQ AIT); however, the effect size was smaller. These results match what Trotter et al. (2018b) found in their study, therefore further validating the construct and face validity of the CIT and AIT subscales. These results correspond to the results found by a study conducted by Guerrero and Anderson (1994); Kosnar (2012) and Nguyen et al. (1975) who found that individuals who are in a serious relationship increase the frequency and have more positive attitudes towards intimacy, whereas married individuals still have the same attitudes towards intimacy and touching behaviours but the frequency of the touch may decrease.

According to Guerrero and Anderson (1994), a possible reason for this finding is that the frequency of touch is more during the relationships stages as the individuals are still trying to get to know each other and form emotional bonds with one another, whereas the emotional bonds have already been formed in married individuals. It can therefore be proposed that the touching behaviour communicates different messages towards individuals who are married

and to individuals who are still in a relationship. Differences in adult attachment may be one way to understand the individual differences in perception of touch within relationships. The reason for this is that attachments orientations are related to closeness and proximity and therefore can be seen as a prerequisite for touch, but also colours perceptions of touching behaviours (Wagner et al., 2020). Therefore, due to the fact that touching behaviours is linked to developing attachment in a relationship, it therefore makes sense that attachment insecurities would in part explain the individual differences in preferences, perceptions and attitudes towards touch. A study conducted by Chopik et al. (2014) provides some evidence as to the how attachment can influence an individual's attitude and perception towards touch. Specifically, Chopik et al. (2014) found that individuals described as having an avoidant attachment style reported to have more aversion towards touching behaviours as well as a deficit of touch within their relationships. Oppositely, individuals with an anxious attachment style were found to seek out touch for comfort and safety therefore, desiring more touch.

4.1.4 Age groups on the UK-TEAQ Subscales

Opposite to the findings of Trotter et al. (2018b), it was found that there was a significant difference between age groups and the perceptions and attitudes towards affective touch, with younger individuals scoring higher on the UK-TEAQ CIT and ChT subscales as compared to the older individuals. According to Sorokowska et al. (2021), a possible reason for these findings, is due to the fact that young people spend more time imitating, creating and maintaining relationships and bonds with other friends and family, therefore the use of touch is more frequent among younger individuals as they use it as a tool for communication. Moreover, a significant difference was found between the different age groups 18-28 year old and 51-72 year old, with the 51-72 year olds scoring higher on the UK-TEAQ FFT subscale scores than the 18-28 year olds. These findings are supported by a study conducted by Croy et al. (2019) who found that not only does affective type touch increase with age, but older individuals prefer affective type touch more than suboptimal stroking.

The need for affectionate touch remains well into old age, however it was found that many older individuals lack affectionate touch for various different reasons, from lack of a partner to death of a loved partner or simply because they did not have any children or any other family (Lockhart, 2019). Research has shown that the lack of affectionate touch specifically for older individuals may become detrimental to their psychological and physical well-being (Lockhart, 2019).

4.1.5 Race on the UK-TEAQ Subscales

Interestingly, significant results were found for all the different UK-TEAQ subscales, except for UK-TEAQ subscale ASC. Specifically, it was found that there was small, yet significant differences between White, Black, Indian and Coloured race groups, with the White race group scoring higher on the respective subscales as compared to the Black race group; the White race group scoring higher than the Indian race group on the UK-TEAQ CIT subscale and the Coloured race group scoring higher on the UK-TEAQ AIT subscale than the Black race group.

Cultures which is in this case different race groups differ in how they perceive, value and accept physical touch (Burleson et al., 2019). A study conducted by Hall (1966), investigated the perception of touch between various members of different cultures and found that the sense of touch within cultures can be divided into two categories: ‘contact cultures’ and ‘non-contact cultures, individuals from contact cultures prefer nonverbal type communication such as touch as compared to noncontact cultures. However, an overarching view as to the reasons behind these differences is described by Dibiase and Gunnoe (2004) who state that these differences in cultures are determined through the social norm of the culture, which includes also looking into the different stereotypes that exist within that culture as well as what the function and purpose of the touching behaviour means to that specific culture. For example: in some cultures, the function of touch is to convey a source of power, while in others it is to convey nurturing and love (Burleson et al., 2019; Dibiase & Gunnoe, 2004). According to Dibiase and Gunnoe (2004), cultural differences in the perception of touch

is largely determined by a particular society. Kosnar (2012) highlights however, that the specification of the difference between different cultures and the sense of touch may be incomprehensible due to the many different cultures present in the world. Another possible explanation as to why there were little significant results found within different racial groups and their perceptions towards affective touch, is related to a demographic limitation of this study, which was the small sample size. Due to the small sample size, equal groups were not formed between the many different racial groups identified within the demographic questionnaire, which therefore lead to limited statical power to find significant differences between the different racial groups.

4.1.6 Religion on the UK-TEAQ Subscales

Interestingly the only significant difference that was found was between Judaism and the Traditional African Religion Groups on the UK-TEAQ ChT subscale, however the effect size was small. with the Judaism subscale scoring higher than the Traditional African Religion. Therefore, reflecting a complicated relationship between religion and physical touch identified in the literature. These findings contradict some of the interpretations made by Brown (2009) and Sorokowska et al. (2021), which stated that touch is a critical part of religion traditions.

One of the possible reasons for some of the non-significant results are that there are different views and attitudes that different religions have on the sense and experience of touch. For example, in the Judaism, Christian and Islam religions frown upon or prohibit sexual contact among unmarried individuals, whereas in other religions it is not frowned upon (Brown, 2009). Jones and Yarbrough's (1985) touch classification can be used to explain the findings found between the different religious groups and the scores on the UK-TEAQ scores. The reason as to why not many significant results were found could be because individuals view the sense of touch from a religious point of view differently as to positive affective touch. In other words, the sense of touch communicates something differently from a religious point of view, therefore, the individual might not interpret a certain touching behaviour as affective but rather as an act of a religious practice (de White, 2011). For example, a hug, which is

considered a form of affectionate touch could be interpreted in religious terms as an act of giving or receiving empathy, therefore not linking or classifying it with affection. Another possible explanation for the findings, is due to the sheer number of religious classifications that were available to choose from within the demographic questionnaire, therefore making it challenging to get a significant result.

4.1.7 Predictors of the scores on the UK-TEAQ subscales

This study has identified that there are differences in how different individuals interpret and perceive affective type touch based on specific social and cultural factors. To further analyse these differences, a multiple regression analysis was run in order to determine which socio-demographic factors (e.g., race, age, relationship status, gender and religion) is a stronger predictor of the experience of touch. Interestingly, it was found that all the socio-demographic variables were good predictors of most of the UK-TEAQ subscale scores, except for the variable religion, which further supports the notions or information of Brown (2009) and Jones and Yarbrough's (1985), which states that touch in religion might have a different meaning than affective touch.

Specifically, it was found that race, gender, age and relationship status were significant predictors within the UK-TEAQ FFT, CIT and AIT subscales, therefore further highlighting the importance of these socio-demographic factors in the perception of touch. These findings are also supported by a study conducted by Dibiase and Gunnoe (2004), who found that specific touching norms are clarified by many different variables or factors together such as age, gender and culture. In addition, it was also found that only gender, age and race were predictive of the UK-TEAQ ChT subscale. Furthermore, only relationship status, gender and age were predictive of UK-TEAQ ASC subscale.

Interestingly, only gender and race as cultural factors were predictive of the scores on the UK-TEAQ AUT subscale. This makes sense as different cultural or racial groups are defined by different behaviours and norms concerning touch from an unfamiliar individual

(Burleson et al., 2019). In terms of gender, these results can be seen matching studies conducted by Harjunen et al. (2017), Heslin et al., (1983), Martin (2012), Remland and Jones (1988) who found that males respond more positively towards unfamiliar touch from females, whereas females respond negatively towards unfamiliar touch. This finding therefore further highlights that gender plays a significant role in how touch is perceived.

Although only several factors in this study was identified as playing an important role in how individuals perceive affective type touch, there are many other factors that could also have a possible influence on the attitudes towards touch. Kosnar (2012) and Sorokowska et al. (2021), highlights a few other factors that could also have an impact on how touch is perceived, these include: and individual's sense of privacy; the body location being touched as well as who the person is that is performing the touch; parasite history (in terms of diseases that spread through touch) as well as the theory of proxemics. According to Kosnar (2012), touch can only occur when another individual is within close proximity to one another. In other words, touch can only occur within an individual's personal space and this size or how close an individual is comfortable with allowing another person within their individuals space is dependent on many different factors, some including, culture, age, race and the relationships between the individuals.

According to Dibiase and Gunnoe (2004) as well as Remland et al. (1995), the sense of touch plays a powerful note in developing, facilitating and maintaining social and romantic relationships. Inversely, behavioural evidence has also shown that touch is also dependent on the emotional bonds between individuals (Dibiase & Gunnoe, 2004; Remland et al., 1995). For example: a study conducted by Suvilehto et al. (2017) found that the closer the social bond and familiarity between individuals the more open respondents are to receiving touch from them. These included family members, friends and romantic partners (Haggarty, 2018).

How one perceives touch could also be dependent on where the touch on the body occurs. Kosnar, (2012), identifies between two body locations – public part like the upper arm, the shoulder, neck and back where most individuals feel more comfortable to be touched and

then there is the private body locations such as the stomach, chest and head, where many individuals feel like when they are touched there it feels like an invasion of privacy and discomfort.

Associated to Kosnar's (2012), findings, how an individual becomes aware of the sense of touch also plays an important role in how an individual comes to understand and interpret the sense of touch. The process of interoception, plays an important part of an individual's life as through becoming aware of one's own body, own can then interpret the sensations, make sense of them, understand them and also feel and behave according to the sensations felt (Ceunen et al., 2016; Craig, 2002; Crucianelli et al., 2018; Gardner, 2001; Schleip & Jäger, 2012; Tsakiris & Critchley, 2016; Tsakiris, 2017). The process of interoception and how it relates to the function of touch is still a relatively new concept. Moreover, how interoceptive bodily self-awareness is processed in different cultures has undergone little research. The process of interoception has been investigated through many different areas and analyses, some of the most common methods is through questionnaires investigate an individual's emotional processes to certain situations and then also through cardiovascular arousal, however there is limited research studies that make use of the sense of touch to assess the process of interoception (Critchley & Garfinkel, 2017). Future studies, should therefore possibly combine these different methods of investigating the process of interoception, to get a clearer understanding of the many different social, cultural and biological factors could play a role in becoming aware of one's own body.

In addition, another possible, but unique theory to the explanation of differences in attitudes towards touch, is the theory of proxemics or in simple terms – temperature. According to Lustig et al. (2006), Sussman and Rosenfeld (1982) and Dibiase and Gunnoe (2004), people in colder climates use large physical distances or engage in less touching behaviour than individuals whom reside in warmer climates. Moreover, another interesting factor that Sorokowska et al. (2021) highlights is an individual's parasitic history. According to Sorokowska et al. (2021) parasites or viruses are easily transmitted to individuals to

individual's and from groups to groups, therefore based on the Behavioural Immune System Theory, individuals would engage in less touching behaviours when exposure to parasites or viruses are greater (Durkin et al., 2021). This Behavioural System Theory as well as its impact on touching behaviours can clearly be seen demonstrated with the new COVID-19 virus pandemic that spread across the world in 2020. The act of touch has been restricted during the times of COVID-19, for the purpose of keeping individual's safe and restricting the virus from spreading (touch in times of COVID-19). With this restriction individual's attitudes towards touch also changes.

Von Mohr et al. (2021), conducted a study looking into the psychological well-being of individuals during the COVID-19 related restrictions and found that due to the touch restrictions and deprivation individuals psychological well-being deteriorated. Interestingly, Von Mohr et al. (2021), found that although touch is restricted to prevent the virus from spreading, individuals craved the sense of touch, specifically during times of distress and uncertainty. Specifically, Von Mohr et al. (2021) found that individuals experiencing intimate touch had reduced anxiety, feelings or loneliness and improved mental health and their emotional tolerance towards the isolation. Von Mohr et al. (2021) highlights however that the degree to which individual's crave social or intimate touch was highly dependent on not only an individual's attitude and past experiences of touch but also on an individual's attachment style, with individuals having an anxious type attachment craving more touch as compared to individuals with an avoidant attachment style. This therefore, further highlights the importance of investigating how different attachment styles could have an impact on how individuals perceive and interpret affective touch. With regards to attitudes and experiences of touch, Von Mohr et al. (2021), found that individuals with a more positive attitude and experience towards touch craved touch more, specifically during circumstances that involved the behaviours of social distancing, such as in the case of COVID-19. Future studies using the UK-TEAQ should consider integrating attachment questionnaires to investigate the relationship between adult

attachment and touch experiences and attitudes over the life-course, in various social and cultural contexts.

Although, theory presumption of why individuals perceive and have different attitudes towards touch are widespread, all theories are seemed to be linked through individual factors such as age and sex. It can therefore be assumed that all these variables are interlinked with one another and consequently, the concept of affective touch should be look at as a whole and not as individual factors. Hence, differences on perceptions of touch should be look at as a whole in terms of age, gender, culture and religion instead of alone on touch. Nevertheless, based upon the results found within this study as well as the literature reviewed it can be seen that how we as individuals perceive and interpret the sense of touch is influenced by various external and internal factors around us, with culture and the social context playing a vital role in how touch is perceived (Ma-Kellams, 2014).

4.2 Limitations of the Study and Future Directions for Research

According to Burmeister and Aitken (2012), Malone et al., (2016) and Taherdoost, (2017) an ideal sample size is where the researcher has an adequate sample size that can yield enough statistical power to find a significant result, and then also use these findings to make inferences about the population.

Although the current study's sample size (N = 1055) can be considered as average and comparable to other studies (Trotter et al., 2018a; Trotter et al., 2018b), the sample size can still be considered a major limitation, specifically when grouping the various socio-demographic factors such as religion and race. Due to the current sample size obtained, it made it difficult to equally group various socio-demographic factors, specifically race and religion. The use of multiple sub-groups (e.g., race, religion and age-categories) further limited the sample size within each sub-category, this therefore limited the statistical power (Aitken, 2012, Malone et al., 2016 & Taherdoost, 2017). Future research studies should therefore obtain a larger sample, specifically to increase the sample size within each subgroup, in order to determine whether there is a statistical difference between various socio-demographic

factors, for example, in how race and different religion groups perceive and interpret affective type touch.

Another possible limitation of this study was the sampling method used to recruit the participants – convenience and snowball sampling method. Although this sampling strategy was convenient and cost effective, one major disadvantage was the lack of a representative sample. For example, there was a bias in the representation of student and therefore younger population, with the sample also biased in terms of socio-economic representation in the country (Etikan et al., 2016). This limitation also links into the limited ability to generalise the study to the rest of the population, although other elements, like race and religion, were arguably representative in terms of distribution of the general South African population (Hanel & Vione, 2016; Wright, 2005). Based upon this statement it is important to recognise that even through this study found the UK-TEAQ to be valid and reliable within the South African context, the sample in which this questionnaire was conducted was not representative or generalisable to the rest of the population. It is therefore recommended that further studies on the UK-TEAQ questionnaire take place within the South African context, using more spread sampling strategies to allow for a more representative sample.

Self-report measures were also used to gain participants responses towards affective type touch and although self-report questionnaires are meaningful and useful for gaining insight into participants personal thoughts and feelings, they can also be problematic because it can lead to the exaggeration or minimisation of responses, therefore not capturing the participants responses accurately (response bias) (Van de Mortel, 2008). The self-report measures were conducted on an online-based platform, as this made it easier to recruit participants (as they could do the questionnaire in their own time). Even though online questionnaire provided a great advantage in terms of time and access to the population, it does come with its disadvantages – a major one being that not all individuals have access to the internet or to a computer as readily to others, which therefore limited who received and completed the questionnaire (Wright, 2005). Another major disadvantage of online

questionnaires is that the participants could not ask questions if they did not understand the content of the questionnaire (Wright, 2005).

When looking into the structure of the UK-TEAQ questionnaire, it is clear that the questionnaire is divided into six different subscales, each looking into different aspects of touch, however there is no total score for the entire questionnaire. This is not a limitation per say, but it might be beneficial to add a total score up to demonstrate the total perception towards affective type touch. Another important factor to consider in terms of the questionnaire structure is the length of the questionnaire. Through analysing the responses of the questionnaires, it was observed that some participants failed to complete the entire questionnaire or in some instances left some sections out of the questionnaire, also one of the reasons some participants were excluded from the study. An interesting feature that could possibly be added to future studies is to add up the average time it took participants to complete the questionnaire, which in this study was not looked at.

Another key limitation to this study, is that it was focused on quantitative data and perceptions. This not only limited the information on how individuals perceive and respond to affective touch, but it also limited how individuals perceived, and responded to the questionnaires as individuals could only rate how they feel. It is therefore recommended that future studies include a qualitative element within the investigation to accurately measure how individuals perceive, feel and respond to affective type touch.

In addition to the above mentioned limitations, the way that the demographic questionnaire was set up or operationalised was also a crucial limiting factor within this specific study. Due to the way the questions were asked of the 1471 participants who completed the 416 participant questionnaires were excluded. Herewith, due to certain demographic questions asked in a specific way, it limited the manner in which certain groups, such as religious, race etc. were formed for the analysis. It is therefore, recommended for future studies to limit the demographic questionnaire to specific responses, by creating multiple choice answers. Although there were some functionality limitations with the demographic

questionnaire, it still could be argued that the sample represented a decent reflection of the demographics within South Africa, as South Africa is said to have a larger population of young Black individuals, with females being in the majority and the religion most individuals subscribing to being Christian (Statistics South Africa, n.d. – https://www.statssa.gov.za/).

The aims of this study was to validate the UK-TEAQ questionnaire within the South African context as well as to investigated whether there were any differences in the perception and interpretation of affective touch between different socio-demographic factors, specifically gender, racial, religious, relationship and age groups. Notwithstanding, the limitations of the study, the results of this study revealed that many different socio-demographic factors play a crucial role in how individuals perceive and experience the sense of touch. In contributing to these findings, various studies have shown that even though multiple different external factors (race, religion, gender, relationship status and age) could impact how individuals perceive and interpret the sense of touch, how individuals become aware of this sense of touch (interoception or bodily self-awareness) plays an equally important role in how affective touch is perceived and interpreted (Ceunen et al., 2016; Craig, 2002; Fotopoulou & Tsakiris, 2017; Tsakiris, 2017). Due to the importance and functionality that bodily self-awareness can play in interpreting and perceiving the sense of touch as well as the process of interoception being a relatively new concept within touch research, it is recommended that future studies should investigate the relationship between interoception and affective touch in more depth, in order to gain a better understanding of how touch experiences increases bodily self-awareness and inversely, how bodily self-awareness increases one's interpretation of the sense of touch (Ceunen et al., 2016; Craig, 2002; Fotopoulou & Tsakiris, 2017; Tsakiris, 2017).

4.3 Conclusion

In conclusion, human touch can be seen as an essential part of human development and plays a crucial role in various aspects of human social interactions. However, until recently, there has been a dearth in validated assessments on experiences and attitudes of affective type touch over the life-course. This study aimed to not only validate the UK-TEAQ

questionnaire within the South African context, but it also set out to investigate how different social and cultural contexts, through different socio-demographic factors, impact the perceptions and attitudes towards affective type touch. Appreciably, the UK-TEAQ questionnaire was found to be valid and reliable within the South African context and interestingly it was further found that there were significant differences between the different socio-demographic factors (age, gender, religion, race and relationship status) and individual's perceptions and experiences of affective type touch over the life-course through the various UK-TEAQ subscales.

Many different theories have proposed how we develop a sense of bodily self-awareness (Ceunen et al., 2016; Craig, 2002; Fotopoulou & Tsakiris, 2017; 2017), however one of the overarching theoretical proposal, is through the process of interoception and multisensory integration. Multiple studies (Schleip & Jäger, 2012; Crucianelli et al., 2018; Jakubiak and Feeney, 2016; Tsakiris and Critchley, 2016), have shown how affective touch is involved building awareness of one's body (especially internal bodily status). However, limited research has investigated how interoceptive bodily self-awareness is processed and experienced in different social and cultural contexts. This study, although descriptive in nature, has shown how various socio-demographic factors such as gender, race, religion, age and relationship statuses can influence the experience and perceptions of affective touch over the life-course, through the novel UK-TEAQ questionnaire. However, future studies – experimental and neuroimaging – are needed to investigate the mechanisms of how these socio-demographic factors modulate the experience and perception of affective touch.

Furthermore, beyond theoretical assumptions, affectionate touch serves two broad but important purposes. One being that it encourages thoughts and behaviours to enhance relational well-being and secondly, that affective touch can be used as a buffer against stressful situations therefore protecting individuals' health (Jakubiak & Feeney, 2016). Therefore, the UK-TEAQ assessment and further research around the application of affective

touch in various settings, such as clinically, developmentally or in educational, can have far-reaching benefits.

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Appendix A: Demographic Questionnaire

Demographic Questionnaire

1. Age: _____

2. Sex:_____

3. What terms (e.g. labels, groups, associations/affiliations, heritage) would you use to describe your cultural background? (please enter only one term per box)

   1

   2

   3

   4

4. If you had to classify yourself in a particular population group, what would you describe yourself as:

   - Black
   - White
   - Coloured
   - Indian
   - Other (please specify):

5. What is your home language? (please choose one)

   ☐ Afrikaans

   ☐ English

   ☐ IsiNdebele

   ☐ IsiXhosa

   ☐ IsiZulu

   ☐ Sepedi (North Sotho)

☐ Sesotho

☐ Setswana

☐ SiSwati

☐ Tshivenda

☐ Xitsonga

☐ Other (please specify):_____

6. What is your religious affiliation?

☐ No religion

☐ Christianity

☐ Hinduism

☐ Islam

☐ Judaism

☐ Baha'i

☐ Buddhist

☐ Zoroastrian

☐ Sikhism

☐ Taoism/ Confucius

☐ Traditional African Religion

☐ Other religion or religious dominations (please specify): _____

7. Please rate your level of religiosity with 1 being "not so religious" and 5 being "very religious.

8. Highest level of education

☐ Primary school

☐ High school grade

☐ Matric

☐ Undergraduate Degree

☐ Postgraduate Degree

☐ Diploma

☐ Other

9. Employment: How would you describe your current employment status?

Employed full-time (1)

Employed part-time (2)

Unemployed / Looking for work (3)

Student (4)

Retired (5)

Other (6) _____

10. What is your current occupation? _____

11. Are you married?

☐ Yes ☐ No

12. Are you in a relationship?

☐ Yes ☐ No

13. Do you live:

☐ Alone

☐ With a partner only

☐ With a partner and children

☐ With children only

☐ With immediate family (parents/siblings)

☐ With other relatives

Appendix B: The Touch Experience and Attitudes Questionnaire (TEAQ) 57 Item UK Validation

	Disagree strongly	Disagree a little	Neither agree nor disagree	Agree a little	Agree strongly
1. I dislike people being very physically affectionate towards me					
2. I like using body lotions					
3. I have to know someone quite well to enjoy a hug from them					
4. I find it natural to greet my friends and family with a kiss on the cheek					
5. There was a lot of physical affection during my childhood					
6. As a child I would often hug family members					
7. I like to use bath essence when having a bath					
8. I find stroking the hair of a person I am fond of very pleasurable					
9. My parents were not very physically affectionate towards me during my childhood					
10. I like to fall asleep in the arms of someone I am close to					

	Disagree strongly	**Disagree a little**	**Neither agree nor disagree**	**Agree a little**	**Agree strongly**
11. I often snuggle up on the sofa with someone					
12. I enjoy the physical intimacy of sexual foreplay					
13. I like to link arms with my friends and family as I walk along					
14. I usually hug my family and friends when I am saying goodbye					
15. As a child I found a hug from my parents when I was upset made me feel much happier					
16. It's nice when friends and family members greet me with a kiss					
17. I often hold hands with someone I know intimately					
18. When I am upset, there is usually someone who can comfort me.					
19. Kissing is a great way of expressing physical attraction					
20. It feels really good when someone I am fond of runs their fingers through my hair					
21. I regularly hug people I am close to					

22. As a child my parents would tuck me up in bed every night and give me a hug and a kiss goodnight					
23. My life lacks physical affection					
24. I enjoy having my skin stroked					
25. I often take a shower or bath with someone					
26. I enjoy having sex					
27. I often have sex					
28. I am put off by physical familiarity					
29. I can always find somebody to physically comfort me when I am upset					
30. I always greet my friends and family by giving them a hug					
31. I enjoy being cuddled by someone I am fond of					
32. My mother regularly bathed me as a child					
33. As a child my parents always comforted me when I was upset					
34. I enjoy the feeling of my skin against someone else's if I know them intimately					
35. As a child my parents would often hold my hand when I was walking along with them					

36. Most days I get a hug or a kiss					
37. If someone I don't know very well puts a friendly hand on my arm it makes me feel uncomfortable					
38. I often make physical contact with my friends and family when I am with them					
39. It makes me feel uncomfortable if someone I don't know very well touches me in a friendly manner					
40. I enjoy holding hands with someone I am fond of					
41. I often share a romantic kiss					
42. As a child my mother regularly brushed my hair					
43. I like exfoliating my skin					
44. Kissing is an enjoyable part of expressing romantic feeling					
45. I often have my skin stroked					
46. I often hold hands with someone I am fond of					
47. I like to stroke the skin of someone I know intimately					
48. I am on huggable terms with quite a few people					

49. I often fall asleep while holding someone I am close to					
50. Snuggling up on the sofa with someone is great					
51. I often put my arm around a close friend as we walk along together					
52. I like having a bath with lots of bubble bath					
53. I don't get many hugs these days					
54. I am often given a shoulder massage					
55. I like to use face masks on my skin					
56. I like it when my friends and family greet me by giving me a hug					
57. I often link arms with my friends and family as I walk along					

1. Scoring: Disagree strongly = 1, disagree a little = 2, neither agree nor disagree = 3, agree a little = 4, agree strongly = 5
2. **R** denotes items which are reverse scored (i.e. disagree strongly = 5, disagree a little = 4, neither agree nor disagree = 3, agree a little = 2, agree strongly = 1). Item numbers below indicate the items which belong to each of the subscales
3. Calculate the mean score for each subscale to obtain a subscale score
4. *Friends and family touch (FFT)* (*11 items*): 4, 13, 14, 16, 21, 30, 38, 48, 51, 56, 57
5. *Current intimate touch (CIT)* (*14 items*): 11, 17, 18, 23**R**, 25, 27, 29, 36, 41, 45, 46, 49, 53**R**, 54
6. *Childhood touch* (*ChT*) (*9 items*): 5, 6, 9**R**, 15, 22, 32, 33, 35, 42
7. *Attitude to self-care* (*ASC*) (*5 items*): 2, 7, 43, 52, 55
8. *Attitude to intimate touch* (*AIT*) (*13 items*): 8, 10, 12, 19, 20, 24, 26, 31, 34, 40, 44, 47, 5

9. *Attitude to unfamiliar touch* (*AUT*) (*5 items*): 1**R,** 3**R**, 28**R**, 37**R**, 39**R**

Appendix C: Participant Information Sheet

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

Date: 25/05/2020

Hello,

My name is Courteney Puckle and I am a student currently completing my Masters in Research by Coursework and Research Report at the University of the Witwatersrand. As part of the requirements for my degree, I am conducting research together with my supervisor, Dr. Sahba Besharati. My research aims to validate a questionnaire regarding experiences and attitudes towards affective type touch. I would like to invite you to participate in this study. Participation in this study is voluntary and you have the right to decline participation. Any questions participants do not wish to complete can be left out. You are welcome to take part in the study if you are over 18 years of age.

There are two parts of the study. Participation in Part 1 will involve completing a demographic questionnaire which contains some questions about you, your age and your education. Thereafter in Part 2, a questionnaire will be provided which contains questions regarding your experiences and attitudes towards affective type touch. Completing this questionnaire should take approximately 15-30 minutes.

These questionnaires will be on an online platform and can be completed at a convenient time for you. Participation is completely voluntary and you will not be advantaged or disadvantaged in any way whether you choose to complete the questionnaire or not. There are also no direct benefits or foreseeable risks for participating in the study. Submission of the completed questionnaire will be regarded as consent to participate in the study.

No identifying information such as your name or identity number or student or staff number (if applicable) will be asked for and you will therefore be completely anonymous. Your responses will remain confidential and your anonymity is guaranteed as no identifying information or IP addresses will be recorded.

Your completed questionnaires will not be seen by anyone other than the researchers and your responses will be saved in a neutral and secure database which is password protected. Thus, your confidentiality is guaranteed. Your responses will only be looked at in relation to all other responses which means that feedback and publications resulting from this project will be in the form of group trends and not individuals' responses.

You will be able to obtain feedback for the study in the form of a summary of the general results; individual feedback will not be possible as the data is anonymous. With your

permission, we would also like to store your responses permanently in anonymous, electronic form and to possibly use this for future research projects.

If you have any questions afterwards about this research, feel free to contact me or my supervisor using the details listed below. If you have any concerns or complaints regarding the ethical procedures of this study, you are welcome to contact the University Human Research Ethics Committee (Non-Medical), University of the Witwatersrand Human Research Ethics Committee (Non-Medical): 011-717-1408; Shaun.Schoeman@wits.ac.za.

Thank you for considering this invitation. Your participation in this study would be greatly appreciated. This research will contribute to the exploration and understanding as well as expanding the knowledge towards affective touch.

Yours sincerely,

Researcher: Courteney Puckle

Telephone number: 071 898 3915

Email: 2259181@students.wits.ac.za

Supervisor: Dr. Sahba Besharati

Telephone number: 011 717 4529

Email: sahba.besharati@wits.ac.za

I have read the details of this study and consent to participate in the study on a voluntary basis. I also understand that I may withdraw at any point up to submission.

YES	NO

Appendix D: Email Invitation

Good day

My name is Courteney Puckle and I am a Masters students in Psychological Coursework and Research Report at the University of the Witwatersrand. As part of my course I must conduct a research project alongside my supervisor, Dr. Sahba Besharati. I would like to invite you to kindly participate in completing an anonymous survey as part of my research study titled: “Affective Touch in the South African Context: South African Validation and Perspectives of the Touch Experiences and Attitudes Questionnaire.”

The online survey takes approximately 10-15 minutes to complete. Confidentiality and anonymity of participant’s is maintained as the survey does not ask for any identifiable information like names or personal details. Participation is entirely voluntary, hence choosing to proceed to and completion of the survey will be considered as consent to participate.

If you wish to participate or know other individuals who may be interested in participating in this study, please click on the link below or alternatively copy and paste the link into your browser.

Your participation is highly appreciated.

Thank you

Sincerely,

Student: Courteney Puckle (2259181@students.wits.ac.za)

Supervisor: Dr. Sahba Besharati (sahba.besharati@wits.ac.za)

Appendix E: Letter of access to be adapted for Head of Schools, Departments and Lecturers, as well as the University Registrar

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

Date: 25/05/2020

To: Head of Department, Head of School, University Registrar

Dear Sir/Madam,

Re: Permission to conduct research at University of the Witwatersrand.

My name is Courteney Puckle.

I am studying for a degree in Masters in Social and Psychological Research at the University of the Witwatersrand. I am seeking permission to do research at the University of the Witwatersrand

I am conducting research on affective type touch, in terms of the different attitudes and experiences of affective touch across different racial groups, including cultural, religious, socio-economic and gender groups in South Africa. I am also aiming to validate the 57-item UK TEAQ for the South African context and to explore the cultural appropriateness of the questionnaire.

The research will entail collecting data from university student and staff members from the University of the Witwatersrand as well as participants through social media platforms and personal contacts.

Participants will be asked to give their written consent before the research begins. Their responses will be treated confidentially, and identities will be anonymous unless otherwise expressly indicated. Individual privacy will be maintained in all published and written data resulting from the study.

The participants will be offered the opportunity to obtain further information about the nature, results and conclusions of the research. For this purpose, contact details of the researchers will be provided in the information sheet. A summary of the research will be provided to participants if requested. The participants will be encouraged to contact the researchers in case they have concerns linked to the research project. Participants can contact the Ethics committee if there are ethical concerns with the research.

The research participants will not be advantaged or disadvantaged in any way. They will be reassured that they can withdraw their permission at any time during this project without any penalty. There are no foreseeable risks in participating in this study. The participants will not be paid for this study.

All research data will be stored in password protected computer in digital form with all identifying features and information removed. All research data will be stored for future secondary analysis.

I therefore request permission in writing to conduct my research at the University of the Witwatersrand. The permission letter should be on your University's headed paper, signed and dated, and specifically referring to myself by name and the title of my study.

Please let me know if you require any further information. I look forward to your response as soon as is convenient.

Yours sincerely,

Student: Courteney Puckle
Telephone number: 071 898 3915
Email: 2259181@students.wits.ac.za

Supervisor: Dr. Sahba Besharati
Telephone number: 011 717 4529
Email: sahba.besharati@wits.ac.za

Appendix F: Ethical Clearance Certificate

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

SCHOOL OF HUMAN AND COMMUNITY DEVELOPMENT ETHICS COMMITTEE
CONSTITUTED UNDER THE UNIVERSITY HUMAN RESEARCH ETHICS COMMITTEE (NON-MEDICAL)

CLEARANCE CERTIFICATE:	**PROTOCOL NUMBER: MASPR/20/10**
PROJECT TITLE:	Affective Touch in the South African Context: South African validation of the Touch Experiences and Attitudes Questionnaire.
INVESTIGATOR	Puckle Courtney (2259181)
SCHOOL/DEPARTMENT OF INVESTIGATOR	SHCD/Psychology
DATE CONSIDERED	12 June 2020
DECISION OF THE COMMITTEE	Approved unconditionally
RISK LEVEL	Low Risk
EXPIRY DATE	31 December 2022

ISSUE DATE OF CERTIFICATE 21 June 2020 **CHAIRPERSON** __ ____
(Dr Sahba Besharati)

cc: Dr Sahba Besharati (Supervisor)

DECLARATION OF INVESTIGATOR

To be completed in duplicate and **ONE COPY** returned to the Chairperson of the School/Department ethics committee.

I fully understand the conditions under which I am are authorized to carry out the abovementioned research and I guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee.

Appendix G: TRREE Ethics Training Certificate



TRREE

Zertifikat
Certificat
Certificado
Certificate

Promouvoir les plus hauts standards éthiques dans la protection des participants à la recherche biomédicale
Promoting the highest ethical standards in the protection of biomedical research participants

Clinical Trials Centre
The University of Hong Kong

Certificat de formation - Training Certificate

Ce document atteste que - this document certifies that

C PUCKLE

a complété avec succès - has successfully completed

Introduction to Research Ethics

du programme de formation TRREE en évaluation éthique de la recherche
of the TRREE training programme in research ethics evaluation

Release Date: 2020/04/02
CID : iXO0FFEZaC

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Coordinateur TRREE Coordinator

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[REV : 20170310]

Appendix H: Normality Distributions of UK-TEAQ subscales

Figure 2: Normality Distribution of FFT Subscale

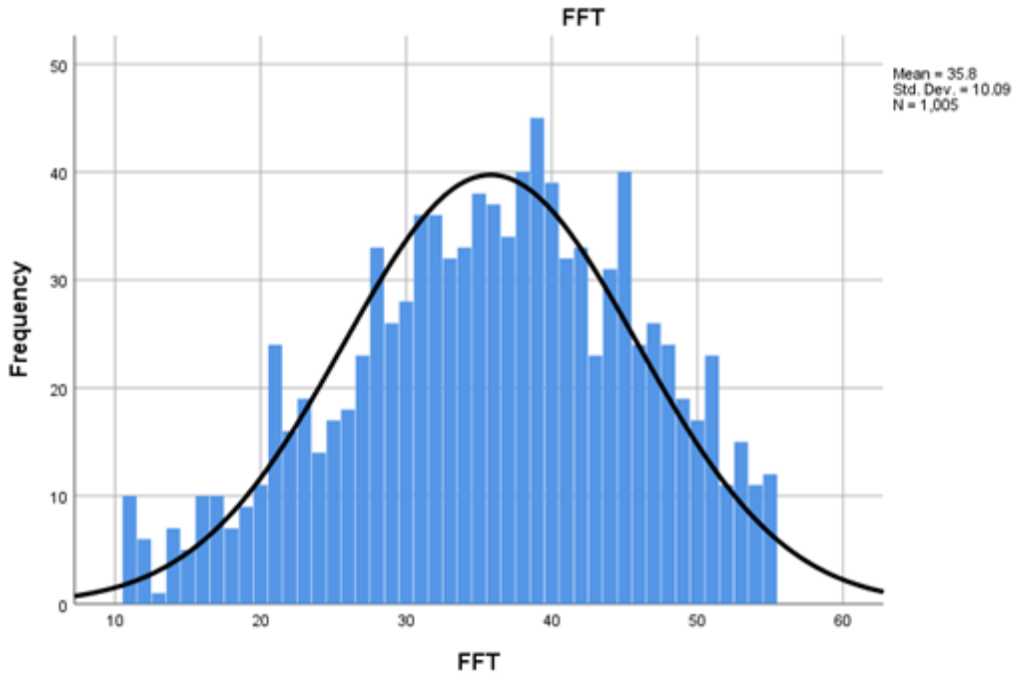


Figure 3: Normality Distribution of ChT Subscale

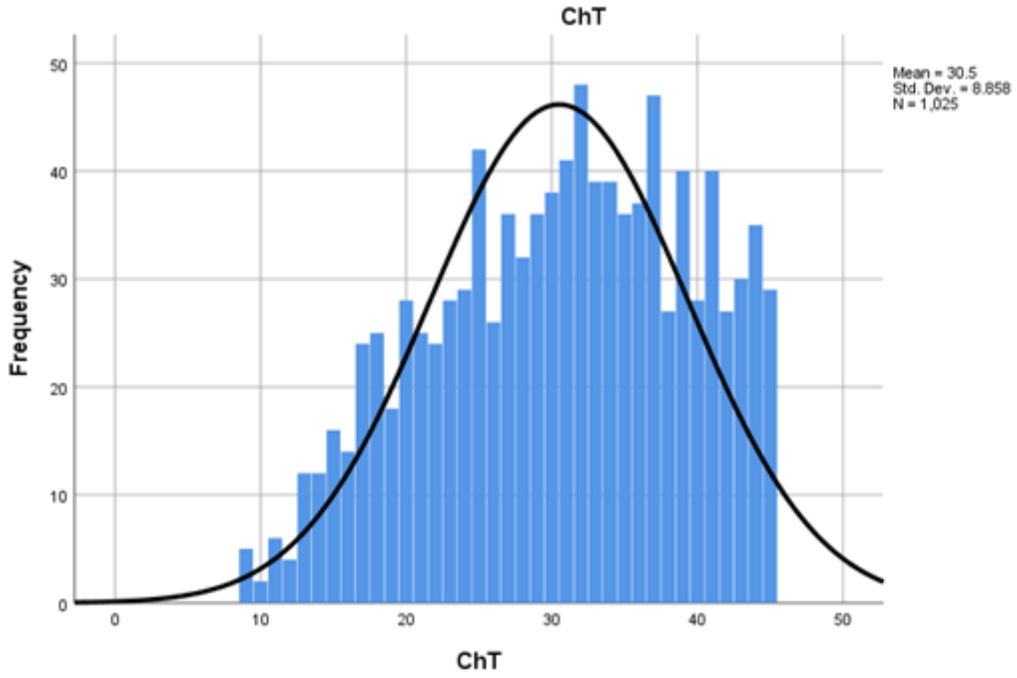


Figure 4: Normality Distribution of CIT Subscale

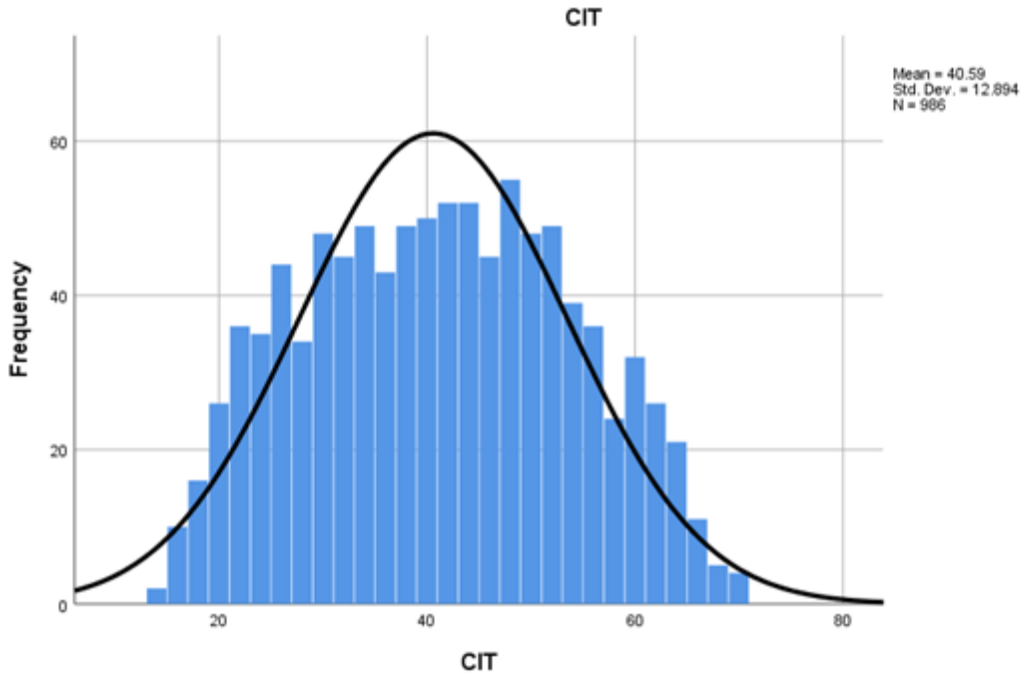


Figure 5: Normality Distribution of ASC Subscale

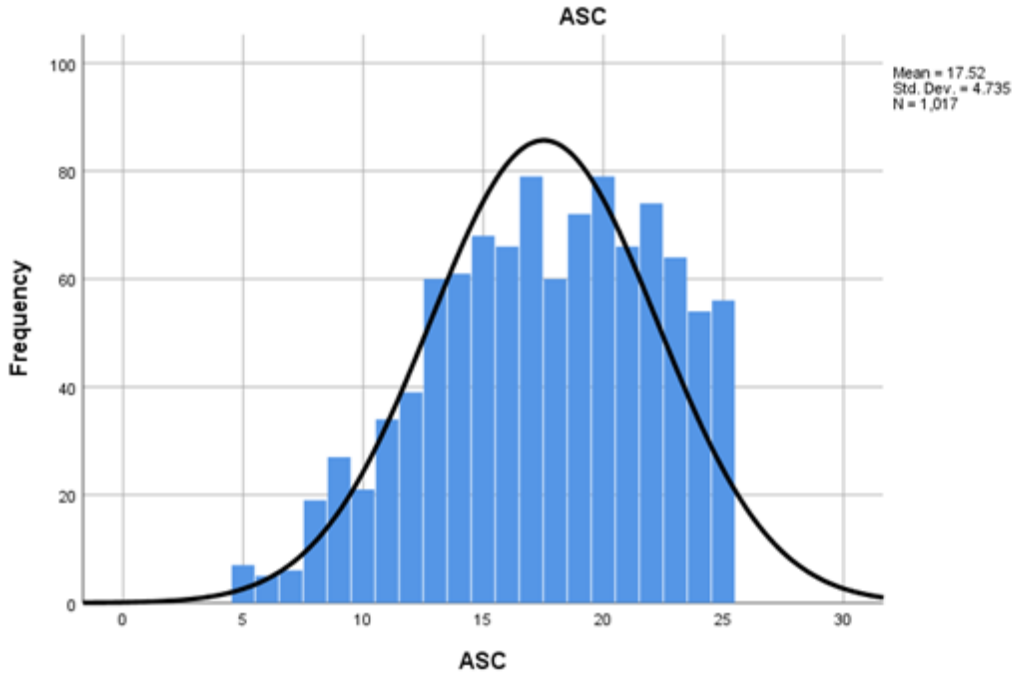


Figure 6: Normality Distribution of AIT Subscale

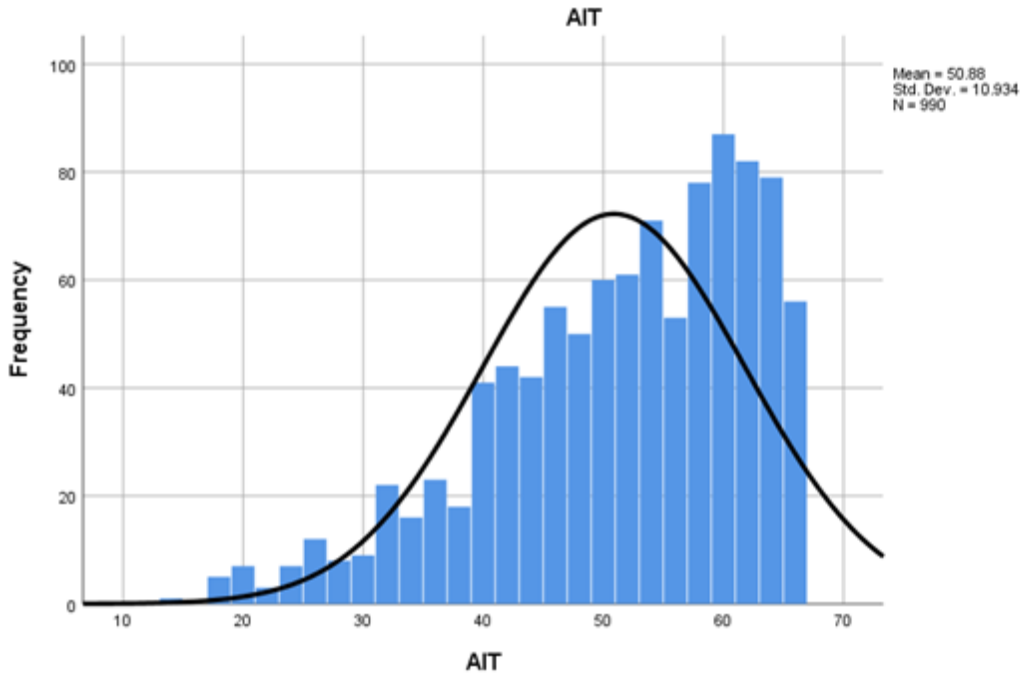
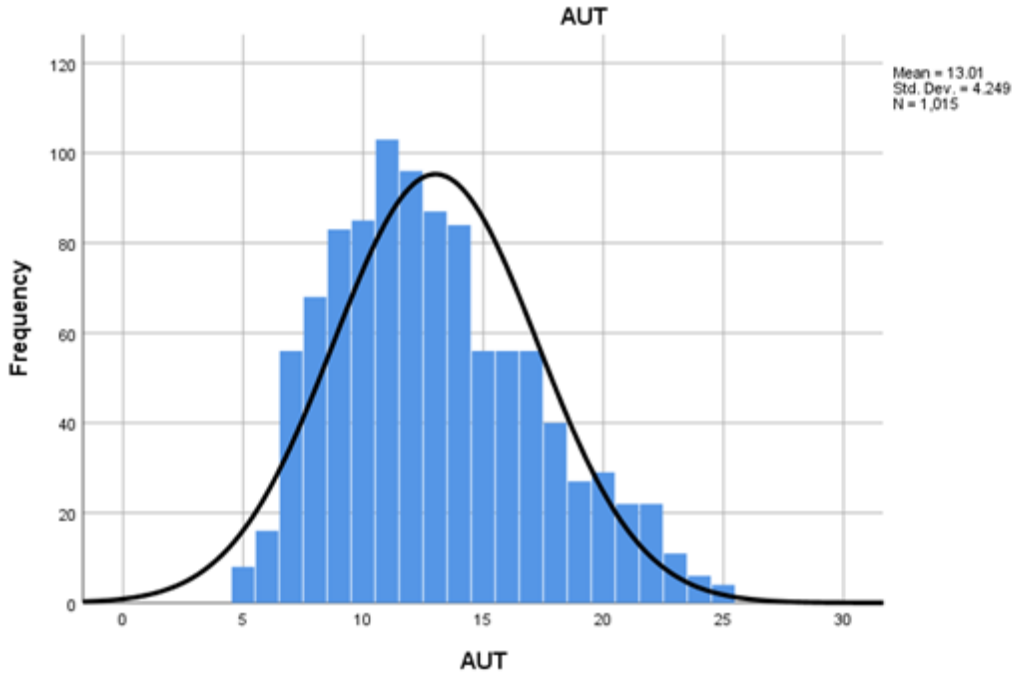


Figure 7: Normality Distribution of AUT Subscale



Appendix I: Component Correlation Matric Table

Component Correlation Matrix

Component	1	2	3	4	5	6
1	1.000	.128	.329	.124	-.307	.245
2	.128	1.000	.192	.072	-.320	.116
3	.329	.192	1.000	.052	-.221	.175
4	.124	.072	.052	1.000	-.161	-.029
5	-.307	-.320	-.221	-.161	1.000	-.238
6	.245	.116	.175	-.029	-.238	1.000

Extraction Method: Principal Component Analysis.
Rotation Method: Oblimin with Kaiser Normalization.

Appendix J: Scree Plot Graph

