Understanding Affective Touch: Exploring Faith Based Individual Differences

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Abstract

The impact of affective touch on mental and physical well-being is well-documented across all life stages. However, individual preferences, experiences, and attitudes toward affective touch can vary significantly based on factors such as age, gender, and attachment. This thesis investigates individual differences in perceptions and attitudes towards affective touch, with a specific focus on the role of faith and religion. Research on how religion influences attitudes toward touch is limited and often based on outdated assumptions. This thesis aims to advance understanding by exploring how religious beliefs shape touch attitudes, addressing existing gaps, and providing updated explanations.

The first part of the thesis utilises secondary data from the Touch Test to examine differences in touch attitudes between religious and non-religious individuals across various situations and comfort levels with touch. The findings indicate that religious individuals generally exhibit more positive attitudes towards touch compared to their non-religious counterparts. However, this does not translate to increased comfort with touch on specific body areas, which is influenced by the area touched and the toucher.

The latter part of the thesis explores how context affects attitudes and desires for affective touch, particularly during grief. While attitudes towards touch did not significantly differ between those experiencing grief and those not, there were notable variations in the desire for affective touch based on the type of touch and the toucher.

Together, these findings contribute to a more inclusive understanding of individual differences in touch related to faith. The results are discussed in relation to theories of affective communication, offering new insights and implications for future research.

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Chapter 1: Motivations

Motivation and Research Objectives

The motivation to research affective touch in this thesis stems from how much touch has been shown to impact our lives in addition to how the desire (within research) to understand this grew exponentially post-COVID. Touch has been found to act as a key vessel in which we share information during social interactions (Hertenstein et al., 2006; Morrison, 2016). Throughout our lives we use affective touch to interact and connect with others, research across domains of psychology (developmental - social- cognitive) have each highlighted the various ways affective touch can impact life at each milestone. Developmental researchers have shown that touch during infancy helps promote a sense of security between baby and caregiver (Weiss et al., 2000). These attachments that are formed impact our response and desire for affective touch in adulthood (Wagner et al., 2020). Social psychologists also show how touch is important in the maintenance of close relationships (Gallace & Spence, 2010) and relationship satisfaction (Floyd et al., 2009). Neuroscientists investigating the neuroendocrinological outcomes of affective touch consistently find that affective touch is an effective stress buffer (Kidd et al., 2023; Morrison, 2016) and that touch has been linked to oxytocin - sometimes known as the cuddle hormone (Jakubiak & Feeney, 2017). The above research and rest of the extensive literature on affective touch, all highlight how vital touch is within our lives and sets the tone for why the focus of this thesis is affective touch.

The other focal point for this thesis is religion. Religion and touch are well versed with each other. It is well known that religions often have boundaries regarding touch, most famously known are their premarital regulations that forbid sexual touch before marriage. Touch is also a fundamental part of some religious practices in the monotheistic faiths, for example; palms together for prayers in Christianity and hands on the chest during prayer in Islam. Interpersonal touch practices are visible in religious communities during their religious communal gatherings, whether that's in how they greet one another or how they worship together. In Islam for example when praying in congregation it is encouraged to be close together, shoulder to shoulder. The motivation behind studying relationships between faith and affective touch in this thesis can be

broken down into a few points. Firstly, religion has been shown to influence morals and prosocial behaviours (Saroglou et al., 2004; Sulaiman et al., 2022) but has not been given substantial attention in individual differences research. Where religion has been included within affective touch research there tends to be issues with intertwining religion with cultural research. The growth of religious groups within the West (Wormald, 2015) requires research to be updated and religion looked at independently from culture. Additionally, research that has touched upon religion in their work has involved the incorporation of outdated assumptions based on research that predates the current religious demographic (Sorokowska et al., 2021). These assumptions suggest negative relationships between what is well-known to be beneficial for the mind and body (ie affective touch) and individuals that subscribe to religious faith, in turn aiding in the creation of an “other/out-group” group mentality. Individuals are known to behave more leniently towards their in-group compared to the out-group (Leyens et al., 2000).

With the socio-political climate that surrounds people of faith at this current moment in time becoming increasingly threatening and reports of an increase in religious discrimination (Qian, 2023; Rehman & Hanley, 2023; Sher & Rübcke, 2021) leading to greater divides within the general community; the deconstruction of this mentality is essential. This thesis aims to help with this deconstruction by expanding research in affective touch to provide accurate and current representations of the religious cohort and provide explanations that do not further the current divide that exists, but instead offer a path that leads to understanding. In addition to this, the landscape of the religious demographic is changing; this generation has access to content previous generations would have never had access to. This means their understanding of their faith may have developed differently from the past generations and therefore the research that we draw inferences from should be reflective of the current religious demographic, further pushing the motivation for bridging this specific gap in research, to improve understanding of religious groups and move away from outdated assumptions. To this end the main research question this thesis aims to address is: How does faith influence individual differences in attitudes towards affective touch?

Positionality Statement

As a British Bangladeshi Muslimah (Muslim woman) born and raised in the UK my background and lived experience will have inevitably shaped my approach, motivations and interpretations when conducting this research. This thesis exploring affective touch and faith-based individual differences, is a topic that resonates deeply with my own cultural and religious background, especially when considering the current political climate. As a Muslimah living in the UK my understanding of the heightened sense of discomfort within minority backgrounds that are seen as “non-British”, that covers both different ethnic backgrounds and those not subscribing to the dominant faith within the UK is more personal.

Being active within a religious community allows me to have an intrinsic understanding of how faith can shape attitudes towards physical touch, social boundaries, and interpersonal interactions. This understanding has enabled me to interpret outcomes in a manner that might not typically be considered in mainstream psychological research, particularly in relation to how religious individuals experience and navigate affective touch within their communities. However, I also recognise that my personal experiences are not universal, and I have taken measures to ensure that my interpretations are grounded in empirical evidence and participant perspectives rather than assumptions or personal biases.

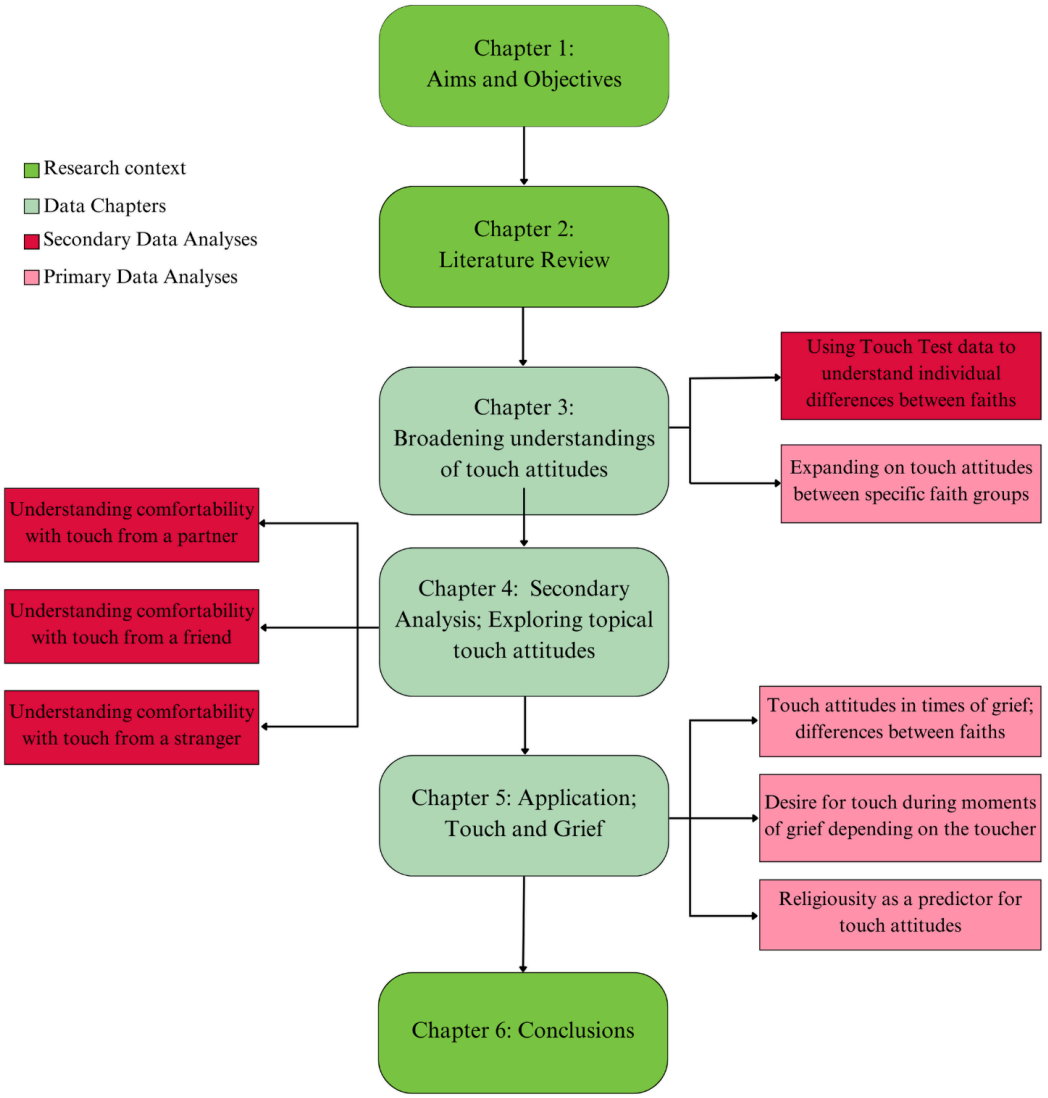
Additionally, as a researcher investigating affective touch, I am also aware that the topic carries cultural, religious, and gendered implications. My identity as a woman from a faith-based and ethnic minority background has heightened my sensitivity to the ways in which touch is often framed in psychological research—frequently from a Western perspective that may overlook or misinterpret the role of religion in shaping touch attitudes and norms.

I also recognise that my positionality could introduce biases in terms of framing and interpreting findings. To mitigate this, I have actively engaged in reflexivity throughout the research process, ensuring that I have considered how my background may have shaped the way I analyse and present the data.

Thesis Outline and Original Contribution

Figure 1.

Illustration of breakdown of thesis content and the relationships between chapters. Detailed descriptions of each chapter are provided below.



Chapter 2

This chapter aims to equip the reader with the necessary background information on touch research. Building a clear picture of its importance in our daily life, its relevance to recent world events and how it differs between individuals. The chapter starts with a broad overview of the extent to which touch is integrated into our lives from birth. Following this, the chapter focuses on the importance of touch from the perspective of deprivation. Specifically exploring what the global

experience of COVID-19 highlighted about touch deprivation and its impact on an individual's mental wellbeing. As the thesis explores individual differences the next section discusses known individual differences studied within touch research, before discussing the lesser understood individual difference of faith. Research on the religious perspectives of touch is reflected upon to bring forth the argument that the current understanding remains too intertwined within cultural research and therefore requires research to specifically investigate these differences. Affection Exchange Theory (Floyd, 2015) is then brought in to aid in the explanation of the aforementioned findings through this theoretical framework of attitudes towards touch before the gaps in the literature and subsequent aims for the rest of the thesis are introduced.

Chapter 3

The purpose of this chapter is to uncover whether there is a difference between religious and non-religious individuals in their attitudes towards touch. Using secondary analysis on a large data set from the Touch Test this chapter looks specifically at healthy UK participants.

Where evidence has assumed religious individuals hold conservative values towards touch this chapter brings in empirical evidence to test this assumption and investigate further. Particular interest is taken with those belonging to the Islamic faith due to both their growth in numbers and the growth of islamophobia in the West. Chapter 3 aims to address this gap by a) a secondary data analysis of a large, cross-sectional sample of UK adults and b) a follow-up study to look further into differences between two major religions.

Chapter 4

Because of evidence supporting the notion that where we deem appropriate to touch and appropriate to be touched can be linked to the perceived emotional bond between the touched and the toucher (Bellard et al., 2023; Suvilehto et al., 2015, 2019), this chapter will investigate whether an individual's faith plays a role in the level of comfortability of touch on the body from three different types of people: their partner, friend and stranger. Similar to chapter 2 this chapter draws from the Touch Test. Meaning Chapter 3 will also use secondary data analysis drawing from a large, cross-sectional sample of UK adults to explore these individual differences in topical touch comfortability between individuals of religious faith and those who are not religious.

Chapter 5

Differing from the aims of the first three chapters, this chapter aims to bring to the discussion how individual differences (including faith, emotional bond and time) interact with real-world situations experienced by humans. Grief is the primary focus here as it is an experience every human is likely to interact with during their lifetime. The understanding of how touch attitudes and behaviours may affect the bereaved/ grieving is limited. The intersection between touch and grief has little evidence that combines what we already know about how grief can affect one's physical and mental health to how affective touch can have a positive effect on such mental and physical health outcomes. Chapter 5 aims to help address this intersection and develop a greater understanding of what individuals desire during moments of grief whilst also investigating how religiosity plays a role in this relationship.

Chapter 6

In this chapter, a breakdown of the contributions made within this thesis is discussed along with the main findings of these contributions and how they impact the current literature surrounding touch. Following this, future research directions that warrant further investigations are suggested.

Chapter 2: Literature Review

Abstract

Of the five major senses (sight, sound, smell, touch and taste), touch is the earliest of the five to develop. Every day of an individual's life from the day they are born will likely include a form of touch, whether it is interpersonal touch between partners, strangers or friends to intrapersonal touch such as washing our faces or applying moisturiser to our bodies. This chapter explores the literature surrounding touch research by highlighting the literature on the importance of touch and how global events impacted our understanding and connection with touch. The review will go on to highlight how touch is essential in 'how we explore the world' around us, how we learn about the objects around us and how we feel connected with the world around us and each other.

Importance of touch across life

Touch is the earliest sense we develop (Mariani Wigley et al., 2023; Gallace & Spence, 2010) and during each individual's life they will experience a range of tactile interactions, from interpersonal touches shared between strangers, colleagues, or friends; to intrapersonal instances of touch like washing the face or applying lotion. Our first experience with sensory sensations of touch begins in the womb (Crucianelli & Filippetti, 2020; Manen, 2018; Nagy et al., 2021) and continues from there. Post-birth, touch is one of the earliest senses to develop as a baby (Gallace & Spence, 2010), a sense that allows us to engage with and understand both our community and surroundings (De Witte, 2011; Fulkerson, 2013; Ratcliffe, 2008; Novak & Schwan, 2021; Rickard & White, 2021).

Humans are known to be social beings (De Waal, 2010; Tamir & Hughes, 2018), therefore it is logical that a sense such as touch will influence our communication styles. Hertenstein and colleagues' (2006) paper investigating how we communicate emotions nonverbally without the use of facial cues and auditory cues support this. Their findings highlighted that by using touch we can discriminate between emotions such as sympathy, love, anger and fear; emotions that humans would need to communicate with each other for social bonding and safety reasons. Their findings

also found that embarrassment, envy and pride were not found to be communicable solely by the use of touch. The latter emotions were deemed as self-focussed emotions, not emotions primarily associated with cooperation (as the former emotions maybe), supporting the notion that touch can be useful when communicating non-verbally with others. A follow-up study by Hertenstein and their colleagues (2009) found that prosocial emotions (love, gratitude and sympathy) were communicated more accurately with touch compared to the other emotions (the "well-studied emotions" anger, fear, happiness, sadness and disgust). These emotions are key in upholding a communal bond and fostering feelings of trust within one another. Research combining touch and emotions highlights the important role interpersonal touch plays in communicating how we feel.

Additionally, research supports the importance of touch through findings that have highlighted our ability to be influenced by others *through touch*. For instance, researchers have suggested that touch and tactile approaches could alter the overt behaviour of an individual (Clements, 1997; Diego et al., 2002; Hegarty & Gale, 1996). Hegarty and Gale (1996) reported a case where a form of affective touch (massage) administered to a patient exhibiting challenging behaviour led to positive and more social changes in their behaviour.

Though not consistently found, there has also been some research that highlights the importance of touch in a societal sense, from an ingroup-outgroup perspective. Through just *imagining* touch with an outgroup member (relative to the participant) Shamloo and colleagues (2018) found that the participants' attitude towards the outgroup member improved and found that this also reduced their bias' towards the outgroup member. Though this was an imagined scenario it remains an important finding. This finding highlights the potential effects of touch, and supports the cultural significance touch can have, even when only imagined. It is important to note that this does not mean the outcome of this research suggests that we begin touching members who we do not identify as our ingroup to improve our attitudes towards them; rather these findings highlight how even implicitly our minds can see value in touch, such that imagined touch can impact how we see our world and communities.

The influence of touch also has the potential to persuade or manipulate, for example, studies have highlighted how being touched by a waiter has led to favourable behaviour from their

customers in the form of more generous tips (Crusco & Wetzel, 1984; Guéguen & Jacob, 2005; Ovesen, 2004; Saleh et al., 2023).

The integration of affectionate touch in our interactions has both psychological and physiological benefits (Carmichael et al., 2021; Debrot et al., 2013, 2021). Existing research has highlighted the advantages of tactile experiences, demonstrating a connection between tactile engagement and psychophysiological outcomes. Debrot and colleagues (2021) investigated touch in romantic relationships and found that across three separate studies, there was evidence to support the positive effect of touch on self-reported well-being, regardless of levels of avoidance attachment (a factor found in other papers to influence touch satisfaction in relationships; Carmichael et al., 2021; Wagner et al., 2020).

Other studies that have highlighted the positive outcomes of affective touch have found that forms of affective touch, like stroking (as opposed to a non-affective fast-neutral touch) can improve an individual's mood and alleviate feelings of social exclusion. From a more clinical lens studies like the ones by Weze and colleagues (2007) have shown that gentle touch can improve depression, anxiety and stress scores on self-report scales. A later 2013 study found that within a clinical setting, touch can play a comforting role and should be welcomed between patient and practitioner (Cocksedge et al., 2013). This study found that expressive touch (touch that is spontaneous and not required as part of a task or clinical examination) was seen as important to patients, as a way to improve non-verbal communication. Some participants specifically referred to the option of receiving touch as reassuring and many participants believed expressive touch from their GP would be positive (Cocksedge et al., 2013). Touch can therefore be a way to express feelings of care without words, even within a clinical setting where the societal boundaries for touch may be more strict.

On the other side of affective touch literature exists research that has highlighted how the lack of tactile experience can exacerbate an individual's feelings of loneliness (Noone & McKenna-Plumley, 2022). Heatley Tejada, Dunbar and Montero (2020) investigated this association directly by assessing whether allowing a participant to receive affective touch (through hand massage administered by an experimenter) can reduce perceived loneliness. They found that

compared to the participants who self-administered a hand massage, the group who were massaged by another showed reduced feelings of neglect within the loneliness scale used within this study. Building on the research that has shown a lack of touch as associated with loneliness there has also been research that has found evidence that suggests loneliness is associated with an increased risk of developing serious mental and physical health conditions such as depression and coronary heart disease (Barton et al., 2024; Valtorta et al., 2016, 2018).

A recent review by Packheiser and colleagues (2023) explored the use of touch interventions on physical and mental health. Their meta-analysis consisting of 137 papers found that touch interventions were found to be effective for the regulation of cortisol, a hormone known for its association with stress. Their meta-analysis also includes a handful of other positive outcomes from touch-based therapies including; a reduction in feelings of pain, an increase in weight in babies, a reduction in depressive feelings, and a reduction in feelings of anxiety- for both adults and children. These findings continue to highlight the importance of touch and its multifaceted benefits. The same magnitude for the benefits of touch are not found in all contexts, their findings also highlighted that touch from a human resulted in greater mental health benefits in comparison to touch from a robot, demonstrating that it is not just affective touch that is important but human affective touch, in the context of mental health benefits.

Our first experience with sensory sensations of touch begins in the womb (Crucianelli & Filippetti, 2020; Manen, 2018; Nagy et al., 2021) and continues from there. Post-birth, touch is one of the earliest senses to develop as a baby (Gallace & Spence, 2010) and evidence consistently attributes affectionate touch from the caregiver as vital to a baby's health. Evidence from Parashar and colleagues (2016) as well as Fatollahzade and colleagues (2022) highlights how forms of gentle touch to infants who are kept in ICU can moderate feelings of pain during procedures, improve their sleep and decrease observed stress levels. The importance of touch from the caregiver specifically is seen in Packheiser and colleagues' (2023) meta-analysis where they found that parental touch was found to be more beneficial than touch from medical staff. Therefore reinforcing that touch is not only vital but our relationship between the toucher and touched is influential.

The importance of social and affective touch has evidence that spans across the human lifetime. Literature around the early development of babies and young infants demonstrates that caregiver-infant tactile interactions play a role in an infant's development amongst numerous domains, from cognitive to social development (Ko et al., 2023). Floyd's Affection Exchange Theory (2006) looks at affective communication (which incorporates touch) as an adaptive behaviour, something needed for our survival. As such, the theory's first postulate surrounds this idea by stating that the exchange of affection is an innate need and capacity we have. Attachment theory heavily dictates the importance of caregiver-child attachment, referring to such a bond as a lasting emotional bond (Bowlby, 1973). Touch between caregiver and child is a large factor in creating and maintaining these attachments (Barnett, 2005; Duhn, 2010), research investigating childhood neglect also supports these findings by highlighting how multiple factors including lack of affectionate touch can have detrimental effects on a child's development and ability to form healthy attachment and relationships (Perry, 1999).

Additionally, developmental psychologists have shown that touch during the earlier years promotes feelings of security (Duhn, 2010; Gürol & Polat, 2012; Hertenstein & Campos, 2001; Weiss et al., 2000). Weiss et al (2000) found that between a mother and their child, it is not about the frequency of touch that occurs but the affective nature of the touch. Nurturing touch was found to be associated with a secure attachment in the child if the child was "robust" i.e. full-term. Later studies highlight how caregiver touch during caregiver-infant interactions (like during playtime) supports an infant's developmental milestones in understanding the world around them and engaging socially with others (Field et al., 2010; Norholt, 2020; Reece et al., 2016; Scott et al., 2022; Tanaka et al., 2021). This also applies to children with neurodevelopmental differences; maternal (caregiver) touch aids in their social interactions (Provenzi et al., 2020).

Furthermore, caregiver-child touch interactions play a pivotal role in the mental health of children during times of extreme distress; research highlights that perceived parental support moderates the relationship between a child's experience of traumatic events and their symptoms of post-traumatic stress disorder (Thabet & Vostanis, 2014). El-Khani and colleagues (2020), conducted an intervention study in the West Bank, a region of the Israeli-occupied land where a

large proportion of the population are young children. It is estimated that half of the young population in the West Bank have experienced a traumatic war event in their lifetime (Khamis, 2005). El-Khani and colleagues' 2020 intervention study aimed to train and implement a simple intervention to aid caregivers with their support of the children living in the West Bank; their intervention included physical interpersonal interactions of light touch between the caregiver and child. Their findings noted a successfully implemented intervention and found that actions like light touch led to reductions in both behavioural and emotional difficulties with the children. Research such as these further validates how vital affective touch is in our lives, demonstrating that even in extremely traumatic situations touch can provide comfort to the most vulnerable populations.

As the years progress, affectionate touch remains a fundamental element in young children's lives. Tactile sensitivity and acuity of touch are greater during childhood and decrease with age, but the *preference* for affective touch is something that increases with age (Zingaretti et al., 2019) and will therefore have significant and lifelong implications. Abnormal touch experiences (such as neglect and abuse) during times of critical brain growth in individuals can have severe consequences on the development of an individual's brain (Bales et al., 2018; Perry & Pollard, 1997; Sonuga-Barke et al., 2017). Behavioural literature has often associated the early deprivation of touch with aggressive behavioural tendencies in adolescence (Field, 2002; Stoff & Susman, 2005), specifically self-aggressive behaviours, including suicide. Additionally, the literature also highlights the increased risk of detrimental adolescent mental health conditions (depression and body dysmorphia) when a child is faced with abusive touch and touch neglect early on in life (Field, 1998; Orbach & Mikulincer, 1998). Though it is important to remember the research here cannot directly manipulate touch to determine causality, there is a link between lack of touch and a series of mental health problems that have been shown consistently (Blackwell, 2000; Gentsch & Kuehn, 2022; Veenema, 2009; Weiss et al., 2001).

The above has highlighted how early instances of touch impact our development as well as our well-being and continue to do so throughout our lives. Touch deprivation at any stage in an individual's life can lead to negative consequences as is evident from research conducted during and post the 2019 global pandemic (Field, 2021; Hasenack et al., 2023; Venkataramu et al., 2020;

Zulueta, 2020). During the bulk of our adult lives, touch has consistently shown how essential it is for positive outcomes in our lives, from our mental well-being to our physical health to the maintenance of our social and romantic relationships. There have been numerous studies conducted to understand the role of touch on our adult social relationships. Gulledge et al's (2003) paper investigated relationship satisfaction and how daily touch experiences may be linked to the participant's satisfaction in their relationships, finding that the couples who engaged in physical affection more were more satisfied in their relationships, similar results are found in later studies that investigated the association between affective touch and the construct of love (Burleson et al., 2013; Jakubiak, 2022; Sorokowska et al., 2023). The findings that link touch and well-being transfer over to friendships too (Brkljačić et al., 2017), conveying once again that touch plays a large role in our well-being and relationship satisfaction with not only romantic partners but platonic partners too. Where many studies investigating relationship satisfaction and touch have conducted touch diaries to investigate the average touch levels of their participants, there has also been research conducted where one cohort was instructed to increase the amount of romantic touch (kissing) in their relationships for 6 weeks. Using this method, Floyd et al. (2009) studied the effects of affectionate touch on particular physical and psychological conditions. Their findings further support touch's influence on our daily lives, with results that the group who were instructed to kiss more frequently showed improvements in perceived stress as well as relationship satisfaction and cholesterol levels.

As we age and move past the bulk of our adult years, the evidence supporting the necessity for effective affective touch and the importance of understanding this continues. Many papers have examined the importance of touch practices and therapies regarding elderly patients. Commonly, studies published in nursing journals house evidence highlighting how touch practices with elderly patients not only improve mood but have observed health benefits such as improved appetite, sleep and immune function (Bush, 2001; Roberson, 2003; Routasalo, 1999; Yücel et al., 2020). Though touch serves many different purposes as we grow from infancy to old age, it is made abundantly clear through the research presented here that touch holds a particular significance throughout our lifetime.

COVID-19 and Affective Touch

The aforementioned research, whether looking at the positive effects of touch or the use of touch as an intervention has come to the same general conclusion that affective touch has important implications in our lives. COVID-19 left the world feeling *out of touch*. During the middle of 2020 parts of the world entered into lockdown. An experience unbeknownst to many individuals that entailed strict restrictions on how we communicate. Touch communication was removed and many were forced to either stay home or keep 2 feet apart when outdoors. This meant individuals no longer got to experience a hug hello, caring embrace or reassuring stroke on the arm - the way they may have grown accustomed to.

This enforced touch restriction many individuals were now required to endure led to an increase in what has been termed “touch hunger”. Touch hunger is a term that defines the feeling of when an individual feels they are not receiving enough touch (Burnside, 1973; Venkataramu et al., 2020; Zulueta, 2020). Studies investigating this sensation have linked touch hunger to several negative mental health outcomes (Floyd, 2014; Tinker et al., 2023), individuals who have reported desiring more touch are also more likely to score higher on scales of anxiety, depression and loneliness among other comorbid disorders (Floyd, 2014).

The increase in longing for touch created by the COVID-19 pandemic, consequently led to new research that supports the association between longing for touch and lower physical, psychological and social quality of life, though longing for touch did not have a significant association with environmental quality of life (Bruno et al., 2023; Hasenack et al., 2023; Jones et al., 2021; Sayin Kasar & Karaman, 2021). A common occurrence during the pandemic for many was enforced isolation to reduce face-to-face social interaction to reduce transmission and limit the spread of the virus. Though these precautions were found to be effective (Fazio et al., 2021; Glogowsky et al., 2021; Moosa, 2020) and therefore able to slow down the transmission of the virus (Moosa, 2020) it had a side effect of increasing the population's longing for touch (Hasenack et al., 2023).

Longing for touch refers to a discrepancy between how much consensual touch an individual receives and how much consensual touch they desire. A recent study (Hasenack et al., 2023) investigated how this longing for touch post-COVID affected an individual's perceived quality of life. Their results highlighted significant associations between a higher longing for touch and a lower quality of life in three of the four domains investigated (physical, psychological and social). This study further exacerbates what research on affective touch has consistently shown, that touch is essential to our health.

Research post-COVID continued this trend in understanding affective touch by investigating how a year-long mandated touch ban affected individuals' attitudes towards touch. This research has highlighted how post COVID there are stronger negative associations with touch. Neuroimaging studies have found evidence for neural changes in the brain, finding an increase in activity in regions associated with hypervigilance and that post-COVID there was no longer a significant difference between positive amplitudes for touch vs. non-touch photos in EEG recordings (Zoabi et al., 2023).

COVID's impact on the world will undoubtedly shape how we now personally view and interact with affective touch, as well as our desires towards affectionate touch. A recent study analysing data from large Twitter databases over 8 years saw an increase in desire for touch (human and pet touch) that remained high after COVID; but the levels of touch avoidance for objects became high and instead of remaining high, returned down to pre-COVID levels of avoidance (Ujitoko et al., 2022). Though the idea of touch may be "touchier" than normal (ie. pre-COVID), it is clear that touch is something that is on the public's mind in the post-COVID era. This thesis will cover both time frames, with sections looking at data that was collected just before the enforced lockdown and other sections looking at touch attitudes and experiences post-lockdown in circumstances that are universally experienced.

Touch and Grief

One chapter of this thesis will investigate affective touch through the experience of grief and bereavement. Grief and bereavement is an experience that is felt by many individuals in their

lifetime. Moments within recent history highlight how grief is being experienced across the world (Adiukwu et al., 2022). For example, during COVID-19 the number of lives lost due to the virus was estimated to be over 6 million across the globe (Johns Hopkins, 2022). Within the United States alone it was estimated that for every life lost due to COVID-19, approximately 9 individuals will have lost a family member (Verdery et al., 2020). Additionally, the current war on Gaza has led to over 20,000 lives lost as of January 2024 (Boukari et al., 2024; Nsutebu et al., 2024), leading Palestinians across the globe to be in a state of grief and bereavement. These are two examples of recent global examples of how grief has impacted many individuals in recent times. Outside of these global examples, every individual in their lifespan will likely face losing a loved one. This feeling of grief, especially if prolonged, can have severe health consequences.

How grief is experienced and the intensity of its impact will vary from individual to individual based on factors such as age, attachment, emotional bond to the deceased and cause of death. Research aiming to understand grief's effect on the physical and mental well-being of an individual has found several concerning outcomes. Amongst the literature surrounding grief, a common outcome of experiencing grief has been loneliness (a feeling also associated with a lack of touch as mentioned previously). Early studies found that loneliness was often associated with loss (Abi-Hashem, 1999; Costello, 1999) and future studies have highlighted the prevalence of loneliness as a requirement in the diagnosis of Prolonged Grief Disorder (Prigerson et al., 2021). In addition to loneliness, other mental health conditions are comorbid with prolonged grief. Simon and colleagues (2007) investigated the comorbidity of psychiatric disorders in individuals suffering from prolonged grief. In their sample of 206 individuals, they found that depression and anxiety were present in over half of their participants (55% for depression and 63% for anxiety). Based on these findings it is clear that grief is an experience greater than just a feeling, it can have long-term severe consequences on an individual's mental well-being. With research on affective touch highlighting touch’s ability to bring a sense of connectedness and warmth to an individual (Guerrero & Floyd, 2006) it is important to grow the literature surrounding grief to understand how individuals feel during moments of grief, what they desire during moments of grief, what can be

done to help alleviate feelings associated with grief within respected boundaries and how affective touch can play a role in these situations.

Recent research that has looked at the interaction between affective touch and grief has shown some important findings. Enmalm and Boehme (2024) found that within a group of individuals who had experienced a loss within the last 2 years, they felt the sensation of grief within the regions of the chest and upper body, this was also the regions of the body they felt the consoling nature of a hug. Additionally, research looking at bereaved mothers has shown that touch is welcomed and even desired during moments of grief (Kempson, 2001; Levitan et al., 2022). Kempson's study (2001) found that therapeutic touch aids grieving mothers in their self-reported levels of despair, depersonalisation and somatisation. Levitan and colleagues (2022) found that when interviewing grieving mothers many expressed a desire for an all-encompassing touch (hug) from their partners. Whether this means that affective touch could be a useful way to relieve/ease feelings of grief across the board and not just with grieving mothers is not yet fully understood as there are many factors to consider. The individual differences in where someone likes to feel touch, the emotional bond between toucher and touched and gender are factors that could influence a person's comfort and attitudes towards being touched at any moment (Bellard et al., 2023; Beßler et al., 2020; Cazzato et al., 2021; Schirmer et al., 2023; Suvilehto et al., 2015, 2019), therefore these factors will also play a role in how touch is perceived and desired in moments of vulnerability like during grief.

Individual differences in touch attitudes and experiences

Despite the breadth of knowledge that highlights to us how vital touch is for our mental, physical and social well-being, we all will experience life (including touch) differently and in turn will have different attitudes towards touch in its various forms and instances. Research investigating attitudes, recency and applications of touch has identified several individual differences that moderate how individuals perceive and give touch. Sex and gender differences have routinely been investigated. Early literature reviews suggested males and females show no difference in touch frequency but that females have a greater tendency to touch other females compared to

males engaging in touch with other males (Stier & Hall, 1984). This difference in touch between genders is further supported in later studies investigating touch in different contexts (Russo et al., 2020), when investigating perceptions of sexual touch, sex differences are reported where women were found to report stimulation on the forearm as more erotic than men did, regardless of the velocity in which touch is given (Bendas et al., 2017).

Recent research conducted by Dueren and colleagues (2021) adds support to the existing literature on gender differences within touch in their investigation of hugs; a social form of affective touch. Their results found differences in the way male and female dyads hug their same sex. These may link to theories of affective touch that posit individuals have different preferences for affective touch depending on the situation, i.e. affectionate feelings and actions are not necessarily synonymous (Floyd, 2015).

Often noted in individual differences research investigating gender/sex, we see factors such as emotional bonds play a mediating role in touch perception and behaviours (Dueren et al., 2021; Suvilehto et al., 2015). Suggesting that though gender may play a role in touch perception and behaviour there are other individual differences which may play a significant role in modulating these behaviours too. Emotional bonds have routinely been seen as an active agent in individual differences research on touch, playing a key role in how individuals like to be touched as well as where topically they like to be touched (Strauss et al., 2020; Suvilehto et al., 2015a; Suvilehto, 2018).

Age is also known to be a factor that can vary an individual's attitudes and perception of touch. Research investigating affective touch and age often concludes that affective touch (specifically CT afferent touch; a type of slowly moving, gentle touch that activates specific fibres and is usually subjectively rated as pleasant, Pawling et al., 2017) is pleasant across all ages, though notably this research has mainly been conducted on the ages between 18-40 (Cruciani et al., 2021) and does not therefore include the early years and later years of an individual's life, where, based on previously mentioned literature, research has indicated touch plays a vital role.

Similarly, we see the role an individual's attachment style may play in the subsequent variation of attitudes and behaviours regarding touch (Chopik et al., 2014; Crucianelli & Filippetti,

2020; Jakubiak & Feeney, 2017; Krahé et al., 2016, 2018; Wagner et al., 2020). Individuals with an avoidant attachment reportedly have less positive feelings toward affectionate touch in both their romantic relationships and child-parent relationships, a finding which coincides with the well-known attachment theory by Bowlby (Bowlby, 1973) that describes how those with avoidant attachments are likely to minimise attachment behaviours (which can include affectionate touch). Recent studies investigating loneliness during COVID further demonstrated how attachment styles can affect the desire for affective touch, von Mohr, Kirsch and Fotopoulou (2021) found that those who were classified as anxiously attached had a higher craving for touch but found the reverse observation for those who were classified as avoidantly attached.

The aforementioned are the internal individual differences that affect our attitudes and feelings towards touch, however, external factors such as societal and cultural norms also play a role in the formulation of our attitudes and behaviours (Hollinger & Buschmann, 1993). Early research investigating cultural and gender differences within the European continent found evidence that suggests a more positive attitude towards touch based on the frequency of touch observed in the regions investigated (Remland et al., 1995). These findings are further supported by recent research that expands the geographical regions of interest from Europe to America and Asia; encompassing what is known as Western cultures and Eastern cultures (Burleson et al., 2019; Dibiase & Gunnoe, 2004; Jakubiak & Feeney, 2017; Suvilehto et al., 2015, 2019). Findings often suggest that Western cultures have a more positive attitude towards touch compared to Eastern cultures (Suvilehto et al., 2019). Suvilehto and colleagues (2019) also found that the emotional bond towards an individual moderates where individuals feel comfortable being touched. Jakubiak and Feeney's review (2017) suggests an alternative explanation for these findings. They argue that perhaps the reason the non-western cultures (listed primarily as the Mediterranean countries, Central America, South America and Islamic countries) report touch as less positive than Western cultures is due to the cultural norms in these non-western cultures that include touch as a part of these norms and therefore is not seen as affective in the same way. Instead, it is the norm that these individuals partake in within their communities, and perhaps aligns with theories of affective touch (specifically Affection Exchange Theory; Floyd, 2015) that propose affective

communication can be adaptive as it aids in the establishment and retention of communal bonds which essentially aids in survival.

The above demonstrates how though research is consistently highlighting the importance of touch and the effect a lack of touch can have on an individual's physical and mental well being some factors can significantly affect these findings. Touch literature that has investigated cultural differences in the various areas of affective touch research, tends to also note the other potential factors that could influence play a role in the cultural differences. One of these potential factors is an individual's religious faith. This is commonly followed by a link to conservatism (in regards to touch)(Malka et al., 2012; Sorokowska et al., 2021) and the understanding within touch literature surrounding religion's influence on affective touch ceases there. An individual's religion and faith tend to shape the morals and behaviours these individuals strive towards (Ezzy, 2016). Therefore, their attitudes towards integral components of life (ie. touch) should be understood in greater detail. The aforementioned assumption of conservative touch values within faiths is an example of why research needs to be conducted specifically investigating these groups and the potential group differences. Despite the assumption of conservatism towards touch, many faiths embrace touch within their practices and rituals (Beaven, 2020; Ferch 2000). Additionally, there is a growing diverse multi-faith population within the West, Muslims for example; roughly 60% of their growing population resides in Western Europe (Anwar, 2021; Burleson et al., 2019).

Religious perspectives on touch

Where religion and culture have shown overlap in the past, there is a distinction that requires understanding in the modern age. Culture in the context of touch research is defined typically by a region of the world and, as referenced above, has been found to be a factor in which individuals differ in with regards to their affective touch attitudes. Religion/religiosity is just one component in what differs geographical cultures from one another, and therefore within cultural differences research is where religion is likely to be mentioned amongst other factors that contribute to "culture". But with the growth of religion (Wormwald, 2015) in the western world, religion must be looked at in its own context. Additionally, there is greater access to religious texts

in today's age along with the growth in religious individuals outside of the origin of many religious faiths. This creates a new hybrid community of religious individuals who may be learning their religion outside of their cultural origins. When religion is understood outside of a cultural shadow, touch can more easily be recognised as a vital component of religion (De Witte, 2011). Touch plays a role in religious practices across the monotheistic faiths, for example; palms together for prayers in Christians often place their palms together when making prayers and Muslims will hold their hands to their chest during their daily prayers. As mentioned above we often only see Individual Differences research introducing religion predominantly when culture is investigated. Religion's relationship with touch is usually brought into literature through their boundaries with touch, most famously being the abstinence from premarital regulations, a.k.a. the forbidding of sexual touch before marriage. Religion's association with touch from academic literature suggests that religious individuals have a more negative and conservative attitude towards touch (Sorokowska et al., 2021), which can indicate they are more likely to be less "touchy". Typically cultures outside of the West have a higher density of religious individuals (Mitchell, 2018). Research has highlighted regions of the world that are less "touchy" as the same regions that have a greater homicide rate (Field, 2002; Hertzberg et al., 2007). This paired with the notion that religious groups are automatically more conservative in their touch attitudes due to conservative political associations (Sorokowska et al., 2021) is a dangerous grey area to make inferences from. With the increase in religious discrimination from islamophobia to antisemitism (Ahmadi & Cole, 2023; Jacobs, 2023), new research must be conducted that takes into account the perspective of religious individuals. In addition to this, it is important to bridge this gap in knowledge from a theoretical background as well as a political one.

Though research on affective touch has successfully explored why touch is important and how we differ from one another, neither has fully taken into account the religious perspective and how an individual's religious faith might play a role in touch attitudes, perceptions and behaviours. Perhaps due to the past misunderstanding and conglomeration that religion and culture are intertwined in a way that cannot be separated, however, with the religious population becoming much younger in age (Wormald, 2015) and having access to materials surrounding their faith their

ancestors and predecessors may not have, the distinction between religion and culture becomes clearer and therefore needed to be studied. How does religion play a role in how we perceive touch and does this support the current theories around why we touch and why it is important?

Theoretical frameworks of attitudes towards touch

The majority of research introduced in this chapter can be explained by what is known as the Affection Exchange Theory (AET, Floyd, 2015). This theory aims to explain why we engage in non-verbal communication (such as touch); with the aforementioned research, it is evident that non-verbal communication like affective touch has numerous benefits when used appropriately and numerous detrimental consequences when revoked or absent from individuals of any age. The above studies have highlighted how even in dire situations affective touch (as a form of nonverbal communication) can be used to treat young children in war-torn circumstances and reduce feelings of stress. The theory comprises five theoretical propositions, the aims of this thesis will include adding to this theory's perspective on affection exchange.

Where this theory is often addressed in affective touch research is via the theory's third postulate; that we engage in affection exchange due to the potential of increasing our chance of survival. Affective touch research has provided evidence for this proposition through findings that affective touch engagement has been shown to have positive effects on our physical health, reducing symptoms of major health conditions such as stress (Kivimäki et al., 2023; Quick, 2014). Additionally, some findings from studies investigating touch suggest prosocial outcomes that further support Floyd's third postulate; slow affective touch has been found to reduce feelings of social exclusion and rejection (von Mohr et al., 2017). Though there is a plethora of research which can be explained by and support Floyd's AET, there is a large perspective that has been too often combined with other factors and therefore overlooked in research.

Gaps in the existing literature

Based on Kory's Affection Exchange Theory, part of the reason we engage in affective communication is for human survival, which can be attributed to strong social bonds. Additionally,

the theory explains how “affectionate feelings and affectionate expressions are distinct experiences that often, but need not, covary” (Floyd, 2015). Research into how religious faith can contribute to individual differences in touch attitudes and behaviours will directly feed into this theory as religious faiths are largely community based and touch attitudes and behaviours may vary depending on how religiously active an individual is as well as the emotional bonds that individuals have towards others.

Aims and overviews of the thesis:

This thesis will address questions that surround individual differences in touch attitudes and how these interact with key aspects of our lives. The next chapter (3) of the thesis will focus on uncovering whether there is a difference between religious and non-religious individuals in their attitudes towards touch. Evidence alludes to religious individuals holding conservative values towards touch due to findings of religiosity being associated with conservative political alignments. However, empirical evidence investigating this is limited and therefore chapter 3 aims to address this gap by a) a secondary data analysis of a large, cross-sectional sample of UK adults and b) a follow-up study to look further into differences within religions. Following this theme where touch attitudes may differ, acceptable social topography may also differ between those who are religious and those who are not. Evidence strongly supports that where we deem appropriate to touch can be linked to the perceived emotional bond between the touched and the toucher. Chapter 4 will also use secondary data analysis of a large, cross-sectional sample of UK adults to explore these individual differences in topical touch comfortability between individuals of religious faith and those who are not religious. We then move to investigate how these individual differences may play out in essential parts of human life. A common part of the human life experience is loss. The understanding of how touch attitudes and behaviours may affect the bereaved/ grieving is limited, the intersection has little evidence that combines what we already know about how grief can affect one's physical and mental health and how affective touch has a positive effect on such health outcomes. Chapter 5 will address this intersection whilst also investigating the differences between religious and non-religious individuals in their grief-touch behaviours and desires.

Chapter 3: Individual differences in touch attitudes between faiths.

Abstract

This chapter aims to explore and expand on individual differences research by investigating the effect of religious faith on an individual's touch attitudes. Prior research highlights differences in gender, sex, attachment styles and cultures. However, despite the findings that an individual's religion plays a significant role in formulating attitudes and morals, religion-related individual differences have not been fully explored in the context of touch. This chapter takes a step in identifying whether there are differences between how those belonging to religious faiths feel about touch in various situations compared to matched non-religious individuals. Later in the chapter, the differences between the two major global faiths (Christianity and Islam) are investigated. Findings showed significant differences between groups that challenge traditional stereotypes. On average the religious group presented as more positive in their attitudes towards touch, in direct contradiction to past literature where less positive, more conservative touch values have been linked to those subscribing to religious faiths. Study 2 found significant differences between Christians and Muslims in their attitudes towards touch in treatment settings, with the Christian cohort exhibiting a more positive outlook. Potential explanations are discussed with links to current and historical political and social climates.

General Introduction

Experiencing touch is universal; each human will encounter touch in their lives. From birth, we know that touch is a salient factor in a human's life, in how we develop and form bonds with the community (Agustina et al., 2022; Ekström & Cekaite, 2023; Hertenstein et al., 2009; Kluny & Dillard, 2022; Mercuri et al., 2023). The association between touch and positive life outcomes is strong, with research supporting its positive effect on physical and mental well-being (Cascio et al., 2019; Morrison, 2016; von Mohr et al., 2017). Similarly, research has shown how a lack of touch can have a negative effect and increase feelings of loneliness (Cascio et al., 2019; Della Longa et al., 2022; Heatley Tejada et al., 2020; Noone & McKenna-Plumley, 2022; Saporta et al., 2022;

Sumich et al., 2022). The 2019 COVID pandemic exacerbated feelings of loneliness globally (Killgore et al., 2020) and led to many missing the feeling of touch. Qualitative research to understand how loneliness was experienced during lockdown found that amongst the four main themes uncovered, touch- or lack thereof- appeared as a sub-theme across ages and genders (McKenna-Plumley et al., 2021). Touch is ingrained in our lives and will be a factor in how many things impact our lives, health, and well-being, as described above, but touch can also impact our interpersonal lives. Early affective touch between a caregiver and an infant is strongly associated with an infant's feelings of safety (Yoshida & Funato, 2021) and is important in adult romantic relationships, too (Debrot et al., 2013; Jakubiak, 2022; Jakubiak & Feeney, 2017). Floyd's Affection Exchange Theory (AET) helps explain such findings by suggesting affectionate communication is essential to survival and human wellness (Floyd, 2006). AET holds five postulates, all summating the idea that giving and receiving touch is innate.

One of the core postulates of AET suggests that though affectionate touch is innate and necessary for survival, there is also a difference in our tolerance for affective touch. In other words, how we interact using touch, our comfortability with being touched and our propensity for social touch will vary between one another. Attitudes, recency and use of touch all show evidence in favour of this and highlight individual differences on numerous levels. Prior research highlights specific differences between gender and sex (Stier & Hall, 1984; Russo, Ottaviani & Spitoni, 2020; Dueren et al., 2021; Bendas et al., 2017), attachment styles (Kim, Feeney & Jakubiak, 2018; Jakubiak, Fuentes & Feeney, 2021) and cultures (Remland et al., 1995; Suvilehto et al., 2019; Sorokowska et al., 2021; Burleson et al., 2019). Some of the research that has touched upon the cultural differences in touch (recency, preference or attitudes) has taken note of the types of factors that may impact these findings on a cultural level. One of these factors highlighted is religious faith. Though not fully explored, religion has been associated with conservative values when it comes to touch behaviours and attitudes (Sorokowska et al., 2021)

Sorokowska et al.'s (2021) research investigating cultural differences in affective touch behaviours in close relationships is one recent example of literature that touches upon religion when addressing affective touch. Here, the authors included religion as a factor that could account

for variability in cultural differences. The relationship between an individual's religious faith and attitudes towards touch mimics the relationship between conservatism and attitudes towards touch. Both are suggested to be negatively related to affective touch due to links with political conservatism and ideas surrounding a specific form of affective touch: sexual touch. In turn, the association between touch and conservative political values has been linked to religion due to findings of political conservatism also relating to religiosity (Carney et al., 2008; Malka et al., 2012; Smidt & Penning, 1982). When addressing religion and touch, the initial thought is often towards sexual touch and the subsequent general restrictions faiths have been found to put on premarital sexual touch. Research has previously supported the argument that religiosity has a negative relationship with affectionate touch (Burdette et al., 2009). However, in these instances, affectionate touch was only investigated as a form of sexual touch.

On the other hand, affectionate touch takes on many forms outside of sexual touch, forms that have been investigated outside the scope of religion (Cekaite & Bergnehr, 2018; Sorokowska et al., 2023). Meaning that the associations between religion and conservative-negative touch values would not hold much validity, as these studies have not looked at an individual's experiences and attitudes towards affectionate touch outside the scope of premarital sex, and the inferences made come in conjunction with research conducted during a different zeitgeist. Research into affective touch that has expanded outside the realms of sexual touch has revealed significant gender differences between men and women, specifically in their hug behaviours (Dueren et al., 2021). Romantic relationship-touch research has many examples where sex as a form of affective touch can be relevant. Still, it is not the sole form of affective touch that is important enough to be investigated. The literature surrounding this has seen studies differentiate and look at nonsexual forms of affective touch, ranging from hand-holding to caressing (Conradi et al., 2020; Gulledge et al., 2004; Jakubiak et al., 2021; Sahi et al., 2021; Wagner et al., 2020).

Though religion has been investigated as a factor within cultural differences research investigating affectionate touch, religion has had little research solely investigating its impact on affective touch attitudes and behaviours despite studies having shown that subscribing to religious faith and their specific beliefs has for many years can be a key motive for many individuals in their

decision making, morals and interpretation of experiences (Sulaiman et al., 2022). Additionally, religiosity has been linked to prosocial traits, namely empathy and compassion (Saroglou et al., 2004). With the global religious profile shifting, the population of some religious groups growing rapidly (Madni et al., 2022) and the general increase in religious discrimination experienced by people of religious faith (Abu Khalaf et al., 2023; Ghumman et al., 2013; Khiterer, 2023; Qian, 2023; Rehman & Hanley, 2023; Sher & Rübcke, 2021), it is imperative research is conducted to understand any differences to aid in a more harmonious society and the incorporation of policies around touch that not only benefits us but respects everyone's boundaries. The effects of religious discrimination are heavy on the individual experiencing it; negative effects on life satisfaction are large and comparable to the effects of major life events such as becoming unemployed and widowed (Vang et al., 2019). A large number of reported religious discrimination in the West is directed towards Muslims; islamophobia is known to have dramatically spiked and has been on the rise reportedly since the terror attack on the World Trade Centre in New York City on September 11th 2001(Akel, 2021; Farooqui & Kaushik, 2022; Vandenbelt, 2021). Numerous studies investigating the media portrayal of Muslims have found commonalities in reporting styles, often using a negative framework, aiding a portrayal of Muslims as alien and different to the general public (Poole & Williamson, 2023; Saeed, 2007).

Given the above findings, it is surprising that touch research has not yet fully investigated the other forms of affective touch outside sexual touch and the potential differences between non-religious and religious individuals.

Where past research may have focused more on a single important aspect of affectionate touch (sexual touch), the study reported in this chapter aims to cover more types of affectionate touch to allow for a better picture of how religious faith may affect an individual’s experience and attitude towards touch. Specifically, it aims to investigate the individual differences between people of religious faiths and non-religious people, as well as the differences between faiths themselves in their touch attitudes.

Here, the aim was to assess whether there are differences in experiences and attitudes towards touch between religious groups, first religious and non-religious and then between the two

most prevalent faiths in the UK- Christianity and Islam. We aim to understand differences in affectionate touch and other forms of touch (i.e. touch in social settings and treatment settings)

To accomplish this, secondary data analysis was initially conducted using cross-sectional questionnaire data. Data was drawn from The Touch Test (Penton et al., 2022; Dueren et al., 2022; Vafeiadou et al., 2022) - a global open-access data set exploring attitudes and experiences towards touch. Within this survey, participants were asked about their touch attitudes across three separate questionnaires: The Touch Experiences and Attitudes Questionnaire (TEAQ; Trotter et al., 2018), the Social Touch Questionnaire (STQ; Wilhelm et al., 2001) and the Touch in Health Scale (THS; Vafeiadou et al., 2022). Responses to these questions were analysed in a large UK healthy adult sample (> 15,000 respondents). Participants who had physical conditions, mental health conditions, and those identifying as neurodiverse were not included due to lack of responders for comparison and in order to minimise variability within the data set. Additionally, to investigate potential differences between those subscribing to the Islamic faith, I compared them to the most prevalent UK faith, Christianity. This chapter will, therefore, explore how affective touch attitudes differ in these groups and where, which will help curate well-informed inferences about these different groups, reducing misinformed stigmas. Based on the literature reviewed above, it was predicted that:

• Hypothesis 1a: Religious and non-religious responders will differ in how positive their attitude is towards touch.

• Hypothesis 1b: Christian and Muslim responders will differ in how positive their attitude is towards touch.

Study 1: Individual differences in touch attitudes between Religious and Non-Religious groups and within different faiths

Methods:

Procedure: Data collection

Data for this study was drawn from The 'Touch Test'(Penton et al., 2022; Dueren et al., 2022; Vafeiadou et al., 2022). This self-reported cross-sectional questionnaire was conducted online between 20/01/2020 and 31/03/2020 and explored attitudes to touch in various ways using a worldwide sample.

Participation in the Touch Test was voluntary and involved no compensation for participation. In order to complete the study online, informed consent was obtained, and participants were required to be 18 or older and have internet access on a computer, smartphone, or tablet. Upon starting the survey, participants had 7 days to complete the study. Goldsmiths' (University of London) ethics committee approved the data collection used in this study. Though a worldwide sample was acquired (respondents from 113 countries), the UK presented the largest cohort, whereas in other countries, there were much smaller respondents(e.g., for some countries, N = 1). Therefore, only data from healthy UK respondents were analysed. Participants included in the analysis were grouped and matched on age and gender. (see the matchings section below for details).

Measures*:*

The Touch Test contained several measures that explore attitudes to touch. The measures where data was obtained for this analysis were chosen according to their wide use in the literature on touch attitudes. Where appropriate, shortened versions of a given measure were used to avoid increasing the overall Touch Test survey length. The following are the measures included specifically for this study and were chosen according to their wide use in touch attitudes literature (Beltrán et al., 2020; Schienle et al., 2022; Van Puyvelde et al., 2019; von Mohr et al., 2021) and relevance to this study.

Modified Touch Experiences and Attitudes Questionnaire (TEAQ)

This was used to measure general attitudes towards touch. The Touch Test uses a shortened questionnaire version (Trotter et al., 2018). Based on Trotter et al.'s paper, the modified questionnaire has twelve items selected from the 57-item TEAQ for use in the current study. These items represent the 6 subscales of the questionnaire, two items from each subscale (the top two highest loading items for each subscale). Scores were summed (3 items reverse-coded) to create an overall TEAQ score (Cronbach's Alpha in the current sample = 0.762), with higher scores indicative of more *positive* attitudes to touch. The modified TEAQ retains the same 6 subscales from the original scale: Childhood Touch (ChT), Friends and Family Touch (FFT), Current Intimate Touch (CIT), Attitude to Intimate Touch (AIT), Attitude to Self-Care (ASC), and Attitude to Unfamiliar Touch (AUT). Responses were received through a 5-point scale to indicate whether they 'Disagree strongly', 'Disagree slightly', 'Neither agree nor disagree', 'Agree a little', or 'Agree strongly' with each statement (e.g., "I always greet my friends and family by giving them a hug."). Questions were scored from 1 (disagree strongly) to 5 (agree strongly).

Social Touch Questionnaire (STQ)

Attitudes to social touch were assessed using the 20-item (STQ; Wilhelm et al., 2001). The questionnaire has 3 subscales: Dislike of Physical Touch (DPT), Liking of Familiar Physical Touch (LFPT) and Liking of Public Physical Touch (LPPT). Participants responded using a 5-point scale (Not at all, Slightly, Moderately, Very, Extremely) to indicate how characteristic or true each statement was of them (e.g., "I feel uncomfortable when someone I don't know very well hugs me"). Questions were scored from 0 (not at all) to 5 (extremely). Scores were summed (10 items reverse-coded) to create an overall STQ score, with higher scores indicative of more *negative* attitudes to social touch (Cronbach's Alpha in the current sample = 0.87).

The Touch & Health Scale (THS)

The THS consists of 14 items that measure attitudes towards touch within treatment settings (medical and non-medical)(Vafeiadou et al., 2022). The questionnaire has 3 subscales: Engagement in Tactile Treatments (ETT), Communication Facilitation via Touch (CFT) and Comfort with Touch in Medical Settings (CTM). The THS items were measured on a five-point scale, with

scores ranging from 1–5 for each item (‘Strongly disagree’ to ‘Strongly agree') with each statement. Half of the items were reverse scored (2, 3, 5, 7, 11, 13, 14). Total scores (sum of responses) could range between 14–70, with higher scores indicating more *positive* attitudes to touch (Cronbach’s Alpha in the current sample = 0.859).

Participants:

As mentioned earlier, only healthy participants from the Touch Tests UK sample who did not report any health conditions or impairments were included in the study. This was primarily because the largest number of participants were recruited from this region. All genders (male, female, non-binary, prefer not to say and prefer to self-describe) were included in this analysis. Additionally, since we were interested in comparisons between non-religious and religious participants (Christians, Jews, Muslims and Sikhs), we filtered only to include these participants. Thus, individuals who replied “Yes" or “No” to the questions “Are you religious?” were included in the study. Then, these individuals who reported following one of the four monotheistic religions were included, and participants who reported “Buddhist”, “Hindu”, “Prefer not to say”, and “A religion not listed here” were excluded. Monotheistic faiths were chosen for this sample for two reasons: a) they were larger in number overall, and b) they hold similar core beliefs of one main deity/God/creator. The participants were then filtered to include individuals with complete data for age and gender before being matched to one another based on their age and gender.

This filtering approach resulted in 14140 participants in total (N), with Religious = 3303 and Non-Religious = 10837. Since the sample sizes of non-religious and monotheist-religious groups were highly disproportionate (Non-Religious < 2 x Religious), a matching sample procedure (1st matching) to facilitate group comparisons with equal group sample sizes was conducted. We were also interested in the differences between the four monotheist religious groups. Thus, since the sample sizes of the different religious groups were also unequal (3562 Christians: 61 Jewish: 49 Muslim: 10 Sikh), we performed another match using only the religious group (2nd matching).

Matchings

A custom R script using the “matchit” package (Ho et al., 2011) was used to perform the nearest neighbour matching method (method = “nearest”) with distance specified by a generalised linear model (distance = “glm”), the binary variable of “Are you religious”-yes/no as grouping variable and gender and age variables as covariates. After matching, a filtering variable was created to identify the matched cases from the original TouchTest dataset. See Table 1 for the sample’s characteristics of the first matching.

Table 3.1

1st Matching: Non-religious with religious group

Group	Sample size	Age	Gender
Non-Religious	3303	58.56 +-/- 13.09 (18-88)	777 Males 2519 Females 1 non-Binary 3 Prefer not to say 3 Prefer to self-describe
Religious	3303	58.56 +-/- 13.09 (18 -92)	778 Males 2514 Females 3 non-binary 2 Prefer not to say 6 Prefer to self-describe
Total Sample	6606	58.56 +-/- 13.01 (18-92)	1555 Males 5033 Females 4 non-binary 5 Prefer not to say 9 Prefer to self-describe

The second matching was done between Muslims and Christians. To do this, the same matching process written above was repeated. See Table 2 below for the sample's characteristics. After matching, two filtering variables were created to identify the matching cases from the original TouchTest dataset. The total matched sample displayed below is reduced from the first matching due to the smaller number of Muslim participants in the filtered Touch Test sample.

Table 3.2

2nd Matching: Muslim with Christian group

Group	Sample size	Age	Gender

Muslim	74	29.7+-/- 7.8 (19-51)	42 Males 32 Females
Christian	74	28.3 +-/- 9.4 (19 -69)	32 Males 42 Females

Lastly, the matched and unmatched datasets were joined from the first and second matching processes based on participants' ID numbers. The filters created to identify the different matching samples were used to identify the sample's characteristics and to perform the planned analysis.

Analysis

Within this analysis, participants' reported attitude towards touch was the dependent variable, and different touch contexts, as measured by the different subscales (TEAQ, STQ and THS), was the within-participant independent variable. This is because these attitudes can vary across situations, individuals involved, and time touched. Each subscale is treated as its own level within the variable and has the potential to interact with one another. Therefore, this chapter is interested in the interaction among these subscales.

Analysis - Study 1: Religious and Non-Religious

In study 1, 6606 participants (calculated through first matching) were used for analysis. Three separate ANOVAs were conducted to investigate group differences in each questionnaire. Each ANOVA broke down the questionnaire into its respective subscales, and so each subscale is treated individually; where a participant may be excluded from the analysis of one subscale, they can still be included in analyses for other subscales on that scale.

Three separate ANOVAs were conducted: a) 6(TEAQ) x 2(Religiosity group), b) 3(STQ) x 2(Religiosity group), and c) a 3(THS) x 2(Religiosity group) mixed measure ANOVAs were conducted. All were run to examine group differences in participants' attitudes towards touch,

touching on several factors from current attitudes to upbringing and attitudes in health-care settings. It should be noted that Bonferroni-corrected tests were run for any post hoc comparisons.

Analysis - Study 2: Muslims and Christians

A total of 34 participants (this total was calculated after the second matching) were used for analysis in study 2. Three separate ANOVAs were conducted to investigate group differences in each questionnaire. Each ANOVA also broke down the questionnaire into their respective subscales and so are treated individually; where a participant may be excluded from the analysis of one subscale, they can still be included in analyses for other subscales on that scale.

Three separate ANOVAs were conducted for the second study exploring differences between religious groups themselves; in this instance, Christianity and Islam: a) 6(TEAQ) x 2(Religion), b) 3(STQ) x 2 (Religion), and c) a 3(THS) x 2(Religion) mixed measure ANOVAs were conducted Matching the aims of study 1, all were run to look at group differences in participants' attitudes towards touch. The appropriate Bonferroni corrections were applied for post-hocs.

Results:

Analysis 1: Group differences in attitudes towards touch in Religious and Non-Religious groups.

TEAQ

A 6(TEAQ subscale) x 2(Religiosity) mixed methods ANOVA on TEAQ subscales and religiosity groups showed a main effect of baseline Religiosity, meaning that TEAQ scores were statistically significantly different between religious and non-religious groups, $F(1, 4598) = 26.5$, $p<.001$, partial $\eta^2= .006$. Specifically, the religious group (M=7.1, SE=.027) scored higher overall than non-religious groups (M=6.89, SE=.032).

The ANOVA on TEAQ subscales and religiosity groups also revealed a main effect of TEAQ subscale, meaning that TEAQ scores were significantly different between each subscale, $F(4.5, 20724) = 760.5$, $p<.001$, partial $\eta^2= .142$. Bonferroni corrected pairwise comparisons highlight several statistically significant differences between the subscales.

FFT scores (M=7.125, SE= 0.034) were significantly greater than scores on CIT (M=6.65, SE= 0.044), ChT (M=6.77, SE= 0.039), ASC (M=5.96, SE= 0.034), AUT (M=6.86, SE= 0.034), p<.001, indicating a more positive attitude towards friends and family touch compared to current intimate touch, childhood touch, attitudes towards self-care and attitudes towards unfamiliar touch. However, FFT scores were significantly lower than scores on AIT (M=8.6, SE= 0.028,p<.001), indicating participants exhibited a more positive attitude towards intimate touch than their attitudes towards friends and family touch.

Additionally, CIT scores (M=6.65, SE= 0.044) were significantly lower than scores on AIT (M=8.6, SE= 0.028) and AUT (M=6.86, SE= 0.034), p<.001. This suggests that individuals hold a more positive attitude towards intimate and unfamiliar touch than they do to their current levels of intimate touch. Conversely, CIT (M=6.65, SE= 0.044) scores were significantly higher than ASC (M=5.96, SE= 0.034), indicating a more positive attitude towards current intimate touch than self-care. CIT scores (M=6.65, SE= 0.044) were not found to be significantly different from ChT scores (M=6.77, SE= 0.039, p=.349), suggesting no statistically significant difference between the participant's current intimate touch and childhood touch experiences. ChT scores (M=6.77, SE= 0.039) differed significantly between ASC and AIT. Specifically, ChT scores (M=6.77, SE= 0.039) were significantly greater than ASC scores (M=5.96, SE= 0.034, p<.001), indicating a more positive attitude towards childhood touch compared to their attitudes towards self-care. The opposite was found between ChT (M=6.77, SE= 0.039) and AIT (M=8.6, SE= 0.028), with findings that attitudes towards intimate touch are more positive than attitudes towards childhood touch experiences (p<.001). Significant differences were not found between ChT (M=6.77, SE= 0.039) and AUT (M=6.86, SE= 0.034) p=.692). ASC scores (M=5.96, SE= 0.034) were found to be significantly lower than the scores from the AIT (M=8.6, SE= 0.028), p<.001 and AUT (M=6.86, SE= 0.034), p<.001 subscales, indicating attitudes towards intimate and unfamiliar touch were more positive than attitudes towards self-care. AIT scores were significantly greater than AUT scores (M=6.86, SE= 0.034), p<.001, indicating more positive attitudes towards intimate touch over unfamiliar touch.

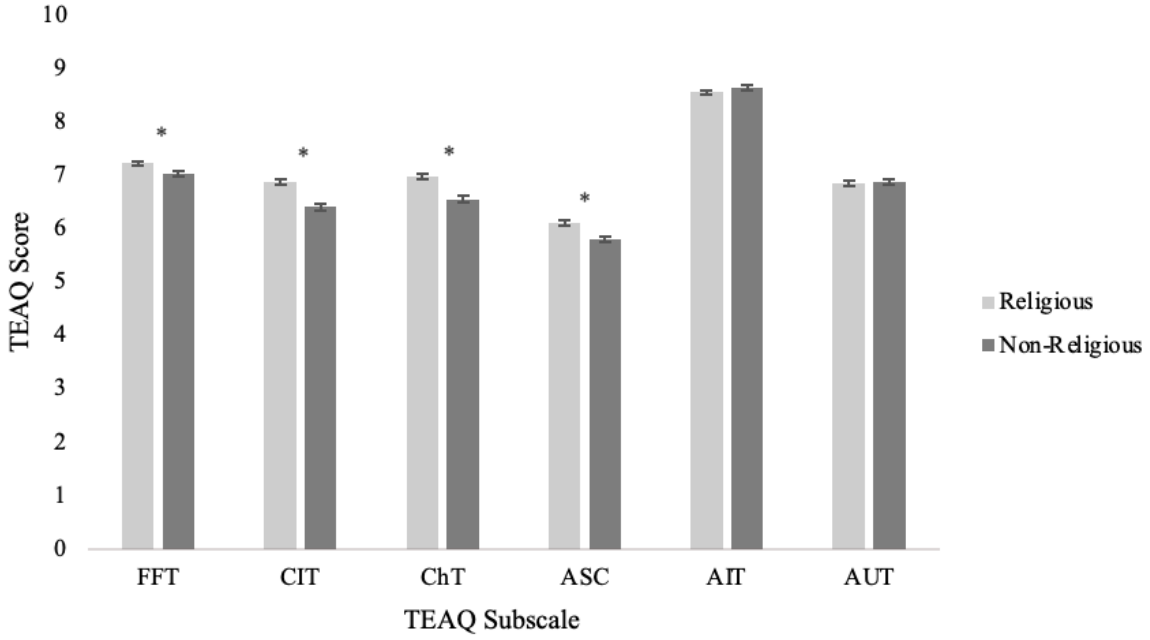
There was also a statistically significant interaction between TEAQ and religiosity groups, $F(4.5,20724)=14.04$, $p<.001$. Bonferroni corrected independent-sample t-tests were run on each subscale of TEAQ, comparing them between the two religiosity groups (see Figure 3.1). There was a statistically significant difference in FFT scores between religious (M=7.22, SD= 2.24) and non-religious (M=7.02, SD= 2.3) individuals, with religious scoring higher (indicating a more positive attitude towards that particular type of touch) than non-religious individuals, $t(4617) = -3.013$, $p=.003$. There was a statistically significant difference in CIT scores between religious (M=6.88, SD= 2.9) and non-religious (M=6.4, SD= 2.97) individuals, with religious scoring higher (indicating a more positive attitude towards that current intimate touch) than non-religious individuals, $t(4129) = -5.43$, $p<.001$. A statistically significant difference in ChT scores between religious (M=6.98, SD= 2.58) and non-religious (M=6.55, SD= 2.65) individuals was also revealed, with religious individuals showing a more positive response to ChT than non-religious individuals, $t(4616) = -5.55$, $p<.001$. ASC scores were found to have statistically significant differences in scores between religious (M=6.11, SD= 2.27) and non-religious (M=5.8, SD= 2.25) individuals, with religious individuals showing a more positive response than non-religious individuals, $t(4613) = -4.54$, $p<.001$. No statistically significant differences were found between religious (M=8.55, SD= 1.91) individuals and non-religious (M=8.64, SD= 1.84) individuals on the AIT subscale ($t(4608) =1.67$, $p=.095$). Similarly, there was not a statistically significant difference between the religious (M=6.84, SE= 2.32) and non-religious (M=6.88, SE= 2.28) groups on the AUT subscale $t(4618) =.615$, $p=.539$.

Furthermore, one-way ANOVAs investigating the religious groups separately highlighted significant main effects within the TEAQ subscales after separating the baseline religiosity groups. TEAQ scores on each subscale differed significantly from each other for the religious group, $F(4.47, 11890)=384.2$, $p<.001$, partial $\eta^2= .126$, and the non-religious group, $F(4.54, 8799)=385.6$, $p<.001$, partial $\eta^2= .166$. Bonferroni corrected pairwise comparisons show that most TEAQ subscales differed significantly from each other for the non-religious group, $p<.001$, except for FFT compared to AUT, $p=0.324$ (see table 3.3 for a full breakdown of pairwise comparisons). Similarly, pairwise comparisons of the religious group on the TEAQ subscales found significant differences

between many subscales, p<.001 (see table 3.4 for detailed table). The exception was between CIT (M=6.89, SE=.056) and ChT (M=6.98, SD=.05), where there was no statistically significant difference in attitudes within the religious group, *p*=1.0. Additionally, there was no statistically significant difference between CIT (M=6.89, SE=.056) and AUT (M=6.84, SE=.045), *p*=1.0.

Figure 3.1

Average TEAQ scores grouped by religiosity.



Note. FFT = Friends Family Touch, CIT = Current Intimate Touch, ChT = Childhood Touch, ASC = Attitudes towards Self-Care, AIT = Attitudes towards Intimate Touch, and AUT = Attitude towards Unfamiliar Touch. * indicates a significant difference between groups, *p*<.005.

Table 3.3

Pairwise Comparisons of TEAQ scores for Non-Religious group (Touch Test Data).

					95% Confidence Interval	
TEAQ Subscale (A)	*TEAQ Subscale (B)*	*Mean Difference (A-B)*	*Standard Error*	*Significance*	*Lower Bound*	*Upper Bound*
Friends Family Touch	Current Intimate Touch	.612*	0.070	<.001	0.406	0.819
	Childhood Touch	.467*	0.066	<.001	0.272	0.662
	Attitudes towards Self-Care	1.214*	0.063	<.001	1.029	1.399
	Attitudes towards Intimate Touch	-1.621*	0.057	<.001	-1.789	-1.453
	Attitude towards Unfamiliar Touch	0.138	0.060	0.32	-0.038	0.314
Current Intimate Touch	Friends Family Touch	-.612*	0.070	<.001	-0.819	-0.406
	Childhood Touch	-0.145	0.079	0.98	-0.377	0.086
	Attitudes towards Self-Care	.602*	0.079	<.001	0.369	0.834
	Attitudes towards Intimate Touch	-2.234*	0.066	<.001	-2.428	-2.039
	Attitude towards Unfamiliar Touch	-.475*	0.081	<.001	-0.713	-0.237
Childhood Touch	Friends Family Touch	-.467*	0.066	<.001	-0.662	-0.272
	Current Intimate Touch	0.145	0.079	0.98	-0.086	0.377
	Attitudes towards Self-Care	.747*	0.075	<.001	0.528	0.966
	Attitudes towards Intimate Touch	-2.088*	0.068	<.001	-2.287	-1.889
	Attitude towards Unfamiliar Touch	-.329*	0.073	<.001	-0.544	-0.115
Attitudes towards Self-Care	Friends Family Touch	-1.214*	0.063	<.001	-1.399	-1.029
	Current Intimate Touch	-.602*	0.079	<.001	-0.834	-0.369
	Childhood Touch	-.747*	0.075	<.001	-0.966	-0.528
	Attitudes towards Intimate Touch	-2.835*	0.063	<.001	-3.021	-2.649
	Attitude towards Unfamiliar Touch	-1.076*	0.071	<.001	-1.284	-0.868
Attitudes towards Intimate Touch	Friends Family Touch	1.621*	0.057	<.001	1.453	1.789
	Current Intimate Touch	2.234*	0.066	<.001	2.039	2.428
	Childhood Touch	2.088*	0.068	<.001	1.889	2.287
	Attitudes towards Self-Care	2.835*	0.063	<.001	2.649	3.021
	Attitude towards Unfamiliar Touch	1.759*	0.060	<.001	1.583	1.934
Attitude towards Unfamiliar Touch	Friends Family Touch	-0.138	0.060	0.32	-0.314	0.038
	Current Intimate Touch	.475*	0.081	<.001	0.237	0.713
	Childhood Touch	.329*	0.073	<.001	0.115	0.544
	Attitudes towards Self-Care	1.076*	0.071	<.001	0.868	1.284
	Attitude towards Unfamiliar Touch	-1.759*	0.060	<.001	-1.934	-1.583

Note. All pairwise comparisons on Touch Experience and Attitudes Questionnaire subscales in the Non-Religious cohort were corrected using the bonferroni method.

Table 3.4

Pairwise Comparisons of TEAQ scores for Religious group (Touch Test Data)

					95% Confidence Interval	
TEAQ Subscale (A)	*TEAQ Subscale (B)*	*Mean Difference (A-B)*	*Standard Error*	*Significance*	*Lower Bound*	*Upper Bound*
Friends Family Touch	Current Intimate Touch	.343*	0.056	<.001	0.177	0.508
	Childhood Touch	.253*	0.056	<.001	0.09	0.416
	Attitudes towards Self-Care	1.120*	0.052	<.001	0.967	1.274
	Attitudes towards Intimate Touch	-1.318*	0.045	<.001	-1.452	-1.184
	Attitude towards Unfamiliar Touch	.392*	0.051	<.001	0.242	0.542
Current Intimate Touch	Friends Family Touch	-.343*	0.056	<.001	-0.508	-0.177
	Childhood Touch	-0.09	0.067	1.00	-0.287	0.108
	Attitudes towards Self-Care	.777*	0.067	<.001	0.582	0.973
	Attitudes towards Intimate Touch	-1.661*	0.053	<.001	-1.817	-1.505
	Attitude towards Unfamiliar Touch	0.049	0.068	1.00	-0.151	0.249
Childhood Touch	Friends Family Touch	-.253*	0.056	<.001	-0.416	-0.09
	Current Intimate Touch	0.09	0.067	1.00	-0.108	0.287
	Attitudes towards Self-Care	.867*	0.063	<.001	0.683	1.052
	Attitudes towards Intimate Touch	-1.571*	0.058	<.001	-1.74	-1.402
	Attitude towards Unfamiliar Touch	0.139	0.062	0.36	-0.042	0.32
Attitudes towards Self-Care	Friends Family Touch	-1.120*	0.052	<.001	-1.274	-0.967
	Current Intimate Touch	-.777*	0.067	<.001	-0.973	-0.582
	Childhood Touch	-.867*	0.063	<.001	-1.052	-0.683
	Attitudes towards Intimate Touch	-2.438*	0.052	<.001	-2.592	-2.285
	Attitude towards Unfamiliar Touch	-.728*	0.061	<.001	-0.908	-0.548
Attitudes towards Intimate Touch	Friends Family Touch	1.318*	0.045	<.001	1.184	1.452
	Current Intimate Touch	1.661*	0.053	<.001	1.505	1.817
	Childhood Touch	1.571*	0.058	<.001	1.402	1.74
	Attitudes towards Self-Care	2.438*	0.052	<.001	2.285	2.592
	Attitude towards Unfamiliar Touch	1.710*	0.052	<.001	1.558	1.862
Attitude towards Unfamiliar Touch	Friends Family Touch	-.392*	0.051	<.001	-0.542	-0.242
	Current Intimate Touch	-0.049	0.068	1.00	-0.249	0.151
	Childhood Touch	-0.139	0.062	0.36	-0.32	0.042
	Attitudes towards Self-Care	.728*	0.061	<.001	0.548	0.908
	Attitude towards Unfamiliar Touch	-1.710*	0.052	<.001	-1.862	-1.558

Note. All pairwise comparisons on Touch Experience and Attitudes Questionnaire subscales in the Religious cohort were corrected using the bonferroni method.

STQ

A 3(STQ subscales) x2(Religiosity) ANOVA on STQ subscales and religiosity groups did not find a significant main effect of baseline religiosity, which means that STQ scores were not statistically significantly different between the religious and non-religious group, $F(1, 6597) = .004$, $p=.947$, partial $\eta^2= 0.0$.

However, a main effect of STQ subscales was found, F(1.6, 10265)= 3.578, $p=0.039$, partial η2= .711, indicating a significant difference between the subscales. Bonferroni corrected pairwise comparisons highlighted significant differences between each subscale in the STQ. DPT scores were significantly higher (M=18, SE=0.088) than LFPT (M=7.7, SE= 0.057), $p<.001$. Because a higher score indicates a more negative attitude within the STQ scale, this finding suggests a greater negative attitude towards dislike for physical touch compared to liking familiar physical touch. Additionally, DPT scores (M=18, SE=0.088) were found to be significantly greater than LPPT (M=7.27, SE=0.049), $p<.001$, also suggesting a larger negative attitude towards dislike for physical touch compared to liking of public physical touch. The final comparison between LFPT scores (M=7.7, SE= 0.057) and LPPT scores (M=7.27, SE=0.049) were found to be significantly different from one another, indicating that familiar physical touch held a more negative attitude compared to the liking of public physical touch.

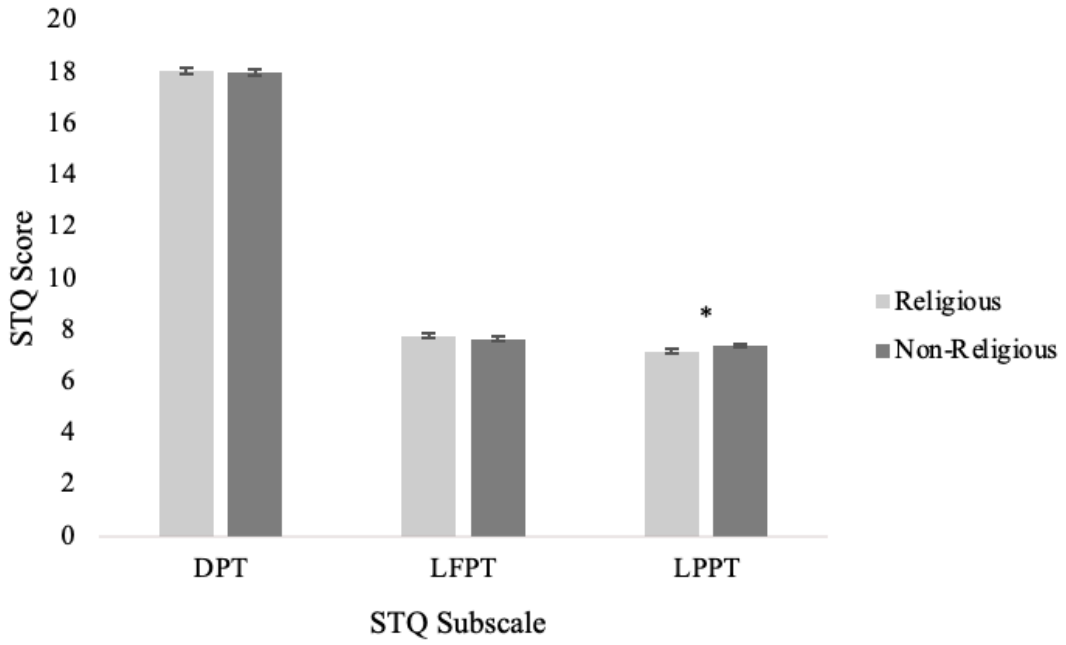
There was also a statistically significant interaction between STQ and religiosity groups, $F(1.6, 10265)= 3.58$, $p<.05$ (see Figure 3.2). To follow up on these findings, independent-sample t-tests (Bonferroni corrected) were run on each subscale of STQ between religiosity groups. There was a statistically significant difference in LPPT scores between religious and non-religious individuals, with the non-religious group scoring higher (M=7.38, SD=4.028), indicating a larger negative attitude than religious individuals (M=7.17, SE = 3.99), $t(6599) =2.12$, $p<.05$. No other subscales saw significant differences between the groups: DPT subscale, $t(6602) =-.281$, $p=.779$; LFPT subscale, $t(6600) =-1.165$, $p=.244$.

Furthermore, one-way ANOVAs investigating the religious groups separately highlighted significant main effects within the STQ subscales after separating the baseline religiosity groups. STQ scores on each subscale differed significantly from each other for the religious group,

F(1.6,5228.6)=8048, *p*<.001, partial η^2=.709, and the non-religious group, F(1.5, 5024.7)=8185.5, *p*<.001, partial η^2= .713. Corrected pairwise comparisons show that almost each STQ subscale differed significantly from each other for the non-religious group, *p*<.001 **(see table 3.5 for a full** breakdown of pairwise comparisons). Similarly, pairwise comparisons of the religious group on the STQ subscales found significant differences between each of the three subscales between each other, p<.001 **(see table 3.6 for detailed tab**le).

Figure 3.2

Average STQ scores grouped by religiosity.



Note. DPT = Dislike of Physical Touch, LFPT = Liking of Familiar Physical Touch, LPPT = Liking of Public Physical Touch. * indicates a significant finding, *p*<.005.

Table 3.5

Pairwise Comparisons of STQ scores for the Non-Religious group (Touch Test Data)

					95% Confidence Interval	
STQ Subscale (A)	*STQ Subscale (B)*	*Mean Difference (A-B)*	*Standard Error*	*Significance*	*Lower Bound*	*Upper Bound*
Dislike of Physical Touch	Liking of Familiar Physical Touch	10.356*	0.113	<.001	10.086	10.626
	Liking of Public Physical Touch	10.613*	0.1	<.001	10.375	10.852
Liking of Familiar Physical Touch	Dislike of Physical Touch	-10.356*	0.113	<.001	-10.626	-10.086
	Liking of Public Physical Touch	.257*	0.065	<.001	0.102	0.413
Liking of Public Physical Touch	Dislike of Physical Touch	-10.613*	0.1	<.001	-10.852	-10.375
	Liking of Familiar Physical Touch	-.257*	0.065	<.001	-0.413	-0.102

Note. All pairwise comparisons on Social Touch Questionnaire subscales in the Non-Religious cohort were corrected using the bonferroni method.

Table 3.6

Pairwise Comparisons of STQ scores for the Non-Religious group (Touch Test Data)

					95% Confidence Interval	
STQ Subscale (A)	*STQ Subscale (B)*	*Mean Difference (A-B)*	*Standard*	*Significance*	*Lower Bound*	*Upper Bound*
Dislike of Physical Touch	Liking of Familiar Physical Touch	10.268*	0.115	<.001	9.993	10.543
	Liking of Public Physical Touch	10.873*	0.098	<.001	10.637	11.108
Liking of Familiar Physical Touch	Dislike of Physical Touch	-10.268*	0.115	<.001	-10.543	-9.993
	Liking of Public Physical Touch	.605*	0.071	<.001	0.436	0.774
Liking of Public Physical Touch	Dislike of Physical Touch	-10.873*	0.098	<.001	-11.108	-10.637
	Liking of Familiar Physical Touch	-.605*	0.071	<.001	-0.774	-0.436

Note. All pairwise comparisons on Social Touch Questionnaire subscales in the Religious cohort were corrected using the bonferroni method.

THS

A 3(THS subscales) x2(Religiosity) ANOVA on THS subscales and religiosity groups showed that there was not a main effect of baseline religiosity, $F(1, 4639) = 2.42$, $p=.120$, partial $\eta^2= .001$. Both groups did not differ significantly overall in their attitudes towards touch in healthcare.

The ANOVA did reveal a significant main effect of THS subscales, which means that THS scores were significantly different between some subscales, $F(1.98, 9182) = 1361$, $p<.001$, partial η2= .227. Pairwise comparisons (Bonferroni corrected) were conducted to investigate this effect further. Each scale was found to differ from the other significantly. ETT scores (M=13.23, SE=0.054) were found to be significantly smaller than CFT scores (M=14.23, SE=0.052), $p<.001$, indicating a more positive attitude towards Communication Facilitation via Touch over Engagement in Tactile Treatments. Additionally, a significant difference was found between ETT and CTM scores, $p<.001$, with ETT scoring higher (M=13.23, SE=0.054) than CTM (M=11.61, SE=0.031), suggesting a more positive attitude towards Engagement in Tactile Treatments than towards Comfort with Touch in Medical settings.

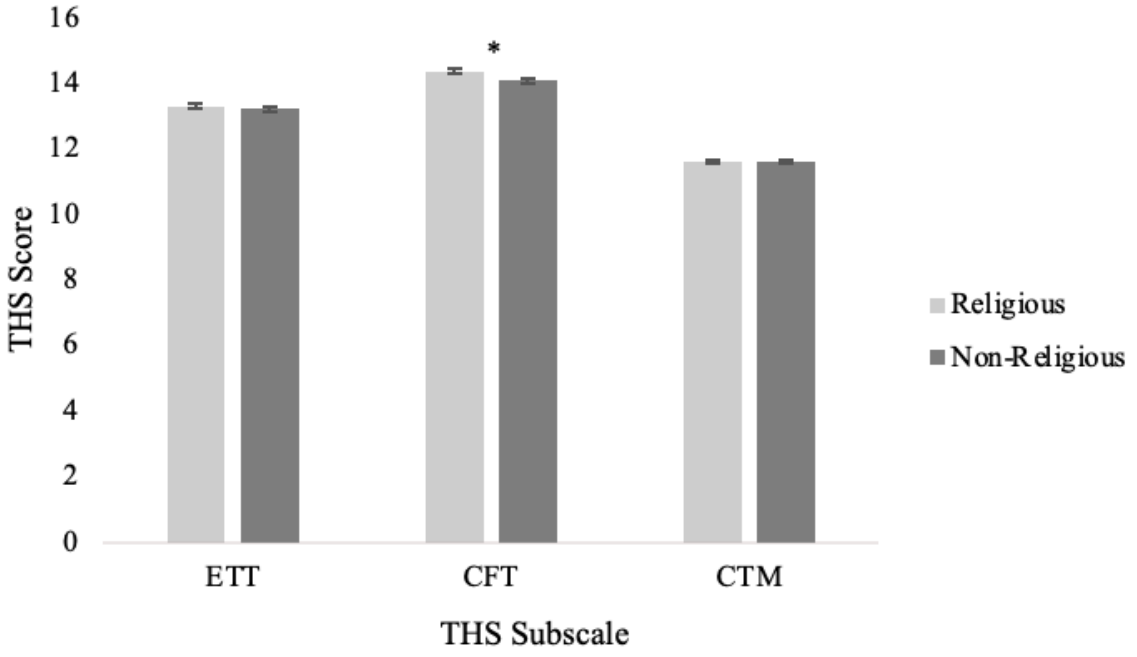
There was also a statistically significant interaction between THS and religiosity groups, $F(1.98, 9182)= 4.39$, $p<.001$ (see Figure 3.3). To follow up on these findings, Bonferoni corrected independent-samples t-tests were run on each subscale of THS between religiosity groups. There was a statistically significant difference in CFT scores between religious and non-religious individuals, with religious scoring higher (indicating a more positive attitude towards that current intimate touch) than non-religious individuals, MD= -0.27, SE = 0.103, $t(4644) =-2.65$, $p=.008$. Scores on the ETT subscale did not significantly differ between the groups, $t(4649) =-.712$, $p=.471$. Similarly, scores on the CTM subscale did not significantly differ between groups, $t(4652) =.348$, $p=728$.

Furthermore, one-way ANOVAs investigating the religious groups separately highlighted significant main effects within the THS subscales after separating the baseline religiosity groups. THS scores on each subscale differed significantly from each other for the religious group, F(1.98, 5295)=880.7, $p<.001$, partial $\eta^2= .248$, and the non-religious group, F(1.97, 3885)=537.6, $p<.001$,

partial η^2= .214. Corrected pairwise comparisons show that almost each STQ subscale differed significantly from each other for the non-religious group, *p*<.001 (see table 3.7 for a full breakdown of pairwise comparisons). Similarly, pairwise comparisons of the religious group on the THS subscales found significant differences between each of the three subscales between each other, p<.001 (see table 3.8 for detailed breakdown).

Figure 3.3

Average THS scores grouped by religiosity.



Note. ETT = Engagement in Tactile Treatments, CFT = Communication Facilitation via Touch, CTM = Comfort with Touch in Medical Settings. * indicates a significant finding, *p*<.005.

Table 3.7

Pairwise Comparisons of THS scores for the Non-Religious groups (Touch Test Data).

					95% Confidence Interval	
THS Subscale (A)	*THS Subscale (B)*	*Mean Difference (A-B)*	*Standard Error*	*Significance*	*Lower Bound*	*Upper Bound*
Engagement in Tactile Treatments	Communication Facilitation via Touch	-.866*	0.081	<.001	-1.059	-0.673
	Comfort with Touch in Medical settings	1.604*	0.075	<.001	1.424	1.783
Communication Facilitation via Touch	Engagement in Tactile Treatments	.866*	0.081	<.001	0.673	1.059
	Comfort with Touch in Medical settings	2.470*	0.073	<.001	2.294	2.645
Comfort with Touch in Medical settings	Engagement in Tactile Treatments	-1.604*	0.075	<.001	-1.783	-1.424
	Communication Facilitation via Touch	-2.470*	0.073	<.001	-2.645	-2.294

Note. All pairwise comparisons on the Touch and Health Scale subscales in the Non-Religious cohort were corrected using the bonferroni method.

Table 3.8

Pairwise Comparisons of THS scores for Religious groups (Touch Test Data).

					95% Confidence Interval	
THS Subscale (A)	*THS Subscale (B)*	*Mean Difference (A-B)*	*Standard*	*Significance*	*Lower Bound*	*Upper Bound*
Engagement in Tactile Treatments	Communication Facilitation via Touch	-1.057*	0.069	<.001	-1.224	-0.891
	Comfort with Touch in Medical settings	1.709*	0.066	<.001	1.552	1.866
Communication Facilitation via Touch	Engagement in Tactile Treatments	1.057*	0.069	<.001	0.891	1.224
	Comfort with Touch in Medical settings	2.766*	0.064	<.001	2.612	2.92
Comfort with Touch in Medical settings	Engagement in Tactile Treatments	-1.709*	0.066	<.001	-1.866	-1.552
	Communication Facilitation via Touch	-2.766*	0.064	<.001	-2.92	-2.612

Note. All pairwise comparisons on the Touch and Health Scale subscales in the Religious cohort were corrected using the bonferroni method.

Analysis 2: Group differences in attitudes towards touch between monotheistic religions, Christianity and Islam.

TEAQ

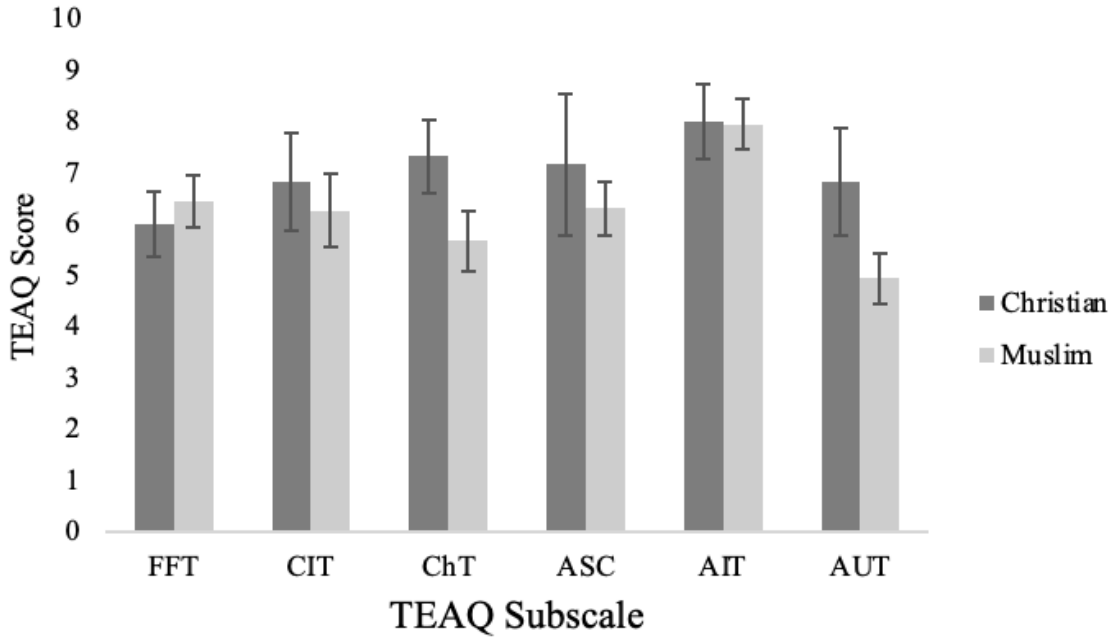
A 6(TEAQ subscale) x 2(Religion)ANOVA on TEAQ subscales and religious groups did not find a statistically significant difference between the Christian and Muslim individuals in their attitudes and experiences of touch, $F(1, 26) = 1.7$, $p=.201$, partial $\eta^2=.062$.

A main effect of the TEAQ subscale highlighted that there was also no statistically significant difference between each subscale in reports of attitudes and experiences of touch: $F(5, 130) = 1.608$, $p=.163$, partial $\eta^2= .058$.

Following this, the ANOVA also showed no statistically significant interaction between our TEAQ scores and groups (based on religion), $F(5, 130)=.643$, $p=.667$, partial $\eta^2= .024$. The group mean differences are summarised in Figure 3.4.

Figure 3.4

Average TEAQ scores grouped by religion.



Note. FFT = Friends Family Touch, CIT = Current Intimate Touch, ChT = Childhood Touch, ASC = Attitudes towards Self-Care, AIT = Attitudes towards Intimate Touch, and AUT = Attitude towards

Unfamiliar Touch. The graph depicts the mean score on each subscale of the TEAQ questionnaire, separated by a religious group.

STQ

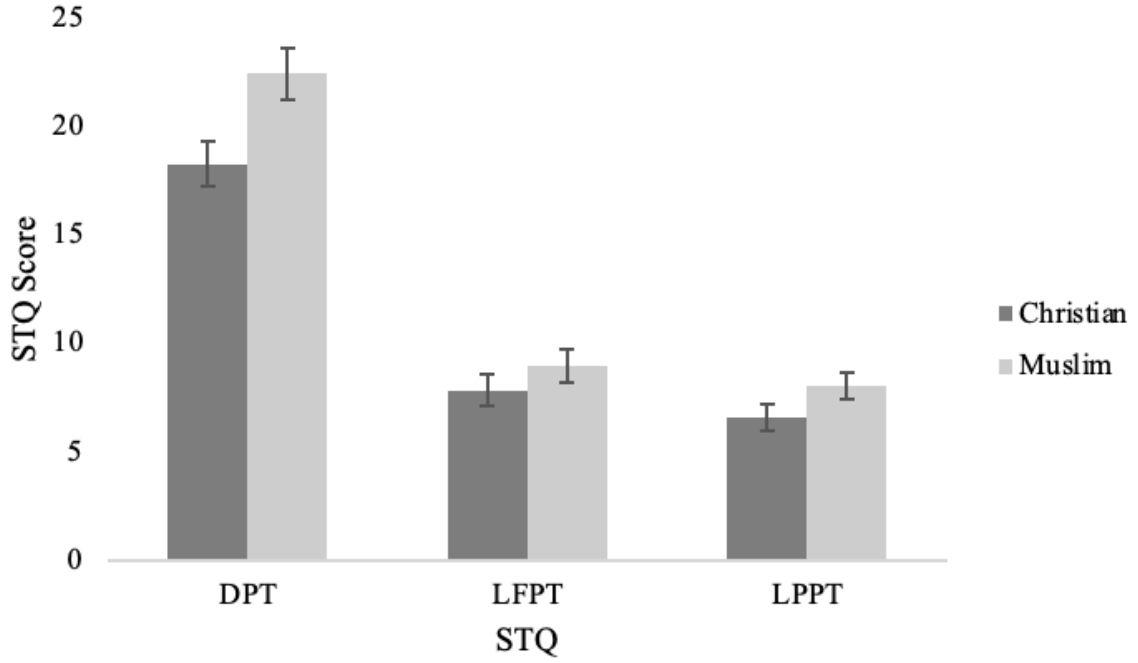
A 3(STQ subscales) x2(Religion)ANOVA on STQ subscales and religious groups found a statistically significant main effect of Religion, meaning there was a significant difference between Christians and Muslims in their attitudes towards social touch overall, F(1,66)=5.93, p=.018, partial η^2=.082. Specifically, the Christian group (M=10.9, SE=0.652) had a more positive attitude towards social touch compared to the Muslim group (M=13.1, SE=.652); this is due to the Christian group scoring lower; which for the STQ is indicative of a more positive attitude.

The within-subjects main effect of STQ scores showed a statistically significant difference between the STQ scores and the subscales, F(1.74, 115) = 232, p<.001. Bonferonni corrected pairwise comparisons found that the significant differences between subscales lay between DPT (M=20.3, SE=0.778) and LFPT (M=8.4, SE=0.53), p<.001, and between DPT (M=20.3, SE=0.778) and LPPT (M=7.3, SE=0.452), p<.001, both comparisons indicating a more positive attitude towards liking of familiar physical touch and liking of public physical touch compared to dislike of physical touch. Conversely, there was not a statistically significant difference between LFPT (M=8.4, SE=0.53) and LPPT (M=7.3, SE=0.452), p=.133, the means are presented in Figure 3.5.

There was no statistically significant interaction between the STQ scores and religious groups, F(1.74, 115)= 3.04, p=.059, though it's important to note that the interaction effect approached significance.

Figure 3.5

Average STQ scores grouped by religion.



Note. DPT = Dislike of Physical Touch, LFPT = Liking of Familiar Physical Touch, LPPT = Liking of Public Physical Touch. The graph depicts the mean score on each subscale of the STQ questionnaire, separated by religious group. All three subscales show a higher STQ score attributed to the Muslim participants.

THS

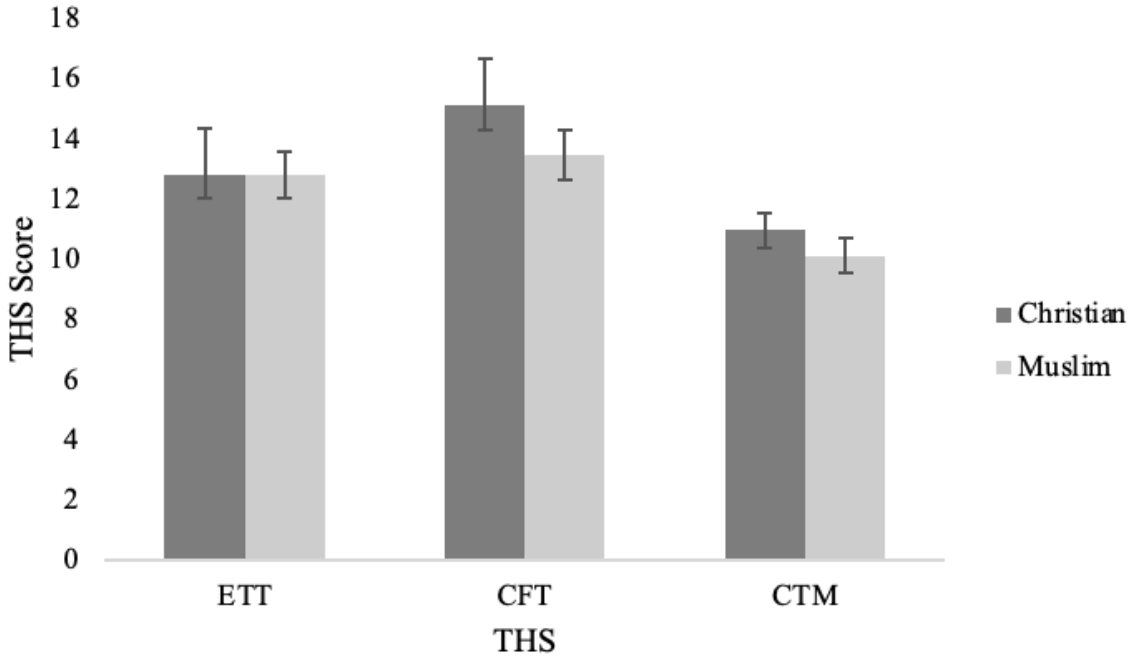
A 3(STQ subscales) x2(Religion) ANOVA on the THS subscales and religious groups did not find a significant main effect of between-subject factor- religion, indicating there was not a statistically significant difference between Christian group in comparison to the Muslim group, $F(1,27)=0.425$, $p=.520$, partial $\eta^2=.015$.

However, a main effect of THS subscale was observed and showed a statistically significant difference between the THS subscales, $F(2, 54) = 12.04$, $p<.001$, partial $\eta^2=.308$. A series of Bonferroni corrected pairwise comparisons to follow up on this main effect found ETT scores (M=12.8, SE=.842) were significantly higher than CTM scores (M=10.57, SE = .603), $p=.025$. Suggesting a greater positive attitude towards engagement in tactile treatments than comfort with touch in medical settings. Similarly CFT scores (M=14.3, SE = .902) were significantly higher than CTM scores (M=10.57, SE = .603), $p<.001$. Again, this suggests a greater positive attitude towards communication facilitation via touch compared to comfort with touch in medical settings. A significant difference was not found between ETT scores (M=12.8, SE=.842) and CFT scores (M=14.3, SE = .902), $p=.204$, the means for each subscale are presented in Figure 3.6.

An interaction effect between the THS scores and religious groups was not found to be statistically significant ($F(2, 54)= .595$, $p=.056$). Similar to the STQ finding, the distance between the value and the significance threshold is small.

Figure 3.6

Average THS scores grouped by religion.



Note. ETT = Engagement in Tactile Treatments, CFT = Communication Facilitation via Touch, CTM = Comfort with Touch in Medical Settings. The graph depicts the mean score on each subscale of the THS questionnaire, separated by religious group.

Discussion

To begin bridging the gaps in understanding how faith may play a role in touch attitudes, a large-scale secondary data analysis was conducted, investigating the individual differences between people who subscribe to a religious faith and those who do not in their attitudes towards touch. Religious individuals were found to have a more positive attitude towards touch overall across the three scales. The differences between groups in the components can be attributed to the practices prevalent within many religious faiths; below, these findings are discussed, addressing each questionnaire separately.

Touch Experiences and Attitudes Questionnaire: TEAQ

This study started by investigating the broader idea of whether there was a difference between Religious groups and Non-Religious groups in their attitudes towards touch across

various contexts. The results found that religious groups scored higher on the TEAQ scale than non-religious groups, indicating a more positive attitude towards touch. TEAQ results found several significant differences within specific components of touch investigated within the scale; Current Intimate Touch, for example, was scored more positively with the religious cohort than the non-religious cohort. Though the significant differences between the two groups were predicted, these findings, in particular, prove to be interesting due to past associations of conservative touch values between people of religious faiths (Sorokowska et al., 2021; Carney et al., 2008; Burdette & Hill, 2009).

These previous associations between religiosity and touch mainly centre themes of sexual and intimate touch. Sexual touch is a field of touch in which many religions observe abstinence until marriage and, therefore, have rulings and restrictions that prohibit sexual touch between two individuals (Endsjø, 2012). Though previously thought of as a reason religious individuals may be more inclined to have a negative attitude towards sexual touch, these restrictions may instead play a role in the positive attitudes. Intimacy and intimate touch are favoured in many faiths between marital couples. In the Islamic faith, for example, it is strongly encouraged for couples to engage in intimate touch before intercourse (Al-Jauziyah, 2003; Al-Jibaly, 2018), and it is seen as an act of worship rather than an act to be wary of. Within the Christian faith, some verses will highlight how intimacy between couples is seen as an act that unites the two and is an integral part of a successful relationship (Proverbs 5:18–19; 1 Cor. 6:13, 19–20, New International Version).

In addition to significant differences between religious and non-religious groups in Current Intimate Touch, we also saw significant differences in Family and Friends Touch (FFT) and Childhood Touch (ChT) subscales. Religious individuals in each subscale present more positive attitudes towards that instance of touch. This result may be due to the prevalent sense of community within religious groups. Most religious groups host at least a weekly community service (e.g. Friday Jummah for Muslims, Saturday Shabbat for Jews, Sunday Service for Christians); these will typically centre the family. From past literature and theories surrounding affective touch, we know that touch is vital in maintaining social bonds within society (Floyd, 2006). Therefore, it is

unsurprising to see the religious cohort in this study have a more positive attitude toward FFT and ChT when the concept of family and the wider community is held highly in many religious faiths.

Lastly, within the TEAQ scale, we found religious individuals also display more positive attitudes towards self-care (ASC) than non-religious individuals; this may be due to the belief that the body is a gift and something individuals should strive to look after. Within the Christian faith, we see the body as a “temple of God” (1 Corinthians 3:16, New International Version). Similarly, Muslims are reminded to be grateful for the blessing of their body and its perfect form in the Quran (Al-Infitar, 82:7-8; As-Sajdah, 32:7). Muslims are also reminded to look after such blessings in recorded the Sunnah of their Prophet ﷺ (Sahih al-Bukhari 6412). The two subscales, Attitudes towards Intimate Touch (AIT) and Attitude towards Unfamiliar Touch (AUT) did not have significant differences between the groups, indicating that regardless of faith, the participant pool had similar attitudes towards these types of touch.

The highest mean within the TEAQ scale for both groups was seen in the attitudes towards intimate touch; regardless of religious faith, intimate touch is seen positively. Intimate touch, when consensual, has been found to have a positive impact on a multitude of factors in our lives, from our mental health (Tinker et al., 2023; von Mohr et al., 2021) to relationship satisfaction and self-perception (Prause et al., 2021). This study’s findings highlight that there is also no difference between groups in their attitudes towards unfamiliar touch (AUT); this component related specifically to how comfortable individuals were with physical touch from people they are less close to, suggesting that, in general, we have similar feelings towards touch from people we have less of a connection with. Findings from the second analysis did not yield the same results. When the faiths are investigated separately, there are no statistically significant differences between the groups despite the higher means presented by the Christian group. The sample size used for this analysis is dramatically smaller than the first analysis due to the minimal number of Muslim participants who took part in the Touch Test. This reduced the number of matchable pairs between the Muslim and Christian groups.

Social Touch Questionnaire: STQ

The findings investigating attitudes towards social touch in the first analysis showed that the religious group had a positive attitude towards social touch that was greater than the non-religious group in each component of the STQ. A follow-up analysis revealed a significant difference between non-religious and religious individuals in their Liking of Public Physical Touch, with the religious group displaying more liking for such touch.

This finding can be attributed similarly to the findings we saw within the TEAQ. Religious groups may be more open to public physical touch since they will likely endure it more often. Many religious groups will often hold weekly (at least) services that will involve greeting their wider community. These greetings may include tactile interactions like hugs and handshakes (with same-sex only).

The results of the second analysis were not statistically significant, but they did approach significance. This finding may be due to a lack of power in this particular analysis. According to a post hoc power analysis using G*Power (Faul et al., 2007), this analysis only had a power of 0.05.

Touch & Health Scale: THS

As predicted, we also found a statistically significant difference between religious and non-religious groups' attitudes towards touch in treatment settings. Specifically, the religious group showed a significantly greater positive attitude towards touch within treatment settings. Follow-up results investigating the Touch in Health scale saw the religious group present more positive attitudes toward Communication Facilitation via Touch (CFT). This indicates that these individuals are more open to communicating with a treatment provider when touched (in treatment settings). If religious individuals have a stronger motivation to look after their health due to religious obligations, this may be part of the explanation as to why religious individuals are more comfortable with Communication Facilitation via Touch. In Vafeiadou's 2022 paper introducing the THS scale, they showed a significant correlation between the CFT component, the STQ's LPPT component and TEAQ's FFT component. Friends and Family Touch (FFT) and Liking of Public Physical touch (LPPT) are both components we saw religious individuals report more positively on; these findings together may explain why religious individuals show greater comfortability with touch

in treatment settings for communication facilitation since they show a more positive attitude to public physical touch and have a more positive attitude towards touch in the family-friends environment.

Analysis 2, investigating the Christian and Muslim cohort from the Touch Test, aimed to decipher if there are differences between the two globally prevalent faiths. This result did not yield any statistically significant findings.

This study acts as a starting point for further investigation into the individual differences between people of religious faiths and people who are not subscribed to a particular religious faith. Due to the method by which this data was collected and the large number of participants who were not eligible through the screening process, this latter study was replicated. It was found that overall, there were many group differences. However, there is much more to be unpacked in each of the questionnaires; the subscales may be able to reveal more about the differences observed in this secondary data analysis. Additionally, though the study investigated religious faiths, it did not consider each individual's degree of religiosity. Where the conclusions speak primarily on participation in community services, there was no record of whether these individuals were active members of their faith. Religiosity is a spectrum that may affect the intensity of the differences in this kind of data.

Study 2: Individual differences in touch attitudes between within different faiths

Introduction

The original sample from the Touch Test in the second analysis lacked power from its small sample size after a matching procedure was conducted on the Touch Test's Christian and Muslim participants. This study recruited a new set of Christian and Muslim participants to continue the earlier study's aim to investigate the original question of whether there are differences in attitudes towards touch between the two most prevalent world faiths.

Additionally, this study sought to determine the impact the current state of religiosity has on touch attitudes. Due to the initial study being a secondary analysis of data acquired from the Touch Test, there was no indication of the religious participant's current state of religiosity. The Touch Test's aim was not to investigate attitudes towards touch from a faith-based perspective, so the participants were not required to ask questions that would allude to their current state of religiosity. Research that has investigated religion often takes into account an individual's religiosity. One's level of religiosity has been shown to contribute towards many positive differences in one's life, from aiding mental health (Koenig & Al Shohaib, 2019) to alleviating feelings of worry and stress (Lucchetti et al., 2021; Thomas & Barbato, 2020), increased life satisfaction (Sholihin et al., 2022) and a positive attitude towards charitable giving and helping others (Roberts & David, 2019). An individual's religiosity level is likely to affect their attitudes towards touch.

As stated in study 1, the introduction of religion into this study stems from the lack of literature addressing the potential differences an individual's religion can make in their attitudes towards the affective touch and the largely negative assumptions made about those belonging to the Islamic faith globally. The current understanding of religion's role in affective touch attitudes draws from political affiliations and older research (Carney et al., 2008; Malka et al., 2012; Smidt & Penning, 1982), which leads to misleading interpretations and does not aid in portrayals of religious groups as "other" (Poole & Williamson, 2023; Saeed, 2007). The current climate of religious discrimination (notably towards Muslims) calls for updated research to allow the literature surrounding affective touch to more accurately depict the religious and Muslim population. This

study replicates the second analysis from study 1 but additionally considers religiosity when investigating the differences between Christians and Muslims in their attitudes towards touch. As such, the hypothesis remains the same, and it was predicted that:

• Hypothesis 2: Christian and Muslim participants (religiosity controlled for) will differ in how positive their attitudes towards touch are.

Methods:

Procedure:

Data for this study was collected through a self-report questionnaire conducted online via Qualtrics. Participation in the study was voluntary and involved a small compensation for participation. To complete the study online, informed consent was obtained, and participants were required to be 18 or older, be registered as religious (either Christian or Muslim), and have internet access on a computer, smartphone or tablet. The Goldsmiths University of London's ethics committee approved the data collection used in this study.

Measures:

To stay in line with the replication of the secondary analysis of study 1. The measures used here mimic the ones used in the previous study, with the addition of one questionnaire to measure religiosity.

Modified Touch Experiences and Attitudes Questionnaire (TEAQ; Trotter et al., 2018)

This was used to measure general attitudes towards touch. This replication used the same shortened TEAQ questionnaire as the Touch Test. Based on Trotter et al.'s paper, the modified TEAQ is composed of 12 items that were selected from the original 57-item TEAQ to be used in the current study. These items represent the 6 subscales of the questionnaire, two items from each subscale (the top two highest loading items for each subscale). Scores were summed (3 items reverse-coded) to create an overall TEAQ score (Cronbach's Alpha in the current sample = 0.783), with higher scores indicative of more positive attitudes to touch. TEAQ (Trotter et al., 2018) is comprised of 6 subscales: Childhood Touch (ChT), Friends and Family Touch (FFT), Current Intimate Touch (CIT), Attitude to Intimate Touch (AIT), Attitude to Self-Care (ASC), and Attitude to Unfamiliar Touch (AUT). Responses were received through a 5-point scale to indicate whether they

‘Disagree strongly’, ‘Disagree slightly’, ’Neither agree nor disagree’, ’Agree a little’, or ‘Agree strongly’ with each statement (e.g., “I always greet my friends and family by giving them a hug.”). Questions were scored from 1 (disagree strongly) to 5 (agree strongly).

Social Touch Questionnaire (STQ; Wilhelm et al., 2001)

Attitudes to social touch were assessed using the 20-item STQ (Wilhelm et al., 2001). The questionnaire is composed of 3 subscales: Dislike of Physical Touch (DPT), Liking of Familiar Physical Touch (LFPT) and Liking of Public Physical Touch (LPPT). Participants responded using a 5-point scale (Not at all, Slightly, Moderately, Very, Extremely) to indicate how characteristic or true each statement was of them (e.g., “I feel uncomfortable when someone I don’t know very well hugs me”). Questions were scored from 0 (not at all) to 5 (extremely). Scores were summed (10 items reverse-coded) to create an overall STQ score, with higher scores indicative of more negative attitudes to social touch (Cronbach’s Alpha in the current sample = 0.7).

The Touch & Health Scale (THS; Vafeiadou et al., 2022)

The THS is comprised of 14 items that measure attitudes towards touch within treatment settings, both medical and non-medical (Vafeiadou et al., 2022). The questionnaire has 3 subscales: Engagement in Tactile Treatments (ETT), Communication Facilitation via Touch (CFT) and Comfort with Touch in Medical Settings (CTM). The THS items were measured on a five-point scale, with scores ranging from 1–5 for each item (‘Strongly disagree’ to ‘Strongly agree') with each statement. Half of the items were reverse scored (2, 3, 5, 7, 11, 13, 14). Total scores (sum of responses) could range between 14–70, with higher scores indicating more positive attitudes to touch (Cronbach’s Alpha in the current sample = 0.823).

Centrality of Religiosity Scale (CRS; Huber & Huber, 2012)

This measures the centrality, importance and salience of religious meanings within an individual's personality (Huber & Huber, 2012). The measure has 5 core dimensions: public practice, private practice, religious experience, ideology and the intellectual dimension. Adjustments were made accordingly due to specific religious practices involved within Islam; these were made by Huber and Huber’s recommendations. Scores were summed and divided by the number of questions to create a CRS score, with higher scores indicative of higher religiosity (Cronbach’s Alpha in the

current sample; for Christians= 0.941, for Muslims= 0.912; two sets of analysis were conducted here due to extra questions for the Muslim cohort). Muslim and Christian participants had a different number of questions to answer. As adjustments above were made for the Muslim participants, they were asked separately about daily prayer (salah) and supplications (dua) as these are major components of the faith (Chen et al., 2021; Koubaa et al., 2020; Lucchetti et al., 2021; Tahir Wyatt et al., 2021; Zohair Abdul-Rahman, 2017).

Participants:

A total of 204 participants (102 Christian and 102 Muslim) completed the survey via the recruitment site Prolific (www.prolific.co). Participants were filtered through prolific to be either Christian or Muslim. Religious affiliations can change throughout a lifetime. Therefore, each participant was asked about their current faith in the survey in case of a change since signing up for prolific. Based on this, 41 either did not report being religious or were not self-reported as Christian or Muslim. This resulted in a sample of 163 participants (82 Females, 81 Males, Age: M = 29.37, SD = 9.04, Age range: 19–69 years).

Matchings:

A custom R script using the “matchit” package was used to perform the nearest neighbour matching method (method = “nearest”) with distance specified by a generalised linear model (distance = “glm”), the binary variable of “Religion”-Muslim/Christian as grouping variable and gender, age and religiosity variables as covariates. After matching, a filtering variable was created to identify the matched cases from the dataset. See Table 3 for the sample’s characteristics of this matching.

Table 3.9

Matching: Muslim with Christian group

Group	Sample size	Age	Gender
Muslim	74	29.7+-/- 7.8 (19-51)	42 Males 32 Females
Christian	74	28.3 +-/- 9.4 (19 -69)	32 Males 42 Females
Total Sample	148	29.0 +-/- 8.3 (19-69)	74 Males 73 Females

Results

TEAQ

A 6(TEAQ subscale) x 2(Religion) ANOVA on TEAQ subscales and religious groups did not find a statistically significant main effect of religion, $F(1,146)= 3.8$, $p=.053$, partial $\eta^2=.025$. This indicates that there is not a statistically significant difference between Christians and Muslims in their attitudes towards touch (see Figure 3.7 for the graph of means).

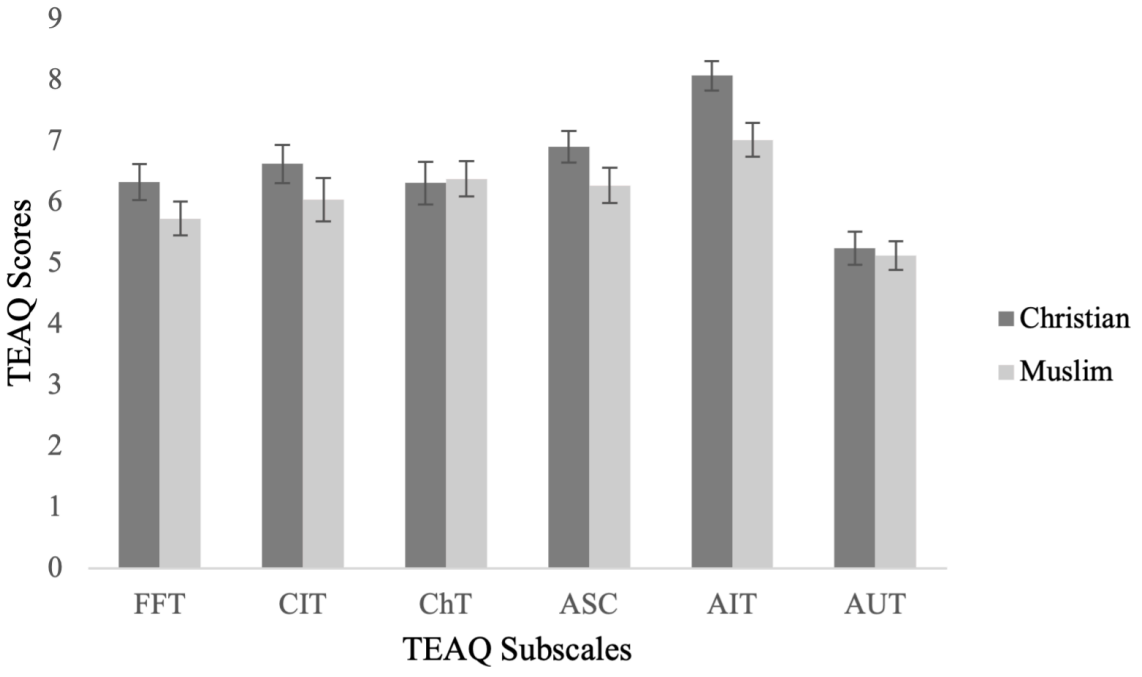
The ANOVA found a statistically significant main effect of TEAQ subscale, $F(4.2, 611.5) = 18.6$, $p<.001$, partial $\eta^2 = .113$. Bonferroni corrected pairwise comparisons highlighted several statistically significant differences between the subscales. FFT scores (M=6, SE= 0.2) were found to be significantly greater than scores on AUT (M=5.2, SE= 0.18), $p=.015$ and significantly lower than scores on AIT (M=7.5, SE= 0.184), $p<.001$. Suggesting a more positive attitude towards friends and family touch compared to attitudes towards unfamiliar touch but a less positive attitude

when compared to intimate touch. Significant differences between CIT (M=6.3, SE= 0.24) and AIT (M=7.5, SE= 0.184) were also observed, with AIT scoring higher, suggesting a more positive attitude towards intimate touch in comparison to attitudes towards current levels of intimate touch (p=.001). CIT scores were significantly higher than AUT scores (M=5.2, SE= 0.18), p<.001. ChT scores (M=6.35, SE= 0.226) were found to be significantly lower than AIT scores (M=7.5, SE= 0.184), p=.001 and higher than AUT scores (M=5.2, SE= 0.18), p<.001. Suggesting that, on the one hand, there are more positive attitudes towards childhood touch compared to unfamiliar touch but less positive attitudes towards intimate touch when compared with childhood touch. Lastly, ASC scores (M=6.6, SE= 0.19) were found to be significantly lower than scores on AIT (M=7.5, SE= 0.184, p<.001) but higher for scores on AUT (M=5.2, SE= 0.18), p<.001.

The ANOVA did not confirm the presence of a statistically significant interaction between TEAQ and religious groups, $F(4.2,611.5)=1.272$, p= .279, partial η^2 = .009.

Figure 3.7

Average TEAQ subscale scores grouped by religion.



Note. FFT = Friends Family Touch, CIT = Current Intimate Touch, ChT = Childhood Touch, ASC = Attitudes towards Self-Care, AIT = Attitudes towards Intimate Touch, and AUT = Attitude towards

Unfamiliar Touch. The graph depicts the mean score on each subscale of the TEAQ questionnaire, separated by a religious group.

Table 3.10

Pairwise Comparisons of TEAQ scores across subscales (new sample)

					95% Confidence Interval	
TEAQ Subscale (A)	*TEAQ Subscale (B)*	*Mean Difference (A-B)*	*Standard Error*	*Significance*	*Lower Bound*	*Upper Bound*
Friends Family Touch	Current Intimate Touch	-0.304	0.236	1.00	-1.007	0.399
	Childhood Touch	-0.318	0.243	1.00	-1.043	0.408
	Attitudes towards Self-Care	-0.561	0.198	0.08	-1.151	0.03
	Attitudes towards Intimate Touch	-1.514	0.237	<.001	-2.221	-0.806
	Attitude towards Unfamiliar Touch	0.845	0.251	0.02	0.096	1.593
Current Intimate Touch	Friends Family Touch	0.304	0.236	1.00	-0.399	1.007
	Childhood Touch	-0.014	0.287	1.00	-0.87	0.843
	Attitudes towards Self-Care	-0.257	0.250	1.00	-1.002	0.489
	Attitudes towards Intimate Touch	-1.209	0.203	<.001	-1.815	-0.604
	Attitude towards Unfamiliar Touch	1.149	0.280	<.001	0.313	1.984
Childhood Touch	Friends Family Touch	0.318	0.243	1.00	-0.408	1.043
	Current Intimate Touch	0.014	0.287	1.00	-0.843	0.87
	Attitudes towards Self-Care	-0.243	0.286	1.00	-1.096	0.609
	Attitudes towards Intimate Touch	-1.196	0.290	<.001	-2.063	-0.329
	Attitude towards Unfamiliar Touch	1.162	0.256	<.001	0.397	1.927
Attitudes towards Self-Care	Friends Family Touch	0.561	0.198	0.08	-0.03	1.151
	Current Intimate Touch	0.257	0.250	1.00	-0.489	1.002
	Childhood Touch	0.243	0.286	1.00	-0.609	1.096
	Attitudes towards Intimate Touch	-0.953	0.221	<.001	-1.613	-0.292
	Attitude towards Unfamiliar Touch	1.405	0.277	<.001	0.578	2.233
Attitudes towards Intimate Touch	Friends Family Touch	1.514	0.237	<.001	0.806	2.221
	Current Intimate Touch	1.209	0.203	<.001	0.604	1.815
	Childhood Touch	1.196	0.290	<.001	0.329	2.063
	Attitudes towards Self-Care	0.953	0.221	<.001	0.292	1.613
	Attitude towards Unfamiliar Touch	2.358	0.233	<.001	1.661	3.055
Attitude towards Unfamiliar Touch	Friends Family Touch	-0.845	0.251	0.02	-1.593	-0.096
	Current Intimate Touch	-1.149	0.280	<.001	-1.984	-0.313
	Childhood Touch	-1.162	0.256	<.001	-1.927	-0.397
	Attitudes towards Self-Care	-1.405	0.277	<.001	-2.233	-0.578
	Attitude towards Unfamiliar Touch	-2.358	0.233	<.001	-3.055	-1.661

Note. All pairwise comparisons on Touch Experience and Attitudes Questionnaire subscales were corrected using the bonferroni method.

STQ

A 3(STQ subscale) x 2(Religion) ANOVA on STQ subscales and religious groups showed that there was not a main effect of religion, meaning STQ scores were not statistically significantly different between the two religious groups, F(1, 146) = .301, p=.584, partial η^2= .002.

Though a main effect of religion was not found, main effects of STQ were found, F(1.3, 188.7)= 548.0, p<.001, partial η^2= .79, meaning there were statistically significant differences between the subscales of the STQ representing attitudes towards touch in social settings. Bonferroni corrected pairwise comparisons confirm that this difference between each subscale is statistically significant (p<.001). Upon conducting Bonferroni pairwise comparisons, the following results were found. Significantly greater scores on the DPT (M=31, SE=0.753) scale compared to the LFPT scale (M=12.8, SE=0.413), p<.001, and between DPT and LPPT (M=7.4, SE=0.315), p<.001, both comparisons indicate a more positive attitude towards liking of familiar physical touch and liking of public physical touch compared to dislike of physical touch. There was also a statistically significant difference between LPPT (M=7.4, SE=0.315) and LFPT (M=12.8, SE=0.413), p<.001. The means suggest that liking familiar physical touch is greater than liking public physical touch.

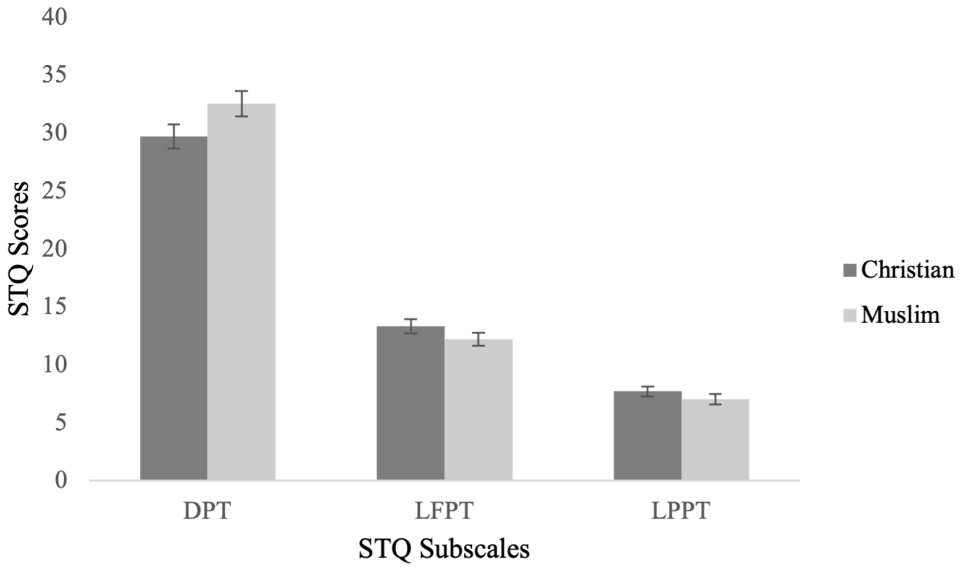
A statistically significant interaction was found between STQ and religious groups, F(1.3, 188.7)= 4.13, p=.033, partial η^2= .028 (see Figure 3.8). Independent-sample t-tests (Bonferroni corrected) found that there was not a statistically significant difference in “Dislike of Physical Touch” (DPT) between Christian and Muslim individuals, MD=-2.8, SE = 1.5, t(146) =-1.87, p=.064. Similarly, we did not see statistically significant differences between the two religions on the other two subscales; Liking of Familiar Physical Touch (LFPT) subscale, MD=1.16, SE = .826, t(146) =1.41, p=.162 and Liking of Public Physical Touch (LPPT), MD=.662, SE = .63, t(146) =1.05, p=.294.

However, one-way ANOVAs investigating the religious groups separately did find significant main effects of STQ subscales for the Christian group, F(1.3, 96.7)=261, p<.001, partial η^2= .782, and the Muslim group, F(1.3, 92.6)= 287.7, p<.001, partial η^2= .798. The interaction is demonstrated by the differences in attitudes towards touch measures through the STQ subscales.

Bonferroni pairwise comparisons investigating this difference further between each subscale and faith independently were found to be statistically significant (p<.001). Within the Christian group, significantly greater scores on the DPT (M=29.7, SE=1.04) scale compared to the LFPT scale (M=13.4, SE=0.609) were found, and between DPT and LPPT (M=7.7, SE=0.423), indicating a more positive attitude towards liking of familiar physical touch and liking of public physical touch compared to dislike of physical touch. There was also a statistically significant difference between LPPT (M=7.7, SE=0.423) and LFPT (M=13.4, SE=0.609), p<.001. The means suggest that liking familiar physical touch is greater than liking public physical touch. Similar findings are seen within the Muslim group; there were significantly greater scores on the DPT (M=32.55, SE=1.08) scale compared to the LFPT scale (M=12.2, SE=0.558), were found (p<.001) and between DPT and LPPT (M=7.05, SE=0.466; p<.001) indicating a more positive attitude towards liking of familiar physical touch and liking of public physical touch compared to dislike of physical touch. There was also a statistically significant difference between LPPT (M=7.05, SE=0.466) and LFPT (M=12.2, SE=0.558), p<.001.

Figure 3.8

Average STQ scores grouped by religion.



Note. DPT= Dislike of Physical Touch; LFPT=Liking of Familiar Physical Touch; LPPT=Liking of Public Physical Touch. The graph depicts the mean score of each subscale of the STQ questionnaire, separated by a religious group. No statistically significant difference between religious groups was found, but there was a significant difference between each subscale.

Table 3.11

Pairwise Comparisons of STQ scores across subscales (new sample)

STQ Subscale (A)	*STQ Subscale (B)*	*Mean Difference (A-B)*	*Standard Error*	*Significance*	*95% Confidence Interval*	
					Lower Bound	*Upper Bound*
Dislike of Physical Touch	Liking of Familiar Physical Touch	18.365	0.831	<.001	16.353	20.377
	Liking of Public Physical Touch	23.764	0.923	<.001	21.529	25.998
Liking of Familiar Physical Touch	Dislike of Physical Touch	-18.365	0.831	<.001	-20.377	-16.353
	Liking of Public Physical Touch	5.399	0.397	<.001	4.436	6.361
Liking of Public Physical Touch	Dislike of Physical Touch	-23.764	0.923	<.001	-25.998	-21.529
	Liking of Familiar Physical Touch	-5.399	0.397	<.001	-6.361	-4.436

Note. All pairwise comparisons on Social Touch Questionnaire subscales were corrected using the bonferroni method.

THS

A 3(THS subscale) x 2(Religion)ANOVA on THS subscales and religious groups found a significant main effect of religion. The THS scores significantly differed between Christian and Muslim groups, $F(1, 146) = 14.2$, $p<.001$, partial $\eta^2= .089$. Bonferroni corrected pairwise comparisons confirm this. Specifically, it was found that the Muslim group (M=10.37, SE=0.27) scored significantly lower overall compared to the Christian group (M=11.8, SE=0.27), $p<.001$, indicating that the latter has a more positive attitude towards touch in treatment/health-care settings.

We also found a significant main effect of THS scales, $F(1.8, 263.8) = 56.9$, $p<.001$, partial $\eta^2= .28$, indicating significant differences between the subscales and, therefore, in attitudes towards touch within a treatment/healthcare setting. Bonferonni corrected pairwise comparisons revealed each subscale of the THS differed significantly from the other ($p<.001$)

Bonferroni corrected pairwise comparisons to follow up on this main effect and found that ETT scores (M=11, SE=0.242) were significantly higher than CTM scores (M=9.5, SE = 0.192), $p<.001$. Suggesting a greater positive attitude towards engagement in tactile treatments than comfort with touch in medical settings. Similarly, CFT scores (M=12.7, SE = 0.32) were significantly higher than CTM scores (M=9.5, SE = 0.192), $p<.001$. Again, this suggests a greater positive attitude towards communication facilitation via touch compared to comfort with touch in medical settings. A significant difference was also found between ETT scores (M=11, SE=0.242) and CFT scores (M=12.7, SE = 0.32), $p<.001$. Indicating a more positive attitude towards engagement with tactile treatments than communication facilitation via touch.

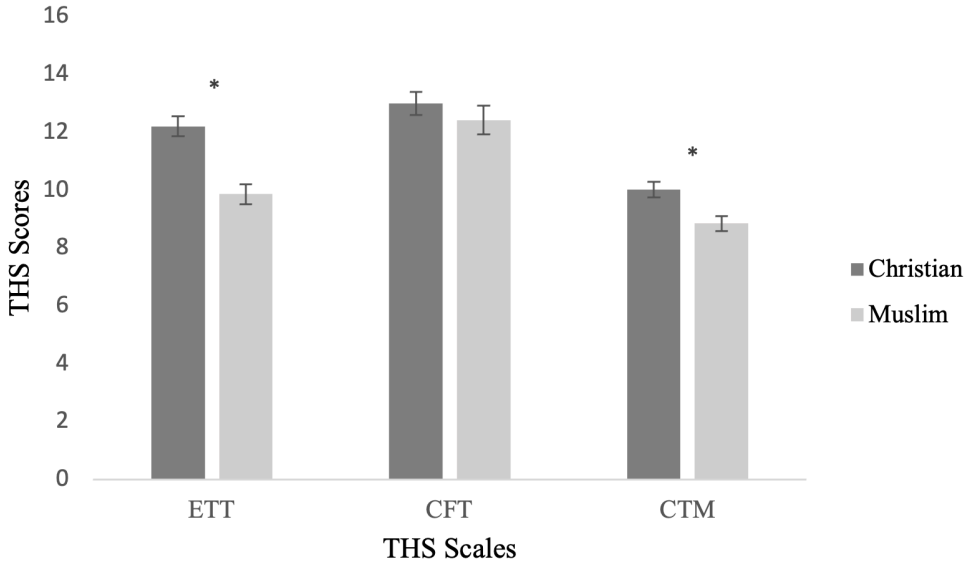
The ANOVA results highlighted a statistically significant interaction between THS subscales and religious groups, $F(1.8, 263.8)= 4.4$, $p<.016$, partial $\eta^2= .029$. Bonferroni corrected independent-samples t-tests were run on each subscale of THS between religiosity groups. Results found a statistically significant difference in attitudes towards Engagement in Tactile Treatments (ETT) scores between Christians and Muslim individuals, with the Christian group scoring higher (indicating a more positive attitude towards engagement in touch-based treatments)

than the Muslim group, MD= 2.35, SE = 0.48, *t*(146) =4.87, *p*<.001 Similarly, scores relating to an individual's Comfort with Touch in Medical settings (CTM) significantly differed between the faiths, MD=1.36, SE=.384, *t*(146) =3.55, *p*=.001 (also indicating a more positive attitude regarding comfort with touch in medical setting). THS scores exploring individuals' attitudes towards Communication Facilitation via Touch (CFT) did not significantly differ between the groups, MD = .581, SE= .64, t(146) =.908, *p*=.365, meaning the religious groups did not significantly differ in their attitudes towards the use of touch in communication facilitation. Furthermore, one-way ANOVAs investigating the religious groups separately highlighted significant main effects of THS subscales even when separating the religious groups. THS scores on each subscale differed significantly from each other for the Christian group, F(2, 146)=23.7, *p*<.001, partial η^2= .245, and the Muslim group, F(1.6, 119.8)= 37.4, *p*<.001, partial η^2= .339.

Bonferroni corrected pairwise comparisons show that almost each THS subscale differed significantly from the other for both religious groups. ETT scores (M=12.2, SE=.342) were not significantly lower than CFT scores (M=13, SE=.401), *p*=216. However, ETT scores (M=12.2, SE=.342) were found to be significantly higher than CTM (M=10.2, SE=.275), *p*<.001, suggesting a more positive attitude towards engagement with tactile treatments compared to comfortability with touch in a medical setting. Additionally, CFT scores (M=13, SE=.401), *p*=216 were significantly higher than CTM (M=10.2, SE=.275) scores, *p*<.001. Again, this suggests a more positive attitude towards communication facilitation via touch compared to comfortability with touch in a medical setting.

Figure 3.9

Average THS scores grouped by religion.



Note. ETT = Engagement in Tactile Treatments, CFT = Communication Facilitation via Touch, CTM = Comfort with Touch in Medical Settings. * indicates a significant finding, $p<.005$. Scales ETT and CTM show that the Christian group scored higher, indicating a more positive attitude towards touch in treatment settings.

Table 3.12

Pairwise Comparisons of THS scores across subscales (new sample)

					95% Confidence Interval	
THS Subscale (A)	*THS Subscale (B)*	*Mean Difference (A-B)*	*Standard Error*	*Significance*	*Lower Bound*	*Upper Bound*
Engagement in Tactile Treatments	Communication Facilitation via Touch	-1.669	0.29	<.001	-2.37	-0.967
	Comfort with Touch in Medical settings	1.52	0.26	<.001	0.891	2.149
Communication Facilitation via Touch	Engagement in Tactile Treatments	1.669	0.29	<.001	0.967	2.37
	Comfort with Touch in Medical settings	3.189	0.342	<.001	2.36	4.018
Comfort with Touch in Medical settings	Engagement in Tactile Treatments	-1.52	0.26	<.001	-2.149	-0.891
	Communication Facilitation via Touch	-3.189	0.342	<.001	-4.018	-2.36

Note. All pairwise comparisons on Touch in Health Scale subscales were corrected using the bonferroni method.

Discussion

Current literature focused on understanding touch attitudes has discovered a plethora of valuable information on how various individual differences may interact and aid in formulating one's attitudes. From gender to sex to cultural differences, we have seen research explain how these factors can alter how an individual may feel about touch in various settings, social or professional (Dueren et al., 2021; Sorokowska et al., 2021). This series of studies allowed us to expand on the past findings and bring forward a factor that has not recently been investigated, specifically, faith. The world's religious populations continue to grow (Grim, 2014), and there is clear evidence that an individual's religion can play a role in framing their behaviours and attitudes (Saroglou et al., 2004; Sulaiman et al., 2022). This research aimed to begin bridging this gap and investigate whether (a) there is a difference in attitudes towards touch between religious and non-religious individuals and (b) if this difference exists and extends to between major religious groups.

The results yielded interesting findings; each study followed essentially the same protocol. Each questionnaire investigated a different context in which touch may occur. The TEAQ looks at both types of touch and the situations in which touch may occur; this questionnaire covers a wide span of touch, from childhood touch to intimate touch and even self-touch. The STQ (Wilhelm et al., 2001) looks specifically at social touch, covering touch exchanges, types of social touch, who is involved with the touch experience and where the touch experience occurs. The THS (Vafeiadou et al., 2022) is a newer addition to the touch attitude measuring scales. This scale looked at attitudes towards touch, specifically in treatment settings.

Social Touch Questionnaire: STQ

It was predicted that there would be a difference between the religious groups and their attitudes towards touch; the results found were contrary to this. The findings highlighted that the Christian and Muslim cohort in the second study did not differ in their attitudes towards touch. Where significant differences between the faiths were not seen, the results did highlight differences between the subscales of the STQ: dislike of physical touch, liking of familiar physical touch, and liking of public physical touch. The same trend of results was found for both the Christian and the Muslim groups. Both showed a stronger dislike of physical touch over liking public and familiar

touch. The scale “dislike of physical touch” is not as specific as the other two scales; liking of public physical touch and liking of familiar physical touch both have added context, and the questions reflect as such. However, the dislike of physical touch is much broader and could be envisioned in many contexts, contexts that researchers have shown can influence our attitudes towards touch (Saarinen et al., 2021).

Nevertheless, these findings support the latter findings of study 1 and, in turn, add to the evidence that there are no significant differences between the two faiths in their attitudes towards social touch. This may then indicate some similarities in how people of religious faith feel towards touch in social situations, helping bridge gaps in understandings of minority faiths as others or outsiders (Eid, 2014). However, this study has not investigated whether this not-statistically significant finding is prevalent when other similar, monotheistic religious faiths are included, nor has it investigated the other faiths.

Touch & Health Scale: THS

As predicted, the analysis found a statistically significant interaction between the Christian and Muslim groups and their attitudes towards touch in treatment settings. Upon further investigation, the results revealed that the Christian participants reported touch in treatment settings significantly more positively than the Muslim participants in two of the THS components: ETT and CTM, meaning that the Christian participants felt more comfortable both partaking in treatments involving touch and being touched in a medical setting. Research comparing the representation of the two faiths in the media indicates that Christianity is often portrayed in a more positive frame in comparison to the framing of the Islamic faith, which leans more negative (Dahinden et al., 2011), which may explain the difference in the comfortability of touch in medical settings and engagement of tactile treatments that was seen in the results, if one group is given the privilege of positive press they are more likely to feel comfortable in spaces that require some level of vulnerability (such as treatment spaces) than a group that is given negative press (Eid, 2014; Siraj & Nawaz, 2023). There continues to be a difficult climate across the globe for Muslims, with reports of islamophobia still being on the rise (Rehman & Hanley, 2023).

Islamophobia can manifest across many domains, from social policies to structural and political contexts (Moore-Berg et al., 2023; Nadal et al., 2012). It can be suggested that policies like these will add to a sense of isolation and alienation in the society Muslims are living in (Haque, 2004). This sense of alienation will likely play a role in their comfort with touch in settings where they are required to trust an individual employed by institutions like treatment centres.

Research suggests that the law requiring healthcare professionals to provide appropriate, sensitive care to all patients and be aware of factors (like a patient's faith) that may change how they should approach a patient has not regularly been upheld (Sheikh & Gatrad, 2002). It is suggested that this may partially be due to barriers that include a lack of understanding, racism and institutional discrimination (Sheikh & Gatrad, 2002). The findings here coincide with past global literature that has published work on sensitivities of Muslim women in hospitals specifically (Bloomer & Al-Mutair, 2013; Lawrence & Rozmus, 2001) and studies which cite reports from Muslim individuals who have experienced discrimination within healthcare settings (Boucher et al., 2017). For practices of faith-sensitive touch communication to be incorporated, these patients would first need to feel that they are seen as important. We see in case studies of high-security hospitals that despite a higher use of chaplain services by Muslim patients, there remain more hired staff for Christian patients (Saleem, Treasaden & Puri, 2012). From this, we can gather a small idea of how and why Muslims feel less comfortable in a treatment setting, as their needs are often not proportionally catered to, even when they are utilising the services more than their Christian counterparts. This may result from the study above being conducted in a traditionally Christian country, meaning that out of all potential faiths, priority was given to the majority faith.

Past literature has identified factors that could aid in the appropriate and sensitive care of patients. Factors such as the ethnicity of a provider can impact the effectiveness of patient-provider communication (Cooper et al., 2003), and minorities can experience treatment settings differently (Schinkle et al., 2016; Schouten & Meeuwesen, 2006). These studies looking at minority groups often look at ethnic minorities rather than religious minorities. Therefore, there is a gap in the literature here that should be explored for all religious minorities. Though Muslims were focused on

in this explanation, it is equally as important to understand the attitudes towards touch in treatment settings of those in other faiths.

Touch Experiences and Attitudes Questionnaire: TEAQ

The TEAQ analysis may not have found any significant interaction between the components of TEAQ, but the religious group findings approached statistical significance, unveiling potential differences between Christianity and Islam.

Based on Study 1's findings, there are differences between religious and non-religious individuals in general, but as seen in Study 2, there are differences between faiths, too. The findings from this chapter help break outdated stereotypes placed on groups of people, demonstrating how individuals of religious faiths not only like touch but are also no different to non-religious individuals when it comes to situations of unfamiliar touch.

Limitations

A key takeaway in this chapter is that there are faith-based individual differences in touch attitudes and behaviours that are worth investigating to bridge the gap in the lack of faith representation within touch research. This chapter has only grazed the surface in bridging this gap; we investigated specifically the two most prevalent faiths, Christianity and Islam (Koehrsen, 2021; Wormald, 2015). In England and Wales, we can see that many religions have increased in number (except Christianity) (ONS, November 2022), meaning that understanding these other faiths is also necessary.

Furthermore, the original religious sample used in study 1 was predominantly Christian, meaning it will not have shown a complete perception of the UK's religious populations' attitude towards touch in various settings. These findings should not be explained without considering contextual factors such as ethnicity and cultural affiliations. There is a relationship between culture and religion in that they can intertwine and influence each other (Croucher et al., 2017). Religious groups from all over the world will share the core values of their chosen faith but will also each have slight variations in how they practise faith; historically, these variations have been documented in major faiths such as Christianity (Höllinger & Makula, 2021; Johnson et al., 2011).

When comparing Study 1's analysis there is a large difference in the ages of participants between analysis 1 and analysis 2. The first had an average age of around 60 whereas the second analysis had an average age of around 30. This large age gap is likely to have had an effect on the results of the studies in this chapter. Bowling and colleagues (2024) used data from the Touch Test (2020) also and notably found significant differences between older and younger adults in their experiences and attitudes towards touch. Religiosity was not a factor in this study but older individuals overall were found to have fewer experiences of current intimate touch and less positive attitudes towards self-care. Therefore it stands to reason that the large age discrepancy between the two studies will have impacted the results and their interpretation.

Because study 1 and 2 were secondary analyses from the Touch Test, which was not created to investigate religious differences, the key factor of religiosity was not considered. Religiosity was not measured in the Touch Test and, therefore, not a factor available for either analysis 1 or 2; though participants may have identified as members of a particular faith, they may not all observe their faith in the same capacity. We addressed this in study 2 and matched based on religiosity. However, a preferred method would have been to recruit a substantial number of participants across the spectrum of religiosity, from not practising to exclusively practising, for a deeper understanding of how religion can affect one's behaviours and attitudes towards touch.

It is also worth noting that the results from study 2, where new participants were recruited, may have been due to its smaller sample size and consequently the study may have been underpowered. The output of study 2 highlighted a small effect size which will have required a larger sample to reliably detect any potential significance.

Conclusions

From these analyses, it is clear that religion is a factor that influences our attitudes towards touch. Study 1 brings into question traditional stereotypes that people of religious faith are automatically more conservative in their touch values. Study 2 opens up more questions about how different some faiths may be from each other and why these differences exist in domains such as treatment settings but not in domains like social touch and family-related touch. These findings, in part, can be explained by Floyd's AET; the findings from study 1 and study 2 highlight the

importance of affectionate touch in specific circumstances, such as intimate touch. The third postulate of the theory states that affective communication holds importance for fertility and human viability, two things intimate touch can be related to. In this context, it is not surprising that intimate touch was a facet of the TEAQ scale that scored highly in both study 1 and 2 for all groups.

The results of the first study highlight the need to explore religiosity further; this study acts as evidence to suggest that the way religious individuals and religious groups have been perceived may be biased and outdated. Prior assumptions of conservative values are shaken, and links towards negative attitudes towards touch, even sexual touch, now have contradictory findings. The findings also highlight that no group investigated had opposing views towards touch; the directions of the attitude followed the same pattern in both the religious and non-religious groups.

With the world's religious population changing and some faiths decreasing in age (Hackett & Lipka, 2018; Wormald, 2015), these traditional understandings of conservatism and religion risk needing to be updated. Pew Research Centre predicted that by 2050, the number of Muslims globally will come close to matching the number of Christians globally. Therefore the need to understand differences between faiths is imperative and requires updating. With the increase in accessible resources for the growing young religious population, their understanding of their faiths may take on different shapes than their parents and grandparents. These differences will also be more complex due to the cultural, social, and political factors that play a role, especially with faiths often portrayed negatively in the media.

With regard to touch behaviours and attitudes, the political climate and media portrayal of faiths will influence how particular religious groups feel and engage in touch-based activities. Similarly, family, friends, self and social touch attitudes and behaviours may change now that resources to understand one's faith have become more readily available. Investigations into how these groups feel about touch and understanding how this links with their reported attitudes will aid in future applications of these findings, whether in education, the workplace or medical settings.

Chapter 4: Individual Differences in Topical Touch

Abstract

Factors such as gender, age, culture, and emotional bond all affect an individual's attitude towards touch. Often overlooked, religion also has the potential to play a role in how individuals feel towards touch. This study looked at the topography of where people feel comfortable being touched and investigated whether there are differences in where people like to be touched by friends, partners and strangers between religious and non-religious groups. Secondary data analysis on data collected through the Touch Test found no statistically significant differences between groups on whether they felt comfortable being touched on intimate or non-intimate regions of the body when participants were asked to envision a stranger. Nor was there a difference in region of the body. When asked to imagine a partner, however, significant differences between faiths and regions of the body were found. Participants generally indicated greater comfort in being touched in non-intimate areas than in intimate areas. Religious groups reported lower levels of comfort with touch from a partner compared to the non-religious group. No difference was found for the region of touch on the body when the participant envisioned a friend. Similarly, no difference was also found between the religious and non-religious groups regarding comfort levels for touch from a friend. Potential explanations and future directions are discussed in relation to norms and rulings within religious faiths and Floyd’s Affectionate Exchange Theory.

Introduction

Our sense of touch is one we trust and is vital for our social communication, mental well-being and even physical health (Carmichael et al., 2021; De Witte, 2011; Debrot et al., 2021; Hertenstein et al., 2009; Rickard & White, 2021). Past literature has established that touch holds great value in the lives of human beings; from the ability to evoke and modulate our emotions (Gallace & Spence, 2010) to studies highlighting the link between lack of touch and increased feelings of loneliness (Heatley Tejada et al., 2020; Noone & McKenna-Plumley, 2022), it is highly improbable that touch can be deemed as anything other than influential.

The influential nature of touch has been noted in research across the lifespan. There is evidence to support the importance of touch in the early years of an individual's life; data from studies that have investigated the effects of skin-to-skin contact on preterm infants show that the babies who experienced skin-to-skin contact grow to develop better sleep patterns and better responses to stress than the preterm infants who stayed solely in an incubator (Vogel et al., 2015). Longitudinal research has shown strong positive relationships between positive touch at an early age and a child's sociomoral outcomes (important components such as self-regulation, empathy and conscientiousness; Narvaez et al., 2019).

Further down the lifespan, literature continues to highlight how touch can modulate mood and well-being; one of the early studies on the health benefits of hugging conducted by Clipman (1999) found that adult participants who were instructed to engage in hugging actions (giving or receiving) had significant increases in their reported well-being compared to control participants who were instead asked to read. Building on this concept, Van Raalte and Floyd (2021) conducted a study that looked further into the health outcomes of touch, i.e. hugging. Their study investigated the relationship between the frequency of hugging and the level of proinflammatory cytokines in the body. The measure of proinflammatory cytokines is one way of assessing chronic inflammation, a condition known to have adverse health associations. Their findings post a 14-day test period found a significant inverse relationship between the frequency of hugs and the level of proinflammatory cytokines, strengthening the notion that touch is vital in our lives.

Although affective touch can, on average, offer benefits, it does not equate to every human being having the same experiences and attitudes towards the affective touch. How we experience touch will depend on the context in which it is received. Studies investigating contextual factors have found evidence that we respond differently to touch depending on whether touch happens in public or private (Major et al., 1990; Miller et al., 2014). Many of these studies have also examined the impact of contextual factors such as the person giving touch and how this can impact the output of the touch's effect on attitudes and behaviour (see Saarinen et al., 2021 for review).

The literature also suggests that our ingroup-outgroup preferences impact our touch behaviours; in other words, we have different responses to touch from an individual we deem as

our ingroup compared to the outgroup. Although much of the past this research has focused primarily on ethnic ingroups and outgroups (Seger et al., 2014; Vrana & Rollock, 1998; Willis et al., 1978), studies have investigated other group forms too (e.g., gender, sexuality, disease, atypical appearance). It is clear that attitudes towards affective touch are personal; every individual will have their own attitudes towards touch that will, as alluded to above, depend on several factors, including their age and gender, personality and culture (Dueren et al., 2021; Russo et al., 2020; Webb & Peck, 2015), and experience with touch (Trotter et al., 2018).

In addition to attitudes, some research has taken this further by investigating the topography of affective touch – where people prefer and find touch to be appropriate on the body. This research has shown that, in general, women are permitted to touch more body areas and typically receive more touch, too (Beßler et al., 2020). Studies have also investigated whether there is a cultural element to where individuals deem touch to be and feel acceptable on the body, finding evidence for cultural differences between predominantly Western communities and Eastern communities (Schirmer et al., 2023; Suvilehto et al., 2019). Cultural differences in where touch is acceptable are predicted based on several factors ranging from the region's temperature to the disease's history (Sorokowska et al., 2021).

Religion likely plays its own role in an individual's attitudes towards touch; as we saw in the previous chapter (Chapter 2), religious groups were found to have significantly different attitudes towards touch in a variety of contexts. Whether this difference in attitude translates to touch topically on their body is yet to be fully understood. As the population of some religious groups grow, these differences become essential to understand (Madni et al., 2022), especially when considering the average age of some of these religious groups is under 30 years of age (Office for National Statistics, 2023). This demographic information leads to a requirement for an updated understanding of religious populations as the literature preceding present day will have primarily taken into account the attitudes and behaviours of religious individuals who were raised in a different zeitgeist (also see Burleson et. al (2019).

Where past research has touched upon religion and aspects of touch, it has also been combined with conservative values (Sorokowska et al., 2021) or looked at touch in religion

through a sexual lens (Burdette et al., 2009). This perspective of religion and touch in research often links religion with conservatism due to many faiths observing sexual abstinence before rituals and ceremonies like marriage. Still, gaps in our understanding of differences concerning religion-related differences in non-sexual affective touch represent an important area for further investigation. Many faiths, such as Islam, have regulations on what is permissible regarding touch. These attitudes must be considered and understood for a more cohesive society. Practically these attitudes must also be considered and understood when it comes to touch within healthcare, education and workplace settings. Therefore more research is needed to explore how religious group differences influence affective touch attitudes.

One such way to improve our understanding of these attitudes for settings within healthcare, education and the workplace is to explore attitudes towards *topical* touch on the body. This study therefore aims to better understand where individuals feel comfortable being touched and whether their attitudes differ depending on factors like religious faith. Specifically, to better understand where individuals feel comfortable with touch and how baseline religiosity (self-described) plays a role in these preferences after controlling for age, gender, emotional bond and personality. Understanding the differences in where individuals are comfortable being touched is essential. This allows for a more practical application of the findings within touch literature. We have learnt that individuals may differ in their attitudes based on gender, age and culture, but with research that extends to the body's topography, we can learn where it is more and less acceptable for touch to be exchanged. These findings will be valuable in social and professional settings, such as the workplace, to create a safer environment. To do this, the comfort of touch on the body from three different types of people, partner, friend and stranger, was investigated. Given the human body's complexities, the study has divided the body into intimate and non-intimate regions. These regions are based on body map analysis conducted on the data that indicated the common regions across participants' responses, indicating that touch in those areas is disliked (therefore labelled as intimate).

The hypotheses for this study were as follows:

H1: There will be a difference in the level of comfortability between touch in intimate and non-intimate areas based on baseline religiosity (self-described as religious or non-religious) regarding receiving touch from a stranger.

H2: There will be a difference in the level of comfortability between touch in intimate and non-intimate areas based on baseline religiosity regarding receiving touch from a partner.

H3: Based on baseline religiosity regarding receiving touch from a friend, there will be a difference in the level of comfortability between touch in intimate and non-intimate areas.

Methods:

Pre-Registration:

Analyses for this project were pre-registered using the open science framework. The full pre-registration is available at https://osf.io/7jd26.

Procedure: Data collection:

Identical to Chapter 2, the data here was drawn from the Touch Test (Penton et al., 2022; Dueren et al., 2022; Vafeiadou et al., 2022). A reminder that all participation in the Touch Test was voluntary and involved no compensation for participation. Only data from healthy UK respondents were analysed. Participants included in this analysis were grouped and matched on age, gender, attachment and emotional bond to the individual thought of (when indicating comfortability of touch topographically) and personality factors.

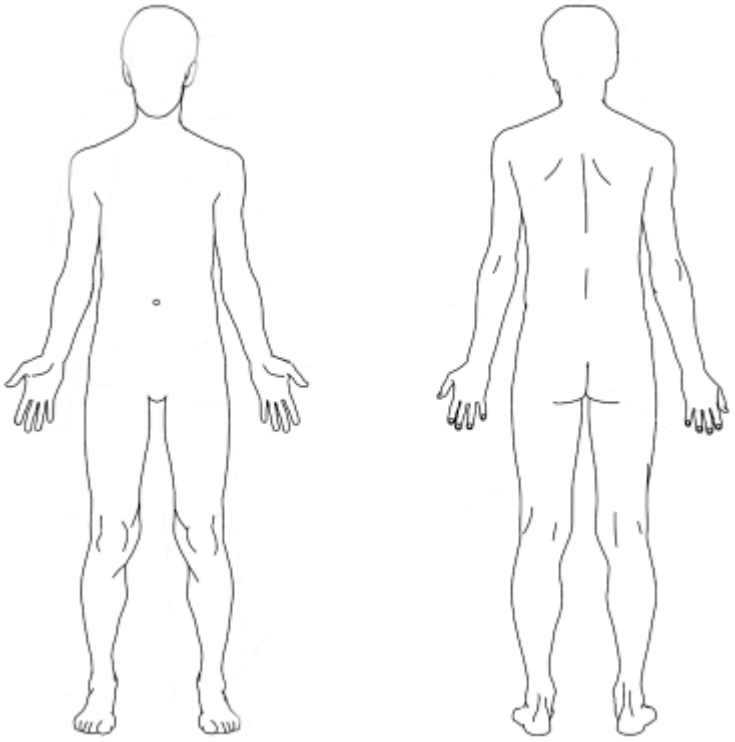
Measures:

The Touch Test utilised several measures to explore attitudes towards touch. For this specific analysis, we used data from the body topography question. This question required participants to indicate where on their bodies they felt comfortable being touched by a stranger, partner or friend (see Figure 4.1). From that block of the Touch Test, we also used data that indicated the participants' emotional bond to the individual they thought of when deciding where they felt comfortable being touched. Areas of touch were broken down into two general groups for

analysis; intimate and non-intimate. The FACTOR program was used to create these groups. This analysis allows for factor analysis on ordinal data in a robust way forming clusters to indicate the regions where participants mostly indicated they disliked being touched and where they mostly indicated they liked being touched.

Figure 4.1

Body diagram displayed to participants to indicate where they feel comfortable being touched. Participants were asked to envision either their friend (or partner if that had one) or stranger and indicate where on the body they liked, or disliked being touched.



Note. The body was sectioned into 30 regions (16 for the front and 14 for the back-facing body). The list of regions was as follows: Front Jaw, Front Neck, Front U Torso, Front Shoulders, Front Upper Arms, Front Forearms, Front M Torso, Front L Torso, Front Crotch, Front Thighs, Front Hands, Front Knees, Front Legs, Front Feet, Back Head, Back Neck, Back U Torso, Back Shoulders, Back M Torso, Back Upper Arms, Back Forearms, Back Hand, Back L Torso, Back Buttocks, Back Thighs, Back Knees, Back Legs, Back Feet, Front Middle Face, Front Forehead.

Participants:

In each study, healthy participants from the Touch Tests UK sample who did not report any health conditions or impairments were included. This was primarily because the largest number of participants were recruited from this region. Additionally, since we were interested in comparisons between non-religious participants, we filtered to only include these participants in each instance. Thus, individuals who replied “Yes" or “No” to the questions “Are you religious?” were included in the study. Then, these individuals who reported following one of the four monotheistic religions were included, and participants who reported “Buddhist”, “Hindu”, “Prefer not to say”, and “A religion not listed here” were excluded. Finally, the participants were filtered to include individuals with no missing data for gender, age, attachment, emotional bond, and personality scores on extraversion and openness.

This filtering approach resulted in N = 4282 participants, with (religious) NReligious = 990 and (non-religious) NNon-Religious = 3292. To control for factors such as age, gender, personality, attachment, and emotional bond, we restricted our sample further by conducting a matching sample procedure (1st matching). This also allowed the analysis to facilitate group comparisons with equal sample sizes.

Matching:

A custom R script using the "matchit" package was used to perform the nearest neighbour matching method (method = "nearest") with distance specified by the generalised linear model (distance = "glm"), the binary variable of "Are you religious"-yes/no as grouping variable and gender, age, personality, attachment and emotional bond (to the individual thought of) variables as covariates. After matching, a filtering variable was created to identify the matched cases from the original TouchTest dataset. See Table 4.1-4.3 for the sample's characteristics of the matchings for stranger's, partner's, and friend's touch. Each set of participants varies in size, this is due to how the participants were questioned within the Touch Test. All participants were asked to envision two situations, both to indicate where they would feel comfortable being touched. They were all asked to envision one scenario as touch by a stranger and then asked to envision touch from a partner. If they did not have a partner they were told to envision a friend.

Table 4.1

Stranger's Touch Matching: Religious with Non-religious group

Group	Sample size	Age	Gender
Religious	2565	58.9 + 12.6	612 Males
		(18-92)	1945 Females
			3 Non-Binary
			2 Prefer not to say
			3 Prefer to self-describe
Non-Religious	2565	58.9 +12.7	658 Males
		(18-87)	1886 Females
			4 Non-Binary
			8 Prefer not to say
			9 Prefer to self-describe
Total	5130	58.9 + 12.7	1270 Males
		(18-92)	3831 Females
			7 Non-Binary
			10 Prefer not to say
			12 Prefer to self-describe

Table 4.2

Partner's Touch Matching: Religious with Non-religious group

Group	Sample size	Age	Gender
Religious	1682	57.84 + .303 (18-87)	404 Males 1273 Females 1 Non-Binary 1 Prefer not to say 3 Prefer to self-describe
Non-Religious	1682	57.81 + .304 (18-87)	434 Males 1232 Females 3 Non-Binary 6 Prefer not to say 7 Prefer to self-describe
Total	3364	57.8 + .215 (18-70)	838 Males 2505 Females 4 Non-Binary 7 Prefer not to say 10 Prefer to self-describe

Table 4.3

Friend's Touch Matching: Religious with Non-religious group

Group	Sample size	Age	Gender
Religious	990	40.35 + 12.68 (18-70)	8 Males 26 Females
Non-Religious	990	40.24 +12.79 (18-70)	9 Males 25 Females
Total	1980	40.29 + 12.64 (18-70)	17 Males 51 Females

Results

Stranger's Touch

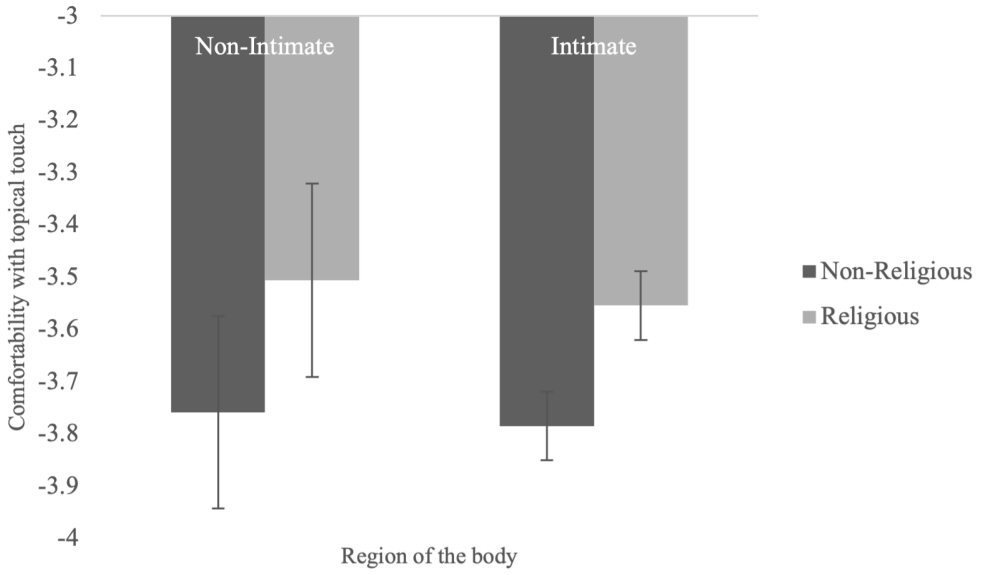
A 2(area of the body)X 2(religiosity) mixed measures ANOVA between baseline religiosity and level of comfortability for touch from a stranger on regions of the body showed that there was not a statistically significant main effect of baseline religiosity, F(1,4917) = 2.12, *p*=.146, partial η^2 = .307. Indicating comfortability with touch from a stranger on areas of the body did not differ significantly based on whether the participants were religious or not religious.

Following these findings, the ANOVA also did not reveal a statistically significant main effect of area, F(1,4917) = .133, p=.715, partial η2 = .065, suggesting that when considering touch from a stranger, there is no difference in comfort levels for touch in intimate and non-intimate regions.

The ANOVA did not highlight any statistically significant interaction effects between the two variables: baseline religiosity and area of the body, F(1, 4917) = .011, *p*=.97, partial η2 = .051.

Figure 4.2

Average comfortability with topical touch on non-intimate and intimate body areas from a stranger, grouped by religion.



Note. The graph depicts the mean score indicating comfortability with topical touch on either the non-intimate (left) or intimate (right) parts of the body from strangers, separated by baseline religiosity.

Partner's Touch

Upon conducting this analysis, Levene's assumption for equality of variances for the non-intimate areas was violated. Due to the robust nature of the ANOVA, the equal group sizes for the baseline religiosity factor and calculated variance ratios being below 10, the analysis went ahead as planned, and a more stringent significance level was used ($p=.01$ rather than $p=.05$; (Pallant, 2020; Tabachnick & Fidell, 2013)).

A 2(area of the body)X 2(religiosity) mixed measures ANOVA between baseline religiosity and level of comfortability of touch by a stranger on regions of the body showed that statistically significant main effects of baseline religiosity were observed, $F(1, 3276)= 29.813$, $p<.001$, partial $\eta 2 =.009$. This is due to non-religious participants reporting more comfortability with touch from partners (M= 4.6, SE = .113) in contrast to religious participants (M= 3.7, SE = .114).

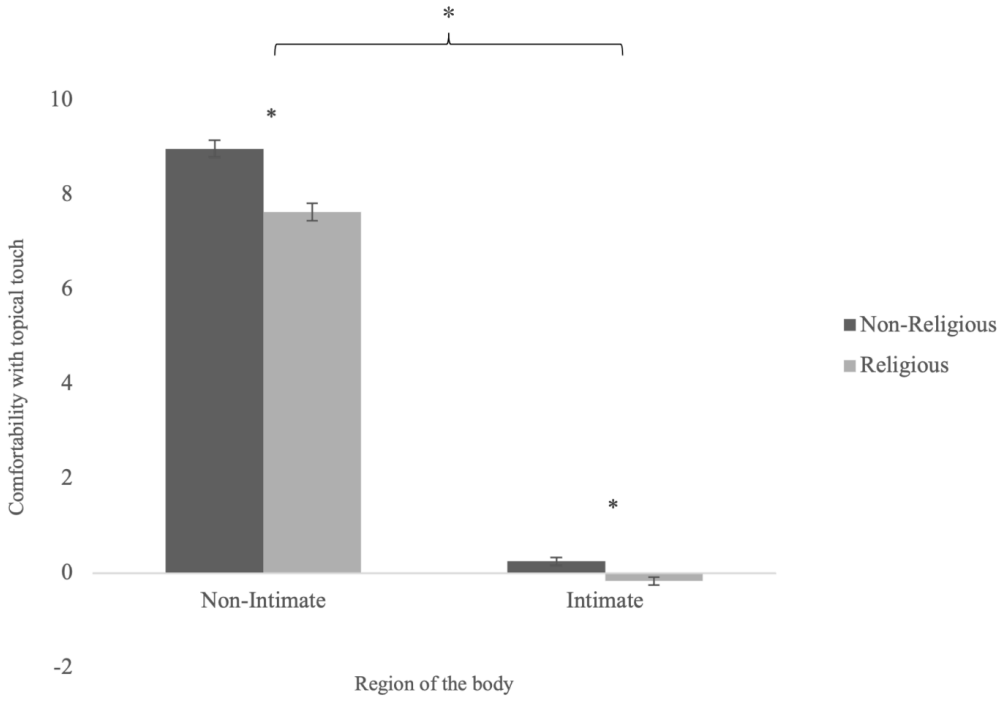
Statistically significant main effects of body area were also found, F(1, 3276)= 5285.7, *p<.001*, partial η^2 = .617. This is due to participants reporting more comfortability for touch from partners in non-intimate areas (M= 8.3, SE= .126) in contrast to intimate areas (M= .039, SE= .058).

The ANOVA also found a statistically significant interaction between baseline religiosity and region of the body, F(1, 3276)= 16.428, *p<.001*, partial η2 =.005. To follow up on this interaction, a Bonferroni corrected independent samples t-test was conducted to examine the between-subjects factor of baseline religiosity. The analysis found statistically significant differences in the comfortability of touch between the religious and non-religious groups on intimate regions of the body (t(3269.5)=-3.60, *p<.001*), with the religious group reporting a lower mean, indicating less comfortability in comparison to the non-religious group. Similarly, the independent samples t-test also found statistically significant differences in the comfortability of touch between the religious and non-religious groups on non-intimate regions of the body (t(3262.9)=-5.26, *p<.001*), with the religious group reporting a lower mean, indicating less comfortability in topical touch in non-intimate areas of the body in comparison to the non-religious group.

To investigate the interaction effect further, paired samples t-tests were also conducted on the religious and non-religious groups separately. The results showed that within the religious group, there was a statistically significant difference between comfortability of touch on intimate and non-intimate areas of the body (t(1627)= 49.7, *p*<.001), with comfortability ratings indicating more comfortability with touch on non-intimate regions (M=7.6, SD= 6.95) than intimate regions (M= -.17, SD= 3.2). Similarly, a statistically significant difference in comfortability of touch on intimate and non-intimate areas of the body by a partner was found in the non-religious group (t(1649)= 53, *p*<.001), with comfortability ratings indicating more comfortability with touch on non-intimate regions (M=8.97, SD= 7.5) than intimate regions (M= .264, SD= 3.4).

Figure 4.3

Average comfortability with topical touch on non-intimate and intimate body areas from a partner, grouped by religiosity.



Note. The graph depicts the mean score indicating comfortability with topical touch on either the body's non-intimate (left) or intimate (right) parts from a partner, separated by baseline religiosity.* indicates a significant finding, $p<.005$; statistical differences are observed for touch between the intimate and non-intimate areas of the body and differences between the religious groups. The figure depicts the religious group as less comfortable with a partner's touch on both intimate and non-intimate areas of the body.

Friend's Touch

Upon conducting this analysis, Levene's assumption about the non-intimate areas was violated. Due to the robust nature of the ANOVA and the equal group sizes for the baseline religiosity factor, the analysis went ahead as planned, and a more stringent significance level was used (*p=.01* rather than *p=.05;* Pallant, 2020).

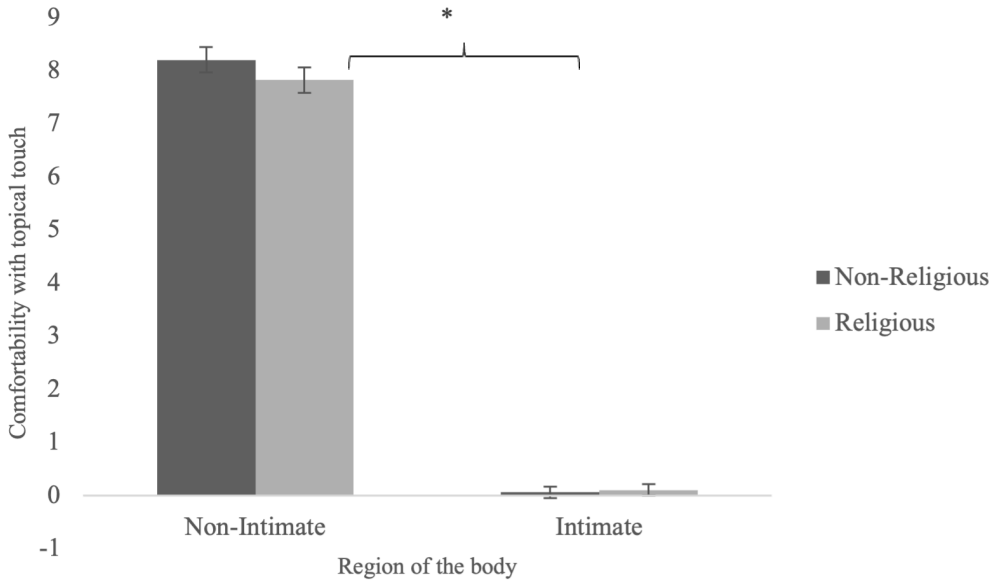
A 2(area of the body)X 2(religiosity) mixed-measures ANOVA between baseline religiosity and the level of comfortability of touch by a friend on regions of the body did not reveal statistically significant main effects of baseline religiosity; F(1,1842)=.619, *p*=.431, partial η^2 =.00.

However, the ANOVA did reveal statistically significant main effects for the area of the body touched (intimate or non-intimate), F(1, 1842)= 2893, *p*<.001, partial η2 =.611. Bonferroni corrected pairwise comparisons show that this is due to participants reporting more comfortability for touch from friends in non-intimate areas (M= 8.01, SE= .167) in contrast to intimate areas (M= .081, SE= .075), *p*<.001.

No statistically significant interaction effects were revealed between baseline religiosity and comfortability of touch on regions of the body, F(1,1842)=2.063, *p*=.151, partial η2 =.001.

Figure 4.4

Average comfortability with topical touch on non-intimate and intimate body areas from a friend, grouped by religion.



Note. The graph depicts the mean score indicating comfortability with topical touch on either the non-intimate (left) or intimate (right) body parts from a friend, separated by baseline religiosity. * indicates a significant finding, *p*<.005; statistical differences are observed for topical touch by friends between the intimate and non-intimate areas of the body. Intimate areas of the body show a significantly lower comfortability score than the non-intimate areas.

Discussion

Understanding attitudes towards touch through the topography of social touch is less understood than other methods of attitudes towards touch. Much of the research around attitudes towards touch has explored these factors through investigations that identify an individual's attitudes through their responses to statements (Bağcı & Çınar Yücel, 2020; Jones & Brown, 1996; Miller et al., 2014; Penton et al., 2022; Trotter et al., 2018; Vafeiadou et al., 2022; Webb & Peck, 2015). Though this is valid, it is not the only way to develop our understanding of this topic. Instead, this study expands on the other literature investigating touch attitudes through understanding where we feel comfortable being touched topically on the body. The literature that has looked at touch on the body has notably seen group differences in gender, emotional bond of the individual and culture (Bellard et al., 2023; Beßler et al., 2020; Cazzato et al., 2021; Schirmer et al., 2023; Suvilehto et al., 2015, 2019); all factors that play a large role in the context of how the touch occurs. This study starts bridging the gap in the existing literature when considering important factors like an individual's faith. The study looked at group differences between religious and non-religious individuals in their level of comfortability being touched on the body (intimate or non-intimate areas) by either an a) partner, b) friend or c) stranger.

The findings yielded interesting results; though a statistically significant difference was predicted between the religious and non-religious groups in their comfortability with touch topically on the body from a stranger, a statistically significant difference was not found. However, in line with the second hypothesis, significant differences between religious and non-religious groups regarding a partner's touch were seen. Findings revealed that when it comes to a partner’s touch, there is less comfort with touch in intimate areas compared to non-intimate areas. Suggesting that individuals are more comfortable/enjoying touch in non-intimate regions with their partners than in these intimate areas. This finding may be due to several factors. The non-intimate regions of the body (areas like the head, shoulders and hands) are more accessible during the working day compared to intimate areas (i.e. thighs, crotch and torso). So, the frequency of touch may have created a sense of comfortability. This is supported by past literature highlighting the importance of

non-sexual touch within relationships (Chopik et al., 2014; Jakubiak et al., 2021; Jakubiak & Feeney, 2016).

The findings from this study can be seen as contradictory to what Suvilehto and colleagues (2015) alluded to in their study, the findings here suggest that touch boundaries also exist with partners. Suvilehto and colleagues (2015) findings suggested touch was allowed almost anywhere on the body, meaning the results here may not compliment that finding as the comfortability score of touch on intimate regions identified in this study was found to be significantly lower than comfortability score for touch in non-intimate regions. This may be due to factors such as age; the aforementioned study stated their research consisted of mean ages under 40, whereas the participants used to analyse partner touch in this study had an average age of 57.8. This may affect comfortability with touch on the body in intimate areas but upholds the importance of general touch in relationships.

Differences were found in comfortability between the religious and non-religious groups within both body regions (intimate and non-intimate). The religious groups averaged a lower level of comfortability with touch on both regions of the body, specifically when touch was imagined as from their partner or for those without a partner, from their friend. This finding is interesting when considering the findings from the previous chapter. Chapter 3, focusing on individual differences in attitudes towards touch found that religious individuals have a more positive attitude towards touch in several contexts across scales including: Friends and Family Touch, Current Intimate Touch, Childhood Touch, Attitudes towards Self-Care, Liking of Public Physical Touch and Communication Facilitation via Touch. Meaning that together these chapters highlight how an individual's attitudes may not be synonymous with their own personal level of comfortability with touch.

Many things are not addressed within this study that may have impacted an individual's comfort with touch. The majority of data collected here was collected during the rise of the COVID pandemic just before the enforced lockdown in late March 2020 in the UK, whether individuals were consciously aware of the severity of the pandemic or whether they had personal experience with it already was not measured, this may have impacted their current comfortability being touched but not shifted their attitude towards affective touch in general.

Though this study looked at individuals with partners, the *type* of partners (i.e. dating, spouse, other, etc.) and the *duration* of the partnership were not defined (i.e. recently gotten together, 3 months or 3 years etc.). Therefore, individuals may have been at varying stages of varying types of relationships; meaning their levels of comfortability could still be developing. With regards to religious individuals, there may have been participants who were in a partnership but not married. This may have been an influential factor given that many religious faiths will have restrictions on touch and intimate touch, as stated in their scriptures before marriage, and there is a chance that perhaps these restrictions played a role in the responses of the religious group.

The role of religion may also play another complex role here that was not dissected in this analysis, though a religious individual's attitudes may be more positive towards touch than a non-religious individual's (in specific contexts) the application of touch may be more determined by their faith. The understanding that touch is positive can be seen in several monotheistic faiths. From the accounts of how touch was a method of healing in the Bible (New International Version, 1973, Mark 8:22-8:26; Mark 5:27–29) to Islamic hadiths highlighting the importance of touch in relationships with one's child (Sahih Muslim 2317, Book 43, Hadith 85) and ones brother (Sahih al-Bukhari 3919, Book 63, Hadith 144); it is clear that individuals of religious faith with knowledge of their faith could have a positive attitude towards touch based on the teachings of their faith. Similarly, monotheistic faiths are well known for their restrictions on touch, varying from touch from the opposite sex to intimate touch outside of marriage. This may explain the pattern found based on this chapter and chapter 3 but it has not been explored here.

Additionally, outside the scope of faith, it is important to note that within the question asked to participants, it is not mentioned where participants were to envision they were whilst envisioning touch on body parts. The contextual distinction of this factor may have skewed the findings. As suggested in theories of affective touch (AET; Floyd, 2015), our optimal tolerances for touch will vary from individual to individual, and even after taking into consideration the emotional bond between two individuals, the results here highlight how individuals are protective of their bodies and that boundaries can exist regardless of who an individual is.

With regards to touch on the body from a friend, there was a significant difference between the regions of the body touched. Though this did not differ within the religious and non-religious groups, there is a clear distinction, when it comes to a friend, individuals are more comfortable being touched on the non-intimate regions; these findings support past research investigating the topography of social touch and how emotional bonds between an individual and the toucher can influence our levels of comfort (Suvilehto et al., 2015). The difference between the two region clusters of the body suggests the importance of touch on these body regions, supporting previous literature. Studies have found evidence that touch from friends can have stress-buffering capabilities (Heinrichs et al., 2003; Morrison, 2016; Saarinen et al., 2021). As these findings highlight a strong comfortability with touch, they also support the understanding that touch is important in social cohesion and community bonding (Dunbar, 2010; Jablonski, 2021; Suvilehto, 2018) as well as supporting some of the assumptions of the affection exchange theory (Floyd, 2015); that affective communication can be adaptive and uphold communal bonds which in turn aids in survival. This element of Floyd's theory could explain the above findings. Even though there seems to be a boundary between acceptable access of topical touch on intimate and non-intimate areas of the body, the existence of such a large difference and high comfortability with touch on non-intimate areas may be because these regions are areas where social touching primarily exists, such as the hug or the handshake. Social touch actions such as these are a part of interacting and maintaining social bonds. Given that the difference between the comfortability of touch between regions of the body has not shown evidence of differing between religious and non-religious groups, it suggests that this element of affection exchange theory can be applied to religious groups too, the concept of upholding communal bonds, which can aid in survival is present within the religious community.

Limitations

As this was a secondary analysis, the participant pool for this data was limited, as reflected in the participant matching, which showed that the gender of the participants included here was primarily female. Additionally, though this study wanted to investigate religious and non-religious

groups, the religious group consisted mainly of Christians. Therefore, this does not allow for a wide breadth of understanding for religious groups.

Following on from this, as was apparent in the second chapter, the secondary data collected from the Touch Test did not collect information on the level of religiosity of the religious group, and this may have had a great effect on how the analysis worked: two self-proclaimed religious individuals will not be identical in their opinions because they share a faith.

The decision to label select regions as intimate and non-intimate came from a preliminary analysis examining the general regions individuals liked and disliked being touched by a partner, friend or stranger (Bowling et al., 2020). This could have instead been investigated separately for a greater, more in-depth understanding of where the regions that individuals like or do not like to be touched are.

The gender of the individual who “gave” the touch was not a factor that was controlled or included in this analysis; this may have affected our findings as we see in other studies that the sex of the toucher can affect an individual’s attitude towards that touch (Miller et al., 2014).

Conclusions

Given the findings of this research and the limitations described above, the future directions for this research are copious. This study serves as an exploration, and future studies should look into how the gender of the touch giver may change the comfort of touch in intimate and non-intimate regions. As the limitations suggest, the findings regarding religion have created a large general blanket from which to infer about the religious groups - this is not appropriate for making inferences. Therefore, it would be vital to explore the religious groups in more depth by ensuring a more balanced sample and the inclusion of religiosity. Though statistical differences were seen, they may be a partial reflection of religious groups as a whole within the UK. Despite this, the findings have highlighted that differences are apparent, and the applications of this research could help build a sense of trust amongst the broader community if an understanding of touch boundaries on the body grows. The findings also highlight the ways that religious and

non-religious groups may not differ, which in its own way also builds community by breaking down a sense of “other” between the two groups.

Chapter 5: Touch attitudes and touch desires during moments of grief

Abstract

Grief can impact our mental and physical health; prolonged grief increases the potential for severe health issues. Therefore, the need to understand how to console a grieving individual is extensive. Touch has been found to improve feelings that are often described by those grieving. The intersection between affective touch and grief, however, is understudied. This chapter aimed to look at this intersection and investigate whether individuals differ in their attitudes towards touch depending on whether they have recently experienced a loss. The findings did not show a significant difference between those who had recently experienced a loss and those who had not. Additionally, this study aimed to explore whether an individual's *desire* for touch differs based on when they are grieving or in an everyday circumstance. The findings here highlighted several things: a) Individuals desire to touch more during moments of grief. b) The type of touch desired is specific; individuals were found to desire affective forms of touch more than non-affective forms. c) Touch from a female was desired more than touch from a male in all recorded circumstances (whether it was a friend, acquaintance or stranger). The last aim of this study was to investigate the relationship between religiosity and touch attitudes, taking into account the time since the loss of a loved one. A regression analysis on three separate scales measuring touch attitudes did not find religiosity or time since loss to be predictive of an individual's touch attitudes. Overall the findings of this study highlight the importance of affective touch during moments of grief and the stability of our attitudes towards touch during these moments.

The findings here also show consistency with the findings of past chapters as well as introduce new findings into the literature of touch and grief, highlighting that touch is desired during these challenging moments but that the desire changes depending on the relationship between the touch giver and the touch receiver.

General Introduction

At some point in every individual's life, they will likely face losing a loved one. With the global pandemic just behind us, many individuals will have faced grief within the last 3 years; it was estimated that in the United States, for every life lost to COVID, approximately 9 individuals lost a family member (Verdery et al., 2020). Grief itself is a natural, normal response to loss (Stroebe & Schut, 1998) and experiencing the loss of a loved one can have a toll on the health of an individual. Given the natural nature of grief, research into the effects of grief (and bereavement, a term used in research to describe the loss that leads to feelings of grief) highlights that individuals who are experiencing grief are at an increased risk of both mental and physical disorders (Wittouck et al., 2011; Thimm et al., 2020).

One of the most common feelings associated with grief is an increase in intense loneliness (Abi-Hashem, 1999; Eisma & Buyukcan-Tetik, 2024). Though grief's association with feelings of loneliness may be a fleeting feeling for some, it can be debilitating for others. So much so that recent empirical studies have found evidence to suggest that loneliness may be a risk factor for major health conditions such as diabetes and cardiovascular disorders (Henriksen et al., 2023; Valtorta et al., 2018). These are important findings when considering that grieving does not have a clear end. The concept of grief is not linear; often, it's described as coming in waves (Del Rosario, 2004; Berzoff, 2006). As mentioned above, grief has not only been associated with a decline in an individual's mental health but also with an individual's physical health (Thimm et al., 2020; Werner & Wick, 2024). The two (mental and physical health outcomes) are not separate entities; many of the studies that have highlighted the links between bereavement and the grief that follows it to adverse physical health outcomes will have also noted the contribution of decline in mental health. A review of the health outcomes of bereavement (Stroebe et al., 2007) revealed that the adverse physical outcomes come as a result of a decrease in mental health, drawing conclusions that serious health concerns and even the morality of individuals following a loss can be largely attributed to the psychological distress caused by loneliness. Some of the other mental health

outcomes that were associated with bereavement in this review include depression, anhedonia and insomnia.

During times of loss, it is not uncommon to be lost for words (Weaver et al., 2019); how does one console an individual who has lost a loved one? A common form of condolence we give and receive during the moments following a bereavement comes through non-verbal communication, often involving touch. Touch, as we have explored in the previous chapters, is an important element of non-verbal communication essential in social interactions and for cohesion (Jablonski, 2021; Yu et al., 2022). Touch can convey feelings and express emotions when words cannot; behaviours like hugs and holds are forms of non-verbal communication to signal affection (Guerrero & Floyd, 2006). Research into the effects of affective touch consistently shows positive outcomes and findings of reduced stress. There were also findings of improved relationship satisfaction when affective touch was actively engaged more. The feeling of touch can bring a sense of connectedness and warmth (Guerrero & Floyd, 2006).

Studies investigating the relationship between touch and well-being consistently find evidence that affective touch can reduce feelings often experienced by grieving people. Loneliness and touch are a pair of factors frequently placed together, with strong associations between the two. We see studies not only highlight the positive effect of reduction in reported feelings of loneliness after receiving touch (Heatley Tejada et al., 2020) but also reported associations between subjective feelings of not enough touch and greater feeling of loneliness; COVID-19 is a prime example of this association; with social restrictions put in place that hindered physical contact there was a rise in feelings of loneliness (Bu et al., 2020; Li & Wang, 2020; McKenna-Plumley et al., 2021). The literature surrounding the positive effects of affective touch has also found evidence that suggests touch can be a stress buffer in moments of duress (Debrot et al., 2024; Ditzen et al., 2019), a feeling well-known to individuals during a period of grief.

Despite the certainty of grief in a human's life and the important role touch plays in reducing feelings associated with grief (loneliness and stress), there has been little research conducted on

affective touch during times of grief to infer a clearer relationship. A recent study that looked at this intersection between grief and touch (Enmalm & Boehme, 2024) found that those who had experienced a recent loss reported wanting touch; this finding was similar to the amount of touch endorsed by individuals imagining to be the consoler of a grieving individual. Though there were discrepancies in the type of affective touch preferred between groups, it is clear from this paper that affective touch plays a key role in handling grief.

Since our understanding of the intersection between touch and grief/bereavement through empirical research is scarce. The study above brings empirical evidence that highlights the apparent relationship between the use of affective touch during times of grief, specifically that both grievers and consolers consider affective touch as an appropriate method of non-verbal communication during periods of grief. This study also found that the forms of affective touch that involve greater physical contact (ie. hugs over strokes) were thought of as more desired/appropriate. This finding could be attributed to increased feelings of loneliness at the time of loss (Fried et al., 2015), the evidence that associates hugs with the attenuation of negative outcomes (Murphy et al., 2018; Packheiser et al., 2024; Van Raalte & Floyd, 2021)and the subsequent literature that reinforces the notion that touch has a comforting role to play in human lives (Heatley Tejada et al., 2020; Noone & McKenna-Plumley, 2022).

Theories on affective touch can also explain such findings; many of these studies investigating the effects of bereavement and grief on the mind and body were conducted on individuals who were bereaved from losing spouses; the loss of one's partner will have resulted in a decrease in affective touch, perhaps leaving the bereaved in a state where their minimum threshold for touch is no longer being met. Floyd's affection exchange theory (AET; Floyd, 2006) explains how affective communication is fundamental to human life and our survival; one of the theory's postulates (5a) explains how receiving affective touch outside the range of an individual's tolerance can lead to changes in the body, this includes not only too much touch but also too little. This may explain in part why grief after the loss of a spouse can have such detrimental effects and why researchers Enmalm and Boehme (2024) found that grieving individuals desired touch.

Additionally, how we console individuals dealing with grief often involves interpersonal touch, such as hugs and holds (Breen, 2020). Research on touch has consistently outputted findings that highlight the positive effects of affective touch on one's emotional, physical and relational well-being (Suvilehto et al., 2019; Suvilehto et al., 2015; Nikolaeva et al., 2024). Within the same research, we see evidence for individual differences and circumstances where our attitudes may change (Debrot et al., 2021; Suvilehto et al., 2019; Vafeiadou et al., 2022; Sorokowska et al., 2021; Pedrazza et al., 2018). Gender and sex differences are among the most consistent in individual differences research investigating touch (Stier & Hall, 1984; Russo et al., 2020; Bendas et al., 2017; Dueren et al., 2021). Individuals are also known to vary in their attitudes according to age (Webb & Peck, 2015; Sehlstedt et al., 2016; Trotter et al., 2018). Similarly, the literature supports the idea of individual differences in attitudes towards touch based on attachment and emotional bond (Chopik et al., 2014; Crucianelli & Filippetti, 2020; Jakubiak & Feeney, 2017; Krahé et al., 2016, 2018; Wagner et al., 2020). Cultural differences have also been investigated. Many studies have investigated cultural differences through the lens of the Western world and the Eastern world and successfully found evidence for differences in touch attitudes (Burleson et al., 2019; Dibiase & Gunnoe, 2004; Jakubiak & Feeney, 2017; Suvilehto et al., 2015b, 2019). This is not a surprising finding, as where the first three individual differences mentioned (gender/sex, age and attachment) stem from internal factors, our external surroundings and environmental factors will also play a role in how we feel towards touch. A mix of internal and external factors will mould our attitudes and desires towards something as fundamental as touch. As the previous chapters have shown, an individual’s faith can influence attitudes towards touch. Religious groups will hold "community" in high regard. With prior research finding that religious individuals have a more positive attitude towards touch than their nonreligious counterparts, it would be interesting to know whether this difference persists in times of grief.

This study aims to expand on the research exploring grief and look at the desire for touch and attitudes towards touch during these moments while also considering the role of religiosity. Based on the above literature and previous chapters, the exploratory hypotheses for this study are as follows:

H1: There will be a difference in touch attitudes between individuals who are experiencing recent grief and those who are not experiencing recent grief

H2: There will be a difference in the degree of desire for affectionate touch based on whether the time of touch is during a moment of grief or in an everyday circumstance.

H3: An individual's level of religiosity and time since loss will predict their attitudes towards touch.

Methods:

Pre-Registration:

Analyses for this project were pre-registered using the open science framework. Please see the full pre-registration available at https://osf.io/ujvtg. Deviations from the pre-registration have been reported.

Procedure: Data collection

The current dataset was drawn from a self-report survey presented on the online platform Qualtrics. The survey aimed to explore attitudes and experiences towards touch, specifically during moments of grief. The survey consists of several independent scales and questions regarding their touch preferences and scales to measure their levels of grief. Participants were also asked to indicate how long it had been since they had lost a loved one (0-6 months ago, 6-12 months ago, 12-24 months ago, 24+ months ago or Not Bereaved). Participants were all recruited online, primarily through Prolific. Participants were only eligible to participate if they were over 18 years old, had internet access on a computer, smartphone or tablet to participate and had yet to participate in a past project by the researcher on touch attitudes and experiences.

Measures:

Touch Attitudes and Experiences Questionnaire (TEAQ; Trotter et al., 2018)

This was used to measure general attitudes towards touch. Differing from the earlier chapters that have taken data from the Touch Test, this survey uses the full TEAQ scale, which includes 57 items for the current study. These items represent the 6 subscales of the questionnaire, two items from each subscale (the top two highest loading items for each subscale). Scores were summed (8 items reverse-coded) to create an overall TEAQ score (Cronbach's Alpha

in the current sample = 0.9), with higher scores indicative of more positive attitudes to touch. The TEAQ includes the 6 subscales: Childhood Touch (ChT), Friends and Family Touch (FFT), Current Intimate Touch (CIT), Attitude to Intimate Touch (AIT), Attitude to Self-Care (ASC), and Attitude to Unfamiliar Touch (AUT). Responses were received through a 5-point scale to indicate whether they 'Disagree strongly', 'Disagree slightly', 'Neither agree nor disagree', 'Agree a little', or 'Agree strongly' with each statement (e.g., "I always greet my friends and family by giving them a hug."). Questions were scored from 1 (disagree strongly) to 5 (agree strongly).

Social Touch Questionnaire (STQ; Wilhelm et al., 2001)

Attitudes to social touch were assessed using the 20-item (STQ; Wilhelm et al., 2001). The questionnaire has 3 subscales: Dislike of Physical Touch (DPT), Liking of Familiar Physical Touch (LFPT) and Liking of Public Physical Touch (LPPT). Participants responded using a 5-point scale (Not at all, Slightly, Moderately, Very, Extremely) to indicate how characteristic or true each statement was of them (e.g., "I feel uncomfortable when someone I don't know very well hugs me"). Questions were scored from 0 (not at all) to 5 (extremely). Scores were summed (10 items reverse-coded) to create an overall STQ score, with higher scores indicative of more negative attitudes to social touch (Cronbach's Alpha in the current sample = 0.875).

Touch in Health Scale (THS; Vafeiadou et al., 2022)

The THS consisted of 14 items that measured attitudes towards touch within treatment settings (medical and non-medical)(Vafeiadou et al., 2022). The questionnaire has 3 subscales: Engagement in Tactile Treatments (ETT), Communication Facilitation via Touch (CFT) and Comfort with Touch in Medical Settings (CTM). The THS items were measured on a five-point scale, with scores ranging from 1–5 for each item ('Strongly disagree' to 'Strongly agree') with each statement. Half of the items were reverse scored (2, 3, 5, 7, 11, 13, 14). Total scores (sum of responses) could range between 14–70, with higher scores indicating more positive attitudes to touch (Cronbach's Alpha in the current sample = 0.826).

Central Religiosity Scale (CRS; Huber & Huber, 2012)

The CRS measures religious meanings' centrality, importance and salience within an individual's personality (Huber & Huber, 2012). The measure has 5 core dimensions: public practice, private practice, religious experience, ideology and the intellectual dimension. Adjustments were made accordingly due to specific religious practices involved within Islam; these were made by Huber and Huber's recommendations. Scores were summed and divided by the number of questions to create a CRS score, with higher scores indicative of higher religiosity (Cronbach's Alpha in the current sample; for Religious individuals 0.935, for Muslims 0.921; two sets of analysis were conducted here due to extra questions for the Muslim cohort). Muslim participants had a different number of questions to answer due to adjustments being made to ask about daily prayer (salah) and supplications (dua) - as these are major components of the faith (Chen et al., 2021; Koubaa et al., 2020; Lucchetti et al., 2021; Tahir Wyatt et al., 2021; Zohair Abdul-Rahman, 2017).

Shortened Attachment Questionnaire; anxiety and avoidance (ECR-12)

The Experiences in Close Relationships Questionnaire (ECR; Brennan et al., 1998) measures relationship attachment (Lafontaine et al., 2015). This study uses the shortened version, the ECR-12 (Lafontaine et al., 2015). The ECR-12 has two separate dimensions of attachment assessed: anxiety and avoidance. Both dimensions have scores that range from 6-42; the higher the score, the greater the trait of anxious attachment or trait of avoidant attachment (Cronbach's Alpha in the current sample = 0.834)

Core Bereavement Items (CBI; Burnett et al., 1997)

The Core Bereavement Items (CBI; Burnett et al., 1997) were developed to assess levels of bereavement in individuals, specifically looking at the prevalence of memories and thoughts about the deceased by the bereaved. The items were measured on a four-point scale, with scores ranging from 0-3 for each item ('Never' to 'Continuously'/ 'Always'/ 'A lot of the time') with each

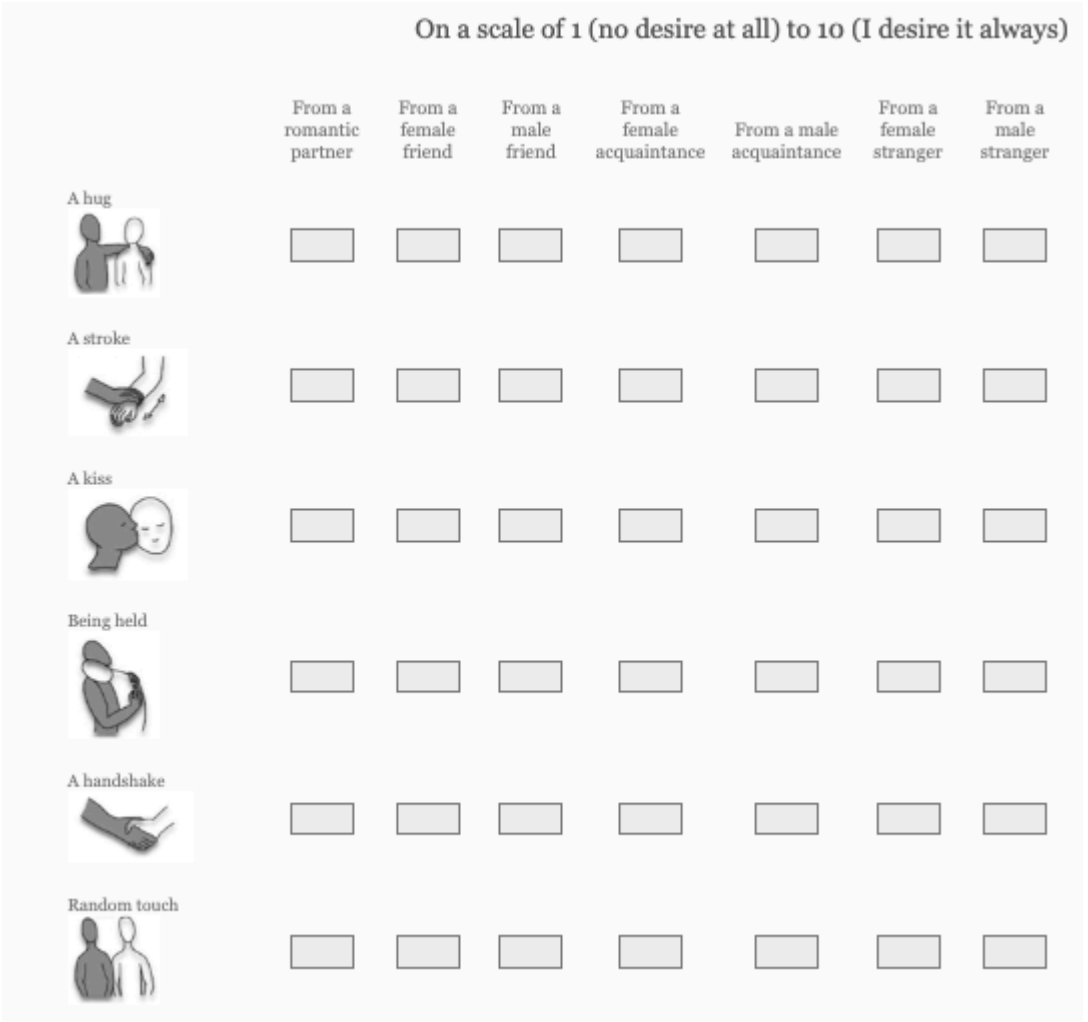
statement. The scale comprises three subscales: Images and Thoughts, Acute Separation, and Grief. Total scores (sum of responses) could range between 0-51, with higher scores suggesting a greater level of bereavement. (Cronbach's Alpha in the current sample = 0.956)

Adjusted: The Longing for Interpersonal Touch Picture Questionnaire; Beßler et al., 2020

The Longing for Interpersonal Touch Picture Questionnaire (Beßler et al., 2020) measures an individual's longing for touch by considering touch frequency and desire for touch. The adjustment made here is that participants were only asked about their desire for touch in two situations: generally and during moments of grief. Touch was broken into six different acts of touch: hugging, stroking, kissing, being held, handshake, and random touch. Interaction partners to report touch with were a romantic partner, female friend, male friend, female acquaintance, male acquaintance, female stranger, and male stranger (see Figure 5.1).

Figure 5.1

Adjusted Longing for Interpersonal Touch Picture Questionnaire.



Note. The figure presents the images of touch shared with participants taken from the Longing for Interpersonal Touch Picture Questionnaire. The two questions asked to participants were: “How much do you desire this type of touch **in general**?” and “How much do you desire this type of touch **during moments of grief**?”

Participants:

A total of 290 responses to the questionnaire were recorded. Participants who did not complete 80% of the study were excluded from the subsequent analyses. This led to 262 participants (age *M*= 40.8, *SD*=14.6, range= 19-83). Of the total participants, 147 self-described as Non-Religious, 115 as Religious. Each participant completed the survey online using Qualtrics.

Results

Analysis 1: Investigating differences between touch attitudes and time since grief

Due to large differences in group sizes affecting ANOVA assumptions, the Time Since Loss variable now consists of 2 levels (recent bereavement and not recent bereavement) rather than the originally stated 5 levels in the preregistration (0-6 months, 6-12 months, 12-24 months, 24 months+, not bereaved). The recent bereavement group was defined as less than a year since loss, meaning the 0-6 months and 6-12 months groups were combined. The not recent bereavement group was defined as bereavement that occurred over a year ago, meaning the 12-24 months, 24 months+ and not bereaved groups were combined. This was done to equalise sample sizes rather than remove participants (Field, 2009, pg. 360).

TEAQ

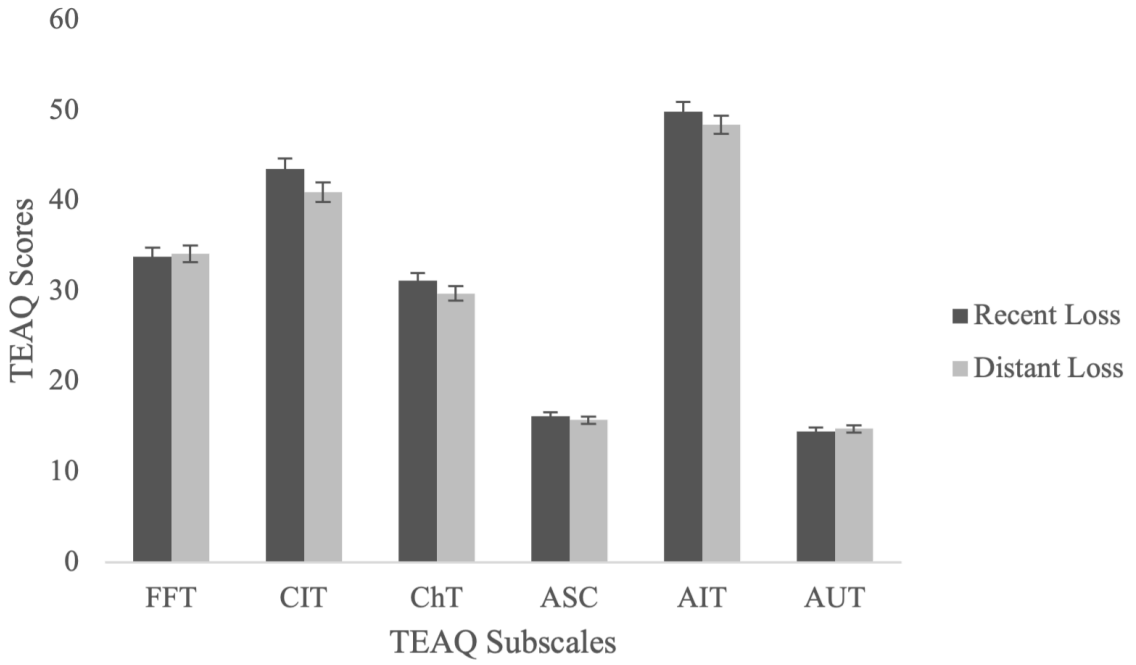
The 2(Time since loss) X 6(TEAQ subscale) mixed measures ANOVA between Time since loss and TEAQ subscales did not reveal a statistically significant main effect of Time since loss, $F(1,260) = 1.02$, $p=.314$, partial $\eta 2 = .004$.

However, consistent with findings from Chapter 3, the mixed ANOVA did reveal a statistically significant main effect of TEAQ, $F(3.86, 1004) = 912$, $p<.001$, partial $\eta 2 = .778$. Bonferroni corrected pairwise comparisons highlighted this was due to each subscale significantly differing from the other (see table 5.1 for detailed table). AUT scores were significantly lower than the other TEAQ subscales (FFT, CIT, ChT, ASC and AIT), suggesting a less positive attitude towards unfamiliar touch. Conversely (as per Chapter 3's findings), AIT was significantly higher than the other TEAQ subscales (FFT, CIT, ChT, ASC and AUT), suggesting a more positive attitude towards intimate touch. ASC scores were largely lower than scores on the other TEAQ subscales (except AUT), suggesting attitudes towards self-care were less positive than the other subscales. The comparisons also highlight that ChT scores are significantly lower than FFT, CIT and AIT scores. CIT scores were significantly higher than the other subscales (except AIT), indicating that current intimate touch was seen more positively overall but less positively compared to general attitudes towards intimate touch.

Additionally, there was not a statistically significant interaction between Time since loss and TEAQ subscales, F(3.863, 1004) = 1.5, *p*=.197, partial η2 = .006

Figure 5.2

Average TEAQ subscale scores grouped by Time Since Loss.



Note. FFT = Friends Family Touch, CIT = Current Intimate Touch, ChT = Childhood Touch, ASC = Attitudes towards Self-Care, AIT = Attitudes towards Intimate Touch, AUT = Attitude towards Unfamiliar Touch. The graph depicts the mean score on each subscale of the TEAQ questionnaire, separated by recent or distant loss group.

Table 5.1

Pairwise Comparisons of TEAQ scores.

					95% Confidence Interval	
TEAQ Subscale (A)	*TEAQ Subscale (B)*	*Mean Difference (A-B)*	*Standard Error*	*Significance*	*Lower Bound*	*Upper Bound*
Friends Family Touch	Current Intimate Touch	-8.270*	0.641	<.001	-10.17	-6.371
	Childhood Touch	3.512*	0.638	<.001	1.621	5.403
	Attitudes towards Self-Care	18.031*	0.624	<.001	16.181	19.881
	Attitudes towards Intimate Touch	-15.195*	0.623	<.001	-17.039	-13.351
	Attitude towards Unfamiliar Touch	19.351*	0.603	<.001	17.563	21.138
Current Intimate Touch	Friends Family Touch	8.270*	0.641	<.001	6.371	10.17
	Childhood Touch	11.782*	0.72	<.001	9.65	13.914
	Attitudes towards Self-Care	26.301*	0.754	<.001	24.068	28.534
	Attitudes towards Intimate Touch	-6.924*	0.632	<.001	-8.797	-5.051
	Attitude towards Unfamiliar Touch	27.621*	0.776	<.001	25.321	29.921
Childhood Touch	Friends Family Touch	-3.512*	0.638	<.001	-5.403	-1.621
	Current Intimate Touch	-11.782*	0.72	<.001	-13.914	-9.65
	Attitudes towards Self-Care	14.519*	0.567	<.001	12.839	16.199
	Attitudes towards Intimate Touch	-18.707*	0.758	<.001	-20.952	-16.461
	Attitude towards Unfamiliar Touch	15.839*	0.589	<.001	14.095	17.582
Attitudes towards Self-Care	Friends Family Touch	-18.031*	0.624	<.001	-19.881	-16.181
	Current Intimate Touch	-26.301*	0.754	<.001	-28.534	-24.068
	Childhood Touch	-14.519*	0.567	<.001	-16.199	-12.839
	Attitudes towards Intimate Touch	-33.226*	0.66	<.001	-35.18	-31.272
	Attitude towards Unfamiliar Touch	1.320*	0.397	0.015	0.145	2.495
Attitudes towards Intimate Touch	Friends Family Touch	15.195*	0.623	<.001	13.351	17.039
	Current Intimate Touch	6.924*	0.632	<.001	5.051	8.797
	Childhood Touch	18.707*	0.758	<.001	16.461	20.952
	Attitudes towards Self-Care	33.226*	0.66	<.001	31.272	35.18
	Attitude towards Unfamiliar Touch	34.545*	0.659	<.001	32.593	36.498
Attitude towards Unfamiliar Touch	Friends Family Touch	-19.351*	0.603	<.001	-21.138	-17.563
	Current Intimate Touch	-27.621*	0.776	<.001	-29.921	-25.321
	Childhood Touch	-15.839*	0.589	<.001	-17.582	-14.095
	Attitudes towards Self-Care	-1.320*	0.397	0.015	-2.495	-0.145
	Attitude towards Unfamiliar Touch	-34.545*	0.659	<.001	-36.498	-32.593

Note. All pairwise comparisons on Touch Experience and Attitudes Questionnaire subscales were corrected using the bonferroni method.

STQ

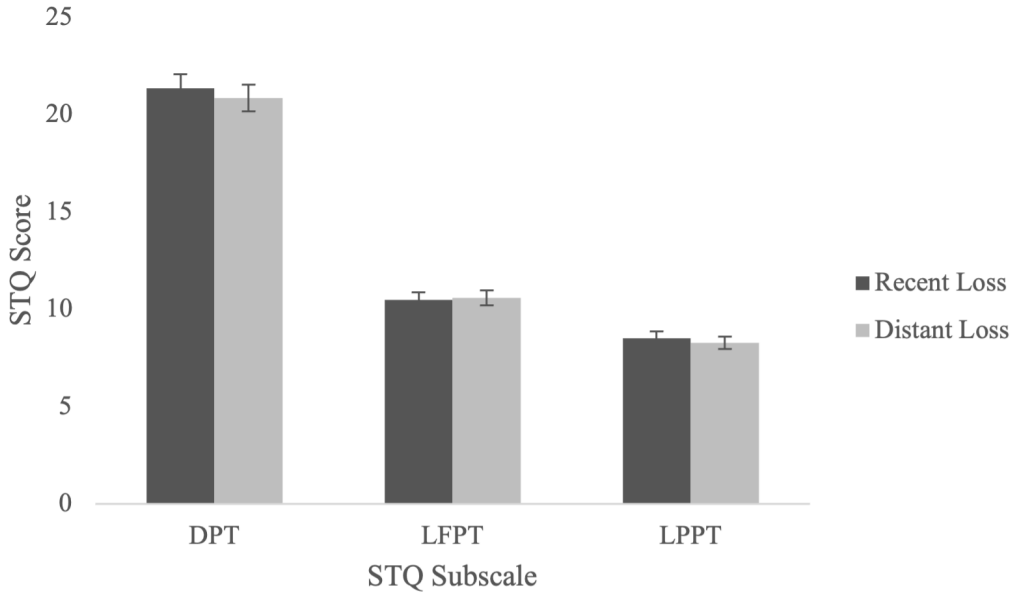
A 2(Time since loss) X 3(STQ Subscale) mixed measures ANOVA between Time since loss and STQ subscales did not reveal a statistically significant main effect of Time since loss, $F(1,260) = .122$, $p=.727$, partial $\eta 2 = .000$.

However, (consistent with Chapter 3) the ANOVA did reveal a statistically significant main effect of STQ, $F(1.4, 368) = 647$, $p<.001$, partial $\eta 2 = .714$. This was due to the group that had experienced a recent loss scoring higher overall compared to the group that had not experienced a recent loss. Bonferroni corrected pairwise comparisons investigating the STQ subscales further found the following significant pairings: significantly greater scores on the DPT (M=21, SE=0.5) scale compared to the LFPT scale (M=10.53, SE=0.28), $p<.001$, and between DPT and LPPT (M=8.4, SE=0.235), $p<.001$. As found also in Chapter 3, both comparisons indicate a more positive attitude towards liking familiar physical and public physical touch than a dislike of physical touch. Additionally, there were also statistically significant differences between LPPT (M=8.4, SE=0.235) and LFPT (M=10.53, SE=0.28), $p<.001$, again matching findings from Chapter 3. The means suggest that liking familiar physical touch is greater than liking public physical touch.

A statistically significant interaction effect between the two variables Time since loss and STQ subscales was not found in this dataset, $F(1.4, 368) = .337$, $p=.639$, partial $\eta 2 = .001$

Figure 5.3

Average STQ scores grouped by Time Since Loss.



Note. DPT= Dislike of Physical Touch; LFPT=Liking of Familiar Physical Touch; LPPT=Liking of Public Physical Touch. The graph depicts the mean score on each subscale of the STQ questionnaire, separated by recent or distant loss group.

THS

A 2 (Time since loss) X 3(THS Subscale) mixed measures ANOVA on Time since loss and THS subscales did not find a main effect of Time since the loss to be statistically significant, F(1, 260)= 1.8, *p*=.179, partial η2= .007.

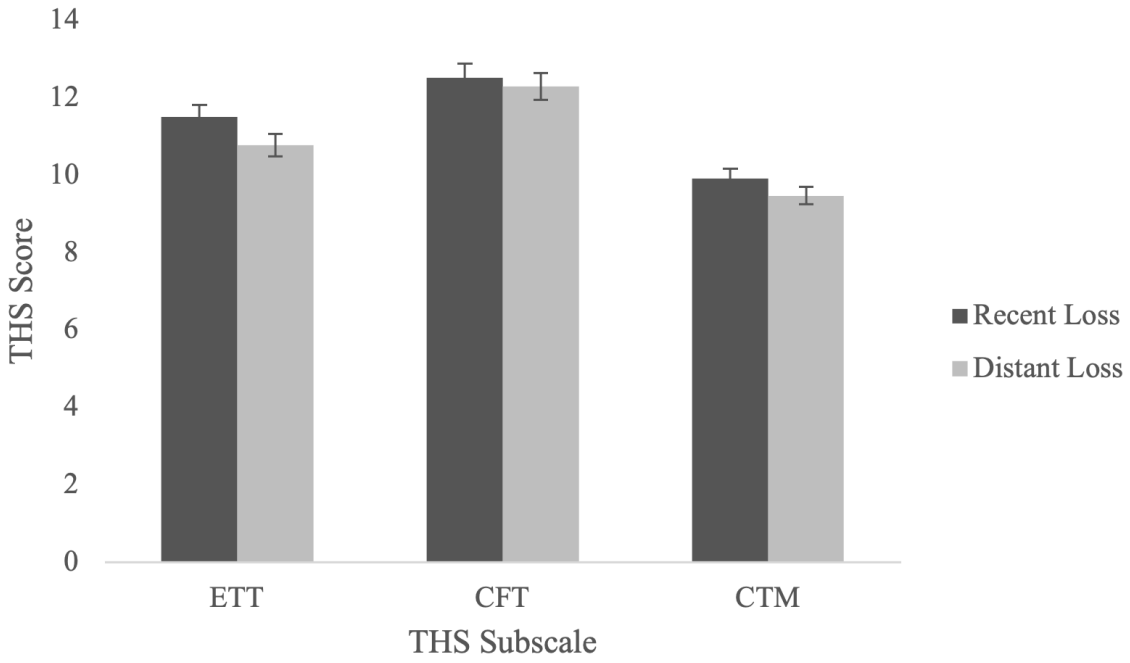
As with the findings from the TEAQ and STQ analyses, the ANOVA did reveal a main effect of THS subscale, highlighting that THS scores were statistically significantly different between the scales, *F*(1.88, 489) = 72, *p*<.001, partial η2 = .217. Bonferonni corrected pairwise comparisons revealed each subscale of the THS differed significantly from the other (*p*<.001). Consistent with Chapter 3's findings ETT scores (M=11.14, SE=0.216) were significantly higher than CTM scores (M=9.69, SE = 0.166), *p*<.001. Suggesting a greater positive attitude towards engagement in tactile treatments than comfort with touch in medical settings. Similarly, CFT scores (M=12.4, SE = 0.257) were significantly higher than CTM scores (M=9.69, SE = 0.166), *p*<.001. Again, this suggests a

greater positive attitude towards communication facilitation via touch compared to comfort with touch in medical settings. A significant difference was also found between ETT scores (M=11.14, SE=0.216) and CFT scores (M=12.4, SE = 0.257), $p<.001$, indicating a more positive attitude towards engagement with tactile treatments than communication facilitation via touch.

Additionally, the findings of the ANOVA looking at the interactions between the two variables showed that there was not a statistically significant interaction between Time since loss and THS subscales, $F(1.88, 489) = .638$, $p=.52$, partial $\eta 2 = .002$.

Figure 5.4

Average THS scores grouped by Time Since Loss.



Note. ETT = Engagement in Tactile Treatments, CFT = Communication Facilitation via Touch, CTM = Comfort with Touch in Medical Settings. The graph depicts the mean score on each subscale of the THS questionnaire, separated by recent or distant loss group.

Analysis 2: Investigation of the relationship between the desire for touch, context and person

Investigating the effects of context (2 levels) on the desire for affective touch and whether the context interacts with the type of touch that occurs (6 levels) and who has given the touch (7 levels). A 2 (context) X 6 (type of affectionate touch) X 7 (person being touched by) within-subjects ANOVA was conducted. The DV for this analysis is the score given to indicate desire for affective touch (for a specific type of touch by a specific person). Scores were required to be between 0-10, and participants who violated this requirement were removed from this analysis. The revised sample following this was a total of 244 participants. Responses that were left blank were assumed to be 0 (indicating no desire for touch).

Main effects of context were found, $F(1, 243)= 18.18$, $p<.001$, partial $\eta^2 = .07$, due to participants reporting a greater desire for touch during moments of grief (M=2.83, SE= .119) in comparison to a general moment (M=2.6, SE= .105).

Similarly, the main effects of touch type were also found, $F(3, 761)= 36.3$, $p<.001$, partial $\eta^2 = .130$. Bonferroni corrected pairwise comparison revealed numerous significant differences between the desire for specific types of touch. Hugs (M=3.44, SE=.125) were seen to be significantly more desired than a stroke (M=2.67, SE=.121), kiss (M=2.32, SE=.097), hold (M=2.88, SE=.117), handshake (M=2.52, SE=.156) and random touch (M=2.46, SE=.127; $p<.001$). However, strokes (M=2.67, SE=.121) were not seen to be significantly less desired than being held (M=2.88, SE=.117), $p=.019$. On the other hand, strokes were found to be significantly more desired than kisses (M=2.32, SE=.097), $p<.001$. Similarly, being held (M=2.88, SE=.117) was found to be more desirable than a kiss (M=2.32, SE=.097), $p<.001$. Bonferroni corrected pairwise comparisons found that being held (M=2.88, SE= .117) was significantly more desired than random touch (M=2.46, SE=.127; $p<.001$); see table 5.2 for a full table.

Table 5.2

Pairwise comparisons of desire for touch based on type of touch.

Touch Type (A)	*Touch Type (B)*	*Mean Difference (A-B)*	*Standard Error*	*Significance*	*95% Confidence Interval*	
					Lower Bound	*Upper Bound*
Hug	Stroke	.779*	0.067	<.001	0.579	0.978
	Kiss	1.123*	0.079	<.001	0.889	1.357
	Being Held	.569*	0.06	<.001	0.393	0.746
	Handshake	.925*	0.126	<.001	0.552	1.297
	Random Touch	.988*	0.101	<.001	0.688	1.288
Stroke	Hug	-.779*	0.067	<.001	-0.978	-0.579
	Kiss	.344*	0.065	<.001	0.153	0.536
	Being Held	-.210*	0.064	0.019	-0.4	-0.019
	Handshake	0.146	0.118	1	-0.205	0.497
	Random Touch	0.209	0.085	0.222	-0.043	0.461
Kiss	Hug	-1.123*	0.079	<.001	-1.357	-0.889
	Stroke	-.344*	0.065	<.001	-0.536	-0.153
	Being Held	-.554*	0.063	<.001	-0.741	-0.367
	Handshake	-0.198	0.123	1	-0.562	0.165
	Random Touch	-0.135	0.084	1	-0.385	0.115
Being Held	Hug	-.569*	0.06	<.001	-0.746	-0.393
	Stroke	.210*	0.064	0.019	0.019	0.4
	Kiss	.554*	0.063	<.001	0.367	0.741
	Handshake	0.356	0.125	0.074	-0.016	0.727
	Random Touch	.419*	0.094	<.001	0.139	0.698
Handshake	Hug	-.925*	0.126	<.001	-1.297	-0.552
	Stroke	-0.146	0.118	1	-0.497	0.205
	Kiss	0.198	0.123	1	-0.165	0.562
	Being Held	-0.356	0.125	0.074	-0.727	0.016
	Random Touch	0.063	0.12	1	-0.293	0.418
Random Touch	Hug	-.988*	0.101	<.001	-1.288	-0.688
	Stroke	-0.209	0.085	0.222	-0.461	0.043
	Kiss	0.135	0.084	1	-0.115	0.385
	Being Held	-.419*	0.094	<.001	-0.698	-0.139
	Handshake	-0.063	0.12	1	-0.418	0.293

Note. All pairwise comparisons were corrected using the bonferroni method.* indicates a significant difference.

The main effect of the person giving touch was also found to be statistically significant, F(3, 703.5)= 439, p<.001, partial η2 = .644, Bonferorri corrected pairwise comparisons revealed statistically significant differences between the desire for touch from each person variation, see table 5.3 for a full table. Romantic partners (M=6.43, SE=.184) were found to be significantly more desired than Female Friends (M=3.57, SE=.171), Male Friends (M=2.54, SE=.138), Female Acquaintances (M=2.12, SE=.128), Male Acquaintances (M=1.69, SE=.106), Female Strangers (M=1.44, SE=.102) and Male Strangers (M=1.20, SE=.089), *p*<.001. Touch from a female (whether it was friend (M=3.57, SE=.171), acquaintance (M=2.12, SE=.128) or stranger (M=1.44, SE=.102)) was found to be desired more in comparison to touch from a male of the same closeness (friend (M=2.54, SE=.138), acquaintance(M=1.69, SE=.106) or stranger (M=1.20, SE=.089)).

Table 5.3

Pairwise comparisons of desire for touch based on the individual touch is shared with.

Person (A)	*Person (B)*	*Mean Difference (A-B)*	*Standard Error*	*Significance*	*95% Confidence Interval*	
					Lower Bound	*Upper Bound*
1	2	2.855*	0.153	<.001	2.384	3.325
	3	3.889*	0.162	<.001	3.39	4.387
	4	4.308*	0.157	<.001	3.825	4.791
	5	4.735*	0.17	<.001	4.213	5.256
	6	4.986*	0.169	<.001	4.466	5.507
	7	5.231*	0.178	<.001	4.685	5.777
2	1	-2.855*	0.153	<.001	-3.325	-2.384
	3	1.034*	0.119	<.001	0.668	1.4
	4	1.454*	0.095	<.001	1.162	1.746
	5	1.880*	0.134	<.001	1.469	2.291
	6	2.132*	0.127	<.001	1.741	2.523
	7	2.376*	0.15	<.001	1.917	2.836
3	1	-3.889*	0.162	<.001	-4.387	-3.39
	2	-1.034*	0.119	<.001	-1.4	-0.668
	4	.420*	0.106	0.002	0.095	0.744
	5	.846*	0.076	<.001	0.613	1.079
	6	1.098*	0.119	<.001	0.732	1.463
	7	1.342*	0.104	<.001	1.022	1.662
4	1	-4.308*	0.157	<.001	-4.791	-3.825
	2	-1.454*	0.095	<.001	-1.746	-1.162
	3	-.420*	0.106	0.002	-0.744	-0.095
	5	.426*	0.08	<.001	0.179	0.673
	6	.678*	0.063	<.001	0.483	0.872
	7	.922*	0.096	<.001	0.629	1.216
5	1	-4.735*	0.17	<.001	-5.256	-4.213
	2	-1.880*	0.134	<.001	-2.291	-1.469
	3	-.846*	0.076	<.001	-1.079	-0.613
	4	-.426*	0.08	<.001	-0.673	-0.179
	6	.252*	0.075	0.018	0.023	0.481
	7	.496*	0.048	<.001	0.348	0.645
6	1	-4.986*	0.169	<.001	-5.507	-4.466
	2	-2.132*	0.127	<.001	-2.523	-1.741
	3	-1.098*	0.119	<.001	-1.463	-0.732
	4	-.678*	0.063	<.001	-0.872	-0.483
	5	-.252*	0.075	0.018	-0.481	-0.023
	7	.245*	0.064	0.003	0.049	0.44
7	1	-5.231*	0.178	<.001	-5.777	-4.685
	2	-2.376*	0.15	<.001	-2.836	-1.917
	3	-1.342*	0.104	<.001	-1.662	-1.022
	4	-.922*	0.096	<.001	-1.216	-0.629
	5	-.496*	0.048	<.001	-0.645	-0.348
	6	-.245*	0.064	0.003	-0.44	-0.049

Note. All pairwise comparisons were corrected using the bonferroni method. * indicates a significant difference

The analysis found that there was a statistically significant three-way interaction between context, touch type and person, F(16.6, 4045) = 5.479, p<.001, partial η2 = .022. To follow up on this, two-way interactions were investigated.

Two-way interactions between context and touch type (F(3,745.5)=31.45, p<.001, partial η^2 = .115) were found to be statistically significant, meaning that desire for touch differed across contexts and types of touch. To investigate the interaction effect fully, a one-way ANOVA was conducted to assess whether there was a main effect of touch type on the desire for touch across contexts (grief and general). There was a significant effect of touch type for participants during moments of grief, F(5, 21638) = 55.87, p< .001, partial η2 = .013, and general moments F(5, 21638) = 13.21, p< .001, partial η2 = .003.

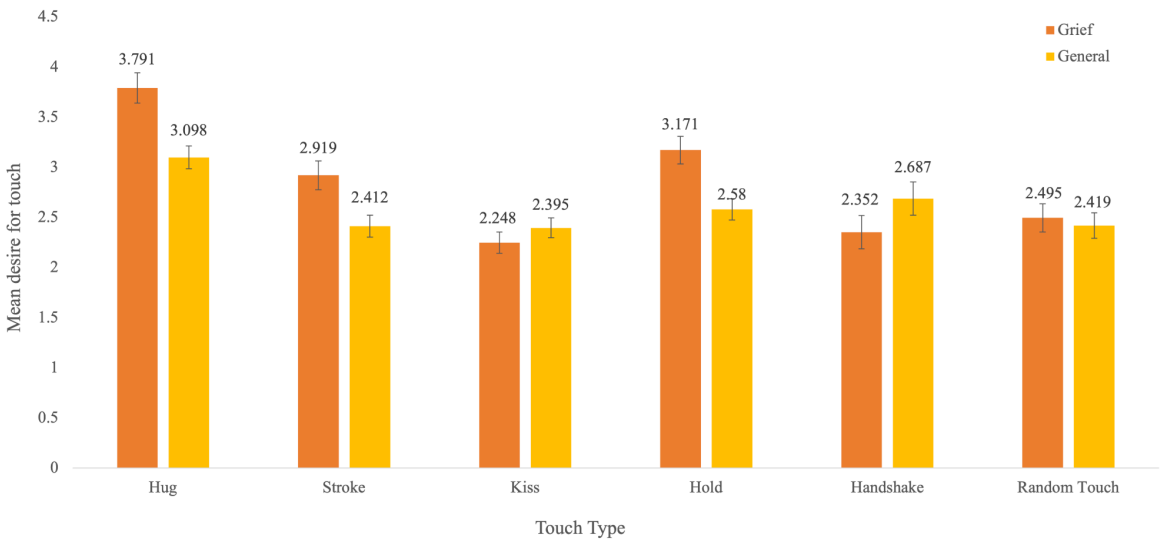
Bonferroni corrected pairwise comparisons revealed statistically significant differences between the desire for touch on each touch variation separated by context, (see figure 5.5). Specifically, hugs were found to be significantly desired more than all other touch-types in both grief and general contexts (p<.001). Also from the touch type variables, being held exhibited a statistically significant difference from all the other touch variables during moments of grief (p<.001), except between the touch type of stroke (p=.045). The desire for being held was significantly less than the desire for being hugged when in a general context and a grief context (p<.001). Kisses in both contexts were significantly less desired in comparison to hugs (p<.001). Strokes during a general context were desired significantly less compared to handshakes (p<.01) but desired significantly more during a grief context (p<.001). See table 5.4 for a full table of comparisons broken down by context.

A one-way ANOVA was conducted to assess whether there was a main effect of context on the desire for touch across each type of touch (hugging, stroking, kissing, being held, handshake, and random touch). There was a significant effect of context for participants when considering the desire for hugs, F(1, 21638) = 43.9, p< .001, partial η2 = .002, with hugs during moments of grief obtaining a larger mean and therefore a greater desire for touch in comparison to desire for hugs in general. A significant effect of context for participants when considering desire for strokes was also found, F(1, 21638) = 23.0, p<.001, partial η2 = .001, with strokes during moments of grief found to

be more desired than strokes in a general context. There was a significant effect of context for participants when considering desire for being held, F(1, 21638) = 30.5, *p*< .001, partial η2 = .001, with being held during moments of grief found to be more desired compared to during a general context. Desire for kisses during moments of grief compared to desire in a general context was not found to be significantly different from one another, F(1, 21638) = .621, *p*= .431, partial η2 = .00. Similarly, desire for handshakes during moments of grief compared to desire in a general context was not found to be significantly different from one another, F(1, 21638) = 6.71, *p*= .01, partial η2 = .00. Lastly, desire for random touch during moments of grief compared to desire in a general context also did not statistically differ from each other, F(1, 21638) = .465, *p*= .495, partial η2 = .00.

Figure 5.5

Average desire for different touch types grouped by Context.



Note. * indicates a significant difference between groups, p<.008.

Table 5.4

Context	*Touch Type (A)*	*Touch Type (B)*	*Mean Difference (A-B)*	*Significance*	*95% Confidence Interval*	
					Lower Bound	*Upper Bound*
General	Handshake	Hold	0.18	0.105	-0.038	0.397
		Hug	-.389*	<.001	-0.607	-0.172
		Kiss	.368*	0.001	0.15	0.585
		Random Touch	.283*	0.011	0.066	0.5
		Stroke	.321*	0.004	0.104	0.539
	Hold	Handshake	-0.18	0.105	-0.397	0.038
		Hug	-.569*	<.001	-0.786	-0.352
		Kiss	0.188	0.090	-0.029	0.405
		Random Touch	0.103	0.352	-0.114	0.321
		Stroke	0.142	0.201	-0.076	0.359
	Hug	Handshake	.389*	<.001	0.172	0.607
		Hold	.569*	<.001	0.352	0.786
		Kiss	.757*	<.001	0.54	0.974
		Random Touch	.672*	<.001	0.455	0.889
		Stroke	.711*	<.001	0.493	0.928
	Kiss	Handshake	-.368*	0.001	-0.585	-0.15
		Hold	-0.188	0.090	-0.405	0.029
		Hug	-.757*	<.001	-0.974	-0.54
		Random Touch	-0.085	0.444	-0.302	0.132
		Stroke	-0.046	0.676	-0.264	0.171
	Random Touch	Handshake	-.283*	0.011	-0.5	-0.066
		Hold	-0.103	0.352	-0.321	0.114
		Hug	-.672*	<.001	-0.889	-0.455
		Kiss	0.085	0.444	-0.132	0.302
		Stroke	0.038	0.728	-0.179	0.256
	Stroke	Handshake	-.321*	0.004	-0.539	-0.104
		Hold	-0.142	0.201	-0.359	0.076
		Hug	-.711*	<.001	-0.928	-0.493
		Kiss	0.046	0.676	-0.171	0.264
		Random Touch	-0.038	0.728	-0.256	0.179
Grief	Handshake	Hold	-.720*	<.001	-0.937	-0.502
		Hug	-1.411*	<.001	-1.628	-1.193
		Kiss	0.168	0.130	-0.05	0.385
		Random Touch	-0.08	0.471	-0.297	0.137
		Stroke	-.497*	<.001	-0.714	-0.28
	Hold	Handshake	.720*	<.001	0.502	0.937
		Hug	-.691*	<.001	-0.908	-0.474
		Kiss	.887*	<.001	0.67	1.105
		Random Touch	.640*	<.001	0.422	0.857
		Stroke	.223*	0.045	0.005	0.44
	Hug	Handshake	1.411*	<.001	1.193	1.628
		Hold	.691*	<.001	0.474	0.908
		Kiss	1.578*	<.001	1.361	1.796
		Random Touch	1.331*	<.001	1.113	1.548
		Stroke	.914*	<.001	0.696	1.131
	Kiss	Handshake	-0.168	0.130	-0.385	0.05
		Hold	-.887*	<.001	-1.105	-0.67
		Hug	-1.578*	<.001	-1.796	-1.361
		Random Touch	-.248*	0.025	-0.465	-0.03
		Stroke	-.665*	<.001	-0.882	-0.448
	Random Touch	Handshake	0.08	0.471	-0.137	0.297
		Hold	-.640*	<.001	-0.857	-0.422
		Hug	-1.331*	<.001	-1.548	-1.113
		Kiss	.248*	0.025	0.03	0.465
		Stroke	-.417*	<.001	-0.634	-0.2
	Stroke	Handshake	.497*	<.001	0.28	0.714
		Hold	-.223*	0.045	-0.44	-0.005
		Hug	-.914*	<.001	-1.131	-0.696
		Kiss	.665*	<.001	0.448	0.882
		Random Touch	.417*	<.001	0.2	0.634

Pairwise comparisons of desire for touch based on touch-types in different contexts.

Note. * indicates a significant difference.

Statistically significant two-way interactions were also found between context and person($F(3.1, 765) = 11.89$, $p<.001$, partial $\eta 2 = .047$), indicating that desire for touch differed across contexts and the relation of the toucher to the participant.

To investigate the interaction effect fully, a one-way ANOVA was conducted to assess whether there was a main effect of person on desire for touch across contexts. There was a significant effect of person on desire for touch during moments of grief, $F(6, 21636) = 685.6$, $p<.001$, partial $\eta 2 = .16$, and general moments $F(6, 21636) = 786.4$, $p<.001$, partial $\eta 2 = .18$.

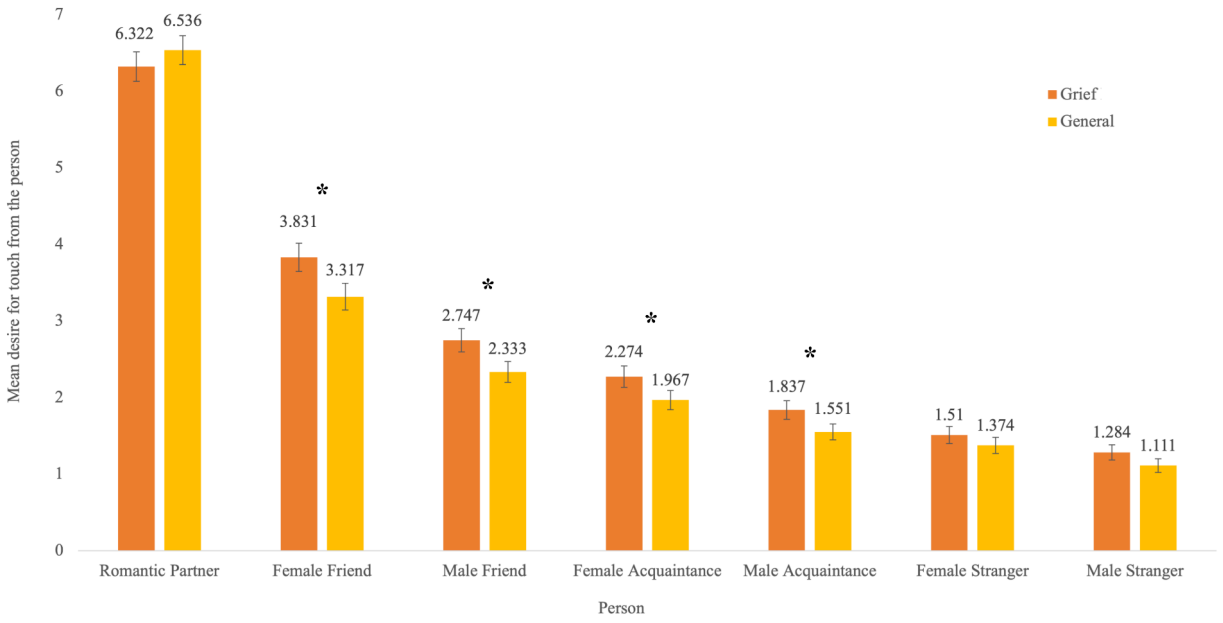
Bonferorri corrected pairwise comparisons revealed statistically significant differences between the desire for touch on each person variation separated by context. Specifically, Romantic partners were found to be significantly desired more than all other types of person in both grief and general contexts ($p<.001$). Also from the person type variables, male strangers exhibited a statistically significant lower score compared to all the other person variables (except when compared to female strangers) during general moments ($p<.001$), indicating individuals desired touch the least from male strangers. This pattern repeats within the context of grief too ($p<.001$) with one exception; there was not a statistically significant difference between the desire for touch between male strangers and female strangers ($p=.031$). Female friends were found to have a higher score on desire for touch compared to the other person variables ($p<.001$) in both general and grief contexts, except Romantic partners, the difference remains significant but female friends scored lower. In both contexts (grief and general) female acquaintances had statistically significant differences between each other person variation ($p<.001$), with a greater positive desire when compared to strangers of both genders and male acquaintances and a less positive desire when compared to the variables of increased closeness to the participant (ie friend and romantic partner), see Appendix E for a full table of comparisons broken down by context.

To investigate the interaction effect fully, another one-way ANOVA was conducted to assess whether there was a main effect of context on the desire for touch across the person variable. There was a significant effect of context on the desire for touch across many of the person variables. Specifically, the ANOVA found that touch with female acquaintances was desired significantly more during the context of grief compared to a general context, $F(1, 21636) = 11.4$,

p=.001, partial η2 = .001. Similarly, female friends were desired significantly more during the context of grief compared to a general context, F(1, 21636) = 32.0, *p*=.001, partial η2 = .001. Conversely, there was no statistically significant difference between touch desired with female strangers depending on context, F(1, 21636) = 2.33, *p*=.127, partial η2 = .00. The finding looking at male strangers mimics that of the female strangers; there was no statistically significant difference between touch desired with these individuals in either context, F(1, 21636) = 4.25, *p*=.039, partial η2 = .00. Male acquaintances however, did show statically significant differences in desire for touch between the grief and general contexts, F(1, 21636) =9.95, *p*=.002, partial η2 = .001, with touch from male acquaintances being more desired in the context of grief over a general context. Similarly, male friends also showed statically significant differences in participants desire for touch with them between the grief and general contexts, F(1, 21636) =20.92, *p*<.001, partial η2 = .001, with touch from male acquaintances being more desired in the context of grief (M=2.96, SE=.072) over a general context. There was no statistically significant difference between desire for touch from a romantic partner based on context, F(1, 21636) =4.68, *p*=.03, partial η2 = .00.

Figure 5.6

Average desire for touch with different people grouped by Context.



Note. * indicates a significant difference between groups, p<.007.

Table 5.5

Pairwise comparisons of desire for touch based on the individual touch is shared with, in different contexts

Context	*Person (A)*	*Person (B)*	*Mean Difference (A-B)*	*Standard Error*	*Significance*	*95% Confidence Interval*	
						Lower Bound	*Upper Bound*
General	Female Acquaintance	Female Friend	-1.397*	0.102	<.001	-1.596	-1.198
		Female Stranger	.668*	0.102	<.001	0.469	0.868
		Male Acquaintance	.457*	0.102	<.001	0.258	0.657
		Male Friend	-.381*	0.102	<.001	-0.58	-0.182
		Male Stranger	.943*	0.102	<.001	0.743	1.142
		Romantic Partner	-4.874*	0.102	<.001	-5.073	-4.675
	Female Friend	Female Acquaintance	1.397*	0.102	<.001	1.198	1.596
		Female Stranger	2.065*	0.102	<.001	1.866	2.265
		Male Acquaintance	1.854*	0.102	<.001	1.655	2.053
		Male Friend	1.016*	0.102	<.001	0.817	1.215
		Male Stranger	2.340*	0.102	<.001	2.14	2.539
		Romantic Partner	-3.477*	0.102	<.001	-3.676	-3.278
	Female Stranger	Female Acquaintance	-.668*	0.102	<.001	-0.868	-0.469
		Female Friend	-2.065*	0.102	<.001	-2.265	-1.866
		Male Acquaintance	-.211*	0.102	0.04	-0.41	-0.012
		Male Friend	-1.049*	0.102	<.001	-1.249	-0.85
		Male Stranger	.274*	0.102	0.01	0.075	0.474
		Romantic Partner	-5.542*	0.102	<.001	-5.742	-5.343
	Male Acquaintance	Female Acquaintance	-.457*	0.102	<.001	-0.657	-0.258
		Female Friend	-1.854*	0.102	<.001	-2.053	-1.655
		Female Stranger	.211*	0.102	0.04	0.012	0.41
		Male Friend	-.838*	0.102	<.001	-1.038	-0.639
		Male Stranger	.486*	0.102	<.001	0.286	0.685
		Romantic Partner	-5.331*	0.102	<.001	-5.531	-5.132
	Male Friend	Female Acquaintance	.381*	0.102	<.001	0.182	0.58
		Female Friend	-1.016*	0.102	<.001	-1.215	-0.817
		Female Stranger	1.049*	0.102	<.001	0.85	1.249
		Male Acquaintance	.838*	0.102	<.001	0.639	1.038
		Male Stranger	1.324*	0.102	<.001	1.124	1.523
		Romantic Partner	-4.493*	0.102	<.001	-4.692	-4.294
	Male Stranger	Female Acquaintance	-.943*	0.102	<.001	-1.142	-0.743
		Female Friend	-2.340*	0.102	<.001	-2.539	-2.14
		Female Stranger	-.274*	0.102	<.001	-0.474	-0.075
		Male Acquaintance	-.486*	0.102	<.001	-0.685	-0.286
		Male Friend	-1.324*	0.102	<.001	-1.523	-1.124
		Romantic Partner	-5.817*	0.102	<.001	-6.016	-5.617
	Romantic Partner	Female Acquaintance	4.874*	0.102	<.001	4.675	5.073
		Female Friend	3.477*	0.102	<.001	3.278	3.676
		Female Stranger	5.542*	0.102	<.001	5.343	5.742
		Male Acquaintance	5.331*	0.102	<.001	5.132	5.531
		Male Friend	4.493*	0.102	<.001	4.294	4.692
		Male Stranger	5.817*	0.102	<.001	5.617	6.016

Grief	Female Acquaintance	Female Friend	-1.629*	0.102	<.001	-1.828	-1.429
		Female Stranger	.857*	0.102	<.001	0.658	1.056
		Male Acquaintance	.480*	0.102	<.001	0.281	0.679
		Male Friend	-.503*	0.102	<.001	-0.702	-0.303
		Male Stranger	1.077*	0.102	<.001	0.877	1.276
		Romantic Partner	-4.310*	0.102	<.001	-4.51	-4.111
	Female Friend	Female Acquaintance	1.629*	0.102	<.001	1.429	1.828
		Female Stranger	2.485*	0.102	<.001	2.286	2.685
		Male Acquaintance	2.109*	0.102	<.001	1.909	2.308
		Male Friend	1.126*	0.102	<.001	0.927	1.325
		Male Stranger	2.705*	0.102	<.001	2.506	2.905
		Romantic Partner	-2.682*	0.102	<.001	-2.881	-2.482
	Female Stranger	Female Acquaintance	-.857*	0.102	<.001	-1.056	-0.658
		Female Friend	-2.485*	0.102	<.001	-2.685	-2.286
		Male Acquaintance	-.377*	0.102	<.001	-0.576	-0.178
		Male Friend	-1.359*	0.102	<.001	-1.559	-1.16
		Male Stranger	.220*	0.102	0.03	0.02	0.419
		Romantic Partner	-5.167*	0.102	<.001	-5.366	-4.968
	Male Acquaintance	Female Acquaintance	-.480*	0.102	<.001	-0.679	-0.281
		Female Friend	-2.109*	0.102	<.001	-2.308	-1.909
		Female Stranger	.377*	0.102	<.001	0.178	0.576
		Male Friend	-.983*	0.102	<.001	-1.182	-0.783
		Male Stranger	.597*	0.102	<.001	0.397	0.796
		Romantic Partner	-4.790*	0.102	<.001	-4.99	-4.591
	Male Friend	Female Acquaintance	.503*	0.102	<.001	0.303	0.702
		Female Friend	-1.126*	0.102	<.001	-1.325	-0.927
		Female Stranger	1.359*	0.102	<.001	1.16	1.559
		Male Acquaintance	.983*	0.102	<.001	0.783	1.182
		Male Stranger	1.579*	0.102	<.001	1.38	1.779
		Romantic Partner	-3.808*	0.102	<.001	-4.007	-3.608
	Male Stranger	Female Acquaintance	-1.077*	0.102	<.001	-1.276	-0.877
		Female Friend	-2.705*	0.102	<.001	-2.905	-2.506
		Female Stranger	-.220*	0.102	0.03	-0.419	-0.02
		Male Acquaintance	-.597*	0.102	<.001	-0.796	-0.397
		Male Friend	-1.579*	0.102	<.001	-1.779	-1.38
		Romantic Partner	-5.387*	0.102	<.001	-5.586	-5.187
	Romantic Partner	Female Acquaintance	4.310*	0.102	<.001	4.111	4.51
		Female Friend	2.682*	0.102	<.001	2.482	2.881
		Female Stranger	5.167*	0.102	<.001	4.968	5.366
		Male Acquaintance	4.790*	0.102	<.001	4.591	4.99
		Male Friend	3.808*	0.102	<.001	3.608	4.007
		Male Stranger	5.387*	0.102	<.001	5.187	5.586

*Note.** indicates a significant difference

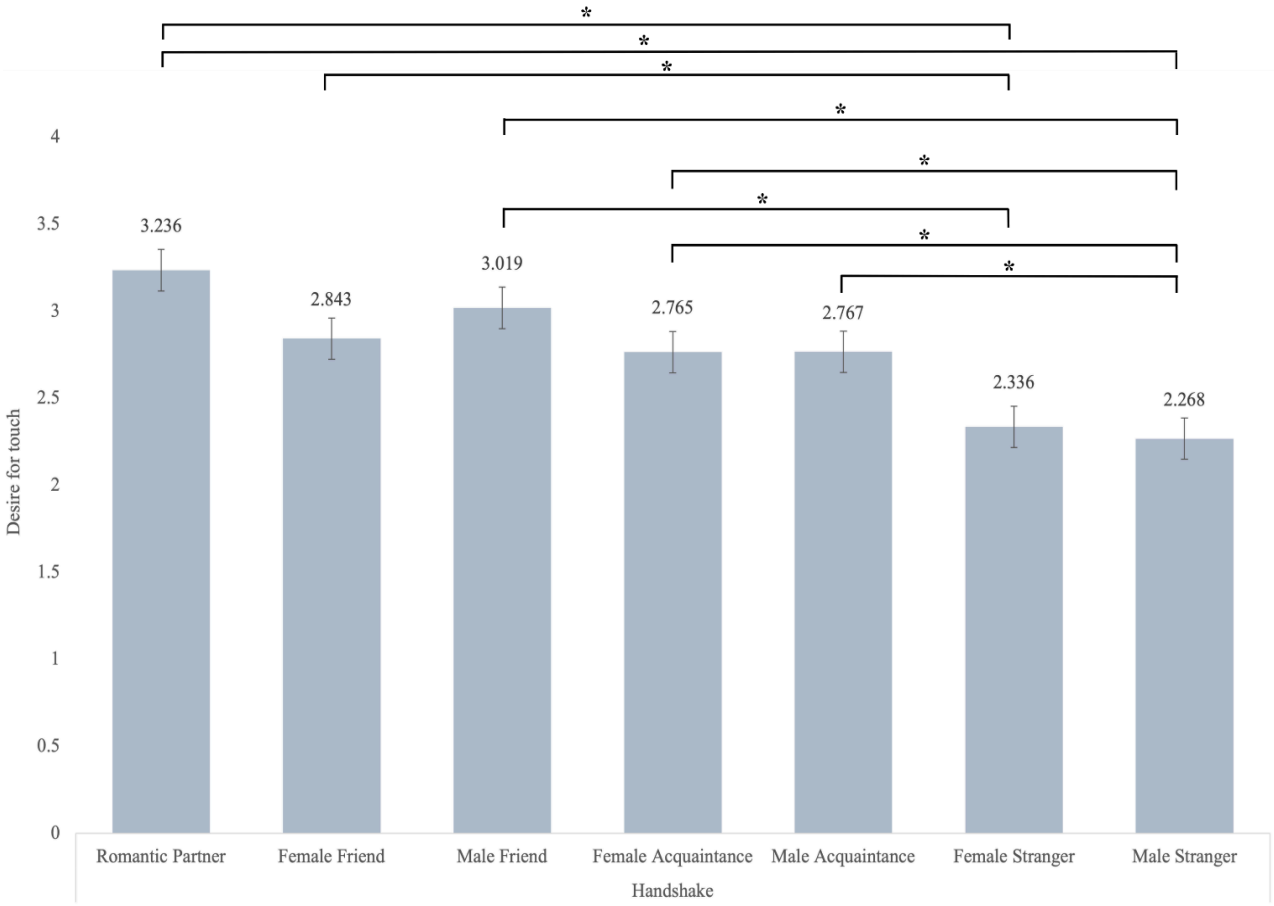
Two-way interactions between person and touch type ($F(3,765.2)=11.89$, $p<.001$, partial $\eta^2 = .047$) were found to be statistically significant, meaning that desire for touch differed across contexts and types of touch.

To investigate the interaction effect fully, a one-way ANOVA was conducted to assess whether there was a main effect of touch type on the desire for touch across person touch is shared with. There were significant effects found across all touch types. Desire for handshakes was found to differ significantly depending on the person, $F(6, 21608) = 8.5$, $p< .001$, partial $\eta2 = .002$.

Specifically, it was found that handshakes were desired significantly less from a male stranger than from a romantic partner, female friend, male friend, female acquaintance, or male acquaintance, $p<.001$. However, handshakes were not desired significantly less from a male stranger than a female stranger, $p = .69$. Findings also highlighted female strangers as having a significantly lower desire rate when compared to female friends, male friends and romantic partners, $p<.001$.

Figure 5.7

Average desire for handshakes separated by the relation to the participant



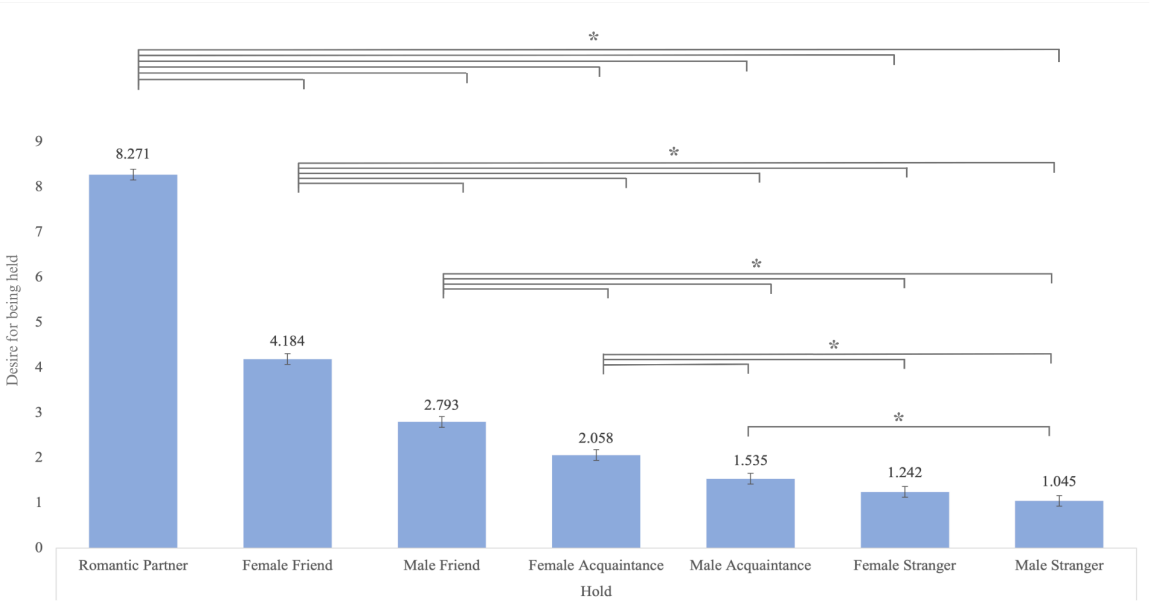
Note. * indicates a significant difference between groups, p<.008.

Desire for being held was found to differ significantly depending on the person, F(6, 21608) = 460.4, *p*< .001, partial η2 = .113. Being held was found to be significantly more desired with romantic partners over female friends, male friends, female acquaintances, male acquaintances, female strangers and male strangers, *p*<.001. Similarly, except for being held by romantic partners, being held was found to be significantly *more* desired with female friends 2.84, SE=.119) over male friends (M=2.79, SE=.119), female acquaintances, male acquaintances, female strangers and male strangers, *p*<.001. The pattern observed with handshakes and male strangers is also apparent with behind held; male strangers were significantly less desired with regards to being held in comparison to romantic partners, female friends, male friends, female acquaintances

and male acquaintances, *p*<.001 but not when compared to female strangers, *p*=.24. Female strangers were also found to be significantly less desired for a hold than female acquaintances, female friends, male friends, *p*<.001.

Figure 5.8

Average desire for handshakes separated by the relation to the participant

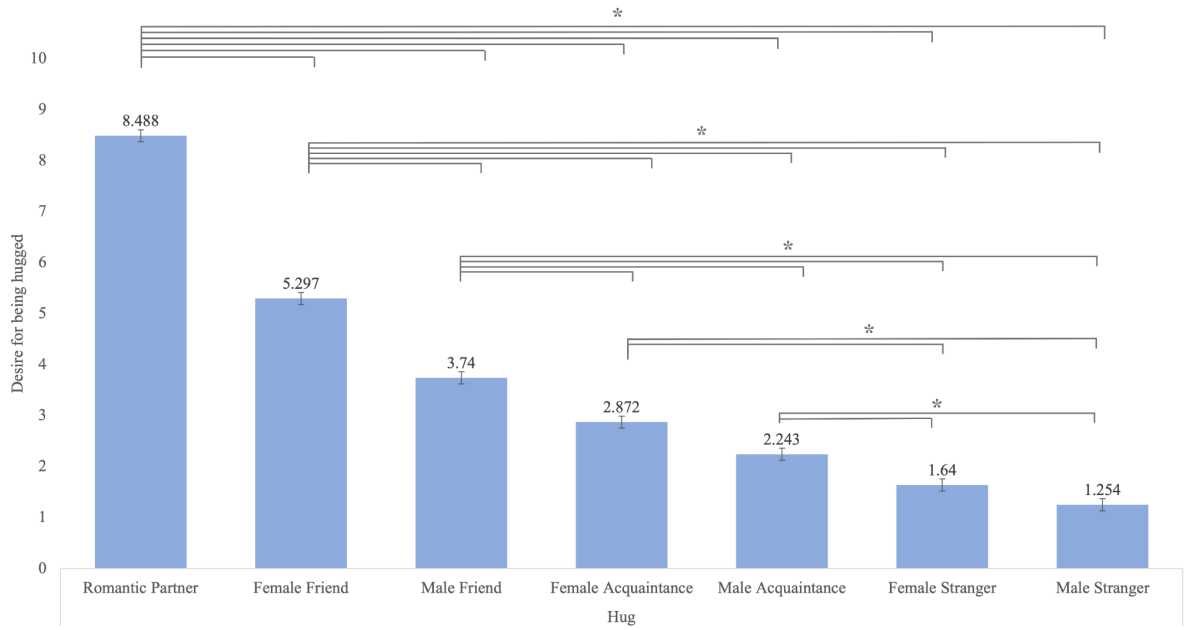


Note. * indicates a significant difference between groups, p<.008.

Desire for hugs was found to differ significantly depending on the person, F(6, 21608) = 452.4, *p*< .001, partial η2 = .112. Patterns observed with being held are similar to the ones observed with being hugged. Being hugged was found to be significantly more desired with romantic partners over female friends, male friends, female acquaintances, male acquaintances, female strangers and male strangers, *p*<.001. Similarly, except for being hugged by romantic partners, being hugged was found to be significantly more desired with female friends over male friends, female acquaintances, male acquaintances, female strangers and male strangers, *p*<.001. The pattern observed with handshakes and being held by male strangers is also found with being hugged; male strangers were significantly less desired with regards to being held in comparison to romantic partners, female friends, SE=.119), male friends (M=3.74, SE=.119), female acquaintances, male acquaintances, *p*<.001 but not when compared to female strangers, *p*=.24. Female strangers were also found to be significantly less desired for a hug than female friends, male friends, female acquaintances, *p*<.001.

Figure 5.9

Average desire for hugs separated by the relation to the participant

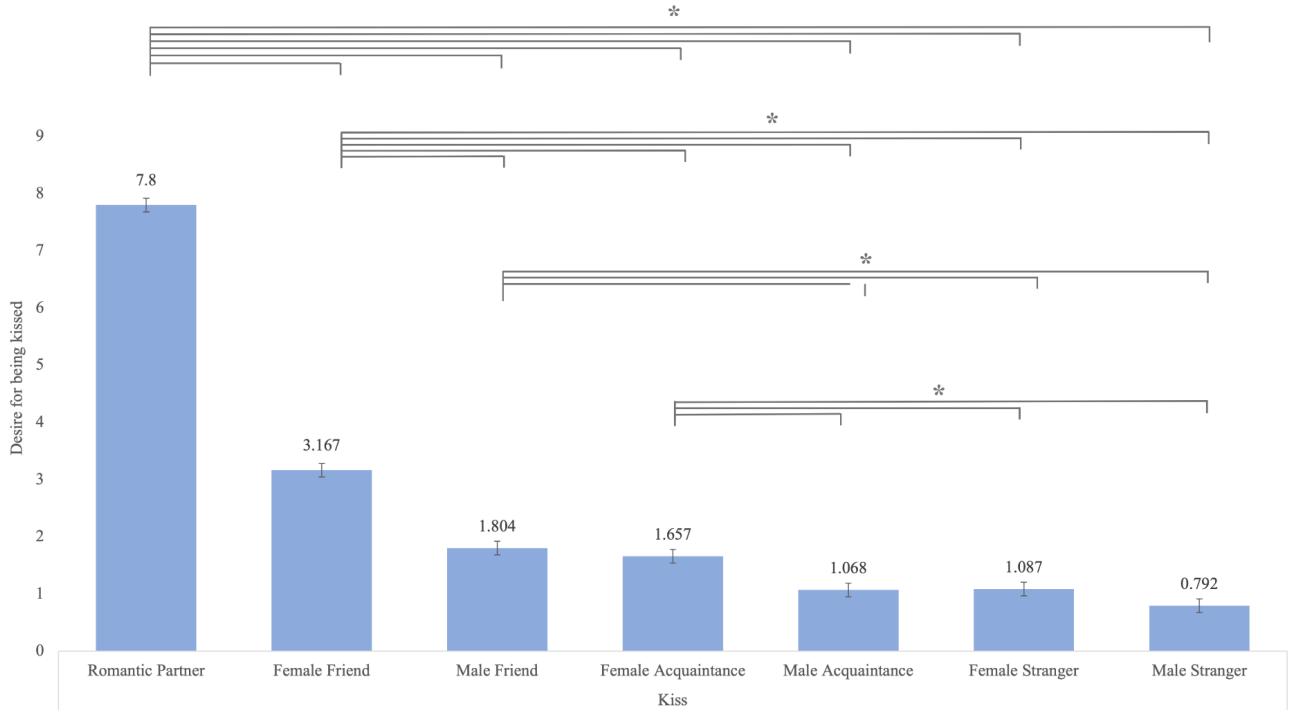


Note. * indicates a significant difference between groups, p<.008.

Desire for kisses was also found to differ significantly depending on the person, F(6, 21608) = 429.8, *p*< .001, partial η2 = .107. Being kissed was found to be significantly more desired with romantic partners over female friends, male friends, female acquaintances, male acquaintances, female strangers and male strangers, *p*<.001. As seen in the above breakdowns, being kissed was also found to be significantly more desired with female friends over male friends, female acquaintances, male acquaintances, female strangers and male strangers, *p*<.001. However, the opposite difference was found between female friends and romantic partners, *p*=.001, with a kiss being shared with the romantic partners being desired more. Female strangers were also found to be significantly less desired for a kiss than female friends, male friends, female acquaintances, *p*<.001. Similarly, male strangers were significantly less desired with regards to being kissed in comparison to romantic partners, female friends, male friends, female acquaintances, *p*<.001, but not when compared to female strangers, *p*=.08 and male acquaintances, *p=0*.1

Figure 5.10

Average desire for kisses separated by the relation to the participant



Note. * indicates a significant difference between groups, p<.008.

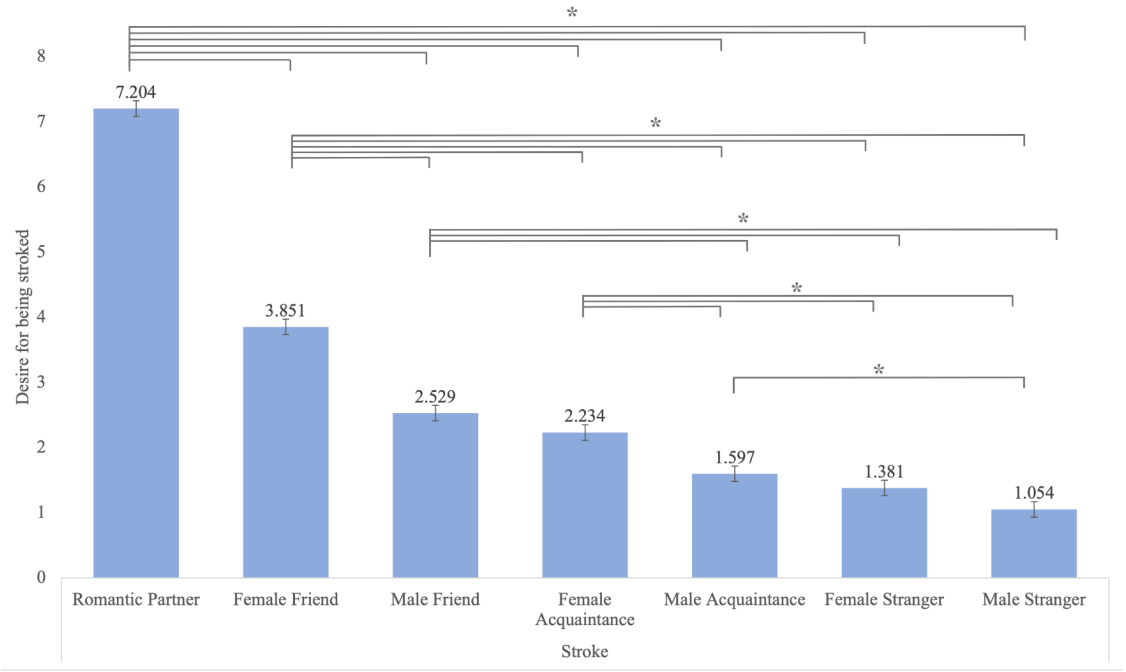
Desire for strokes was found to differ significantly depending on the person, F(6, 21608) = 321.3, *p*< .001, partial η2 = .082.

Being stroked was found to be significantly more desired with romantic partners over female friends, male friends, female acquaintances, male acquaintances, female strangers and male strangers (M=.119), *p*<.001. Similarly, being stroked was found to be significantly more desired with female friends too, the analysis highlighted significant differences indicating this greater desire between female friends and male friends, female acquaintances, male acquaintances, female strangers and male strangers, *p*<.001. Male strangers again exhibited the greatest number of significant differences that indicated less desire for touch with this type of person (when considering strokes). Except for female strangers, male strangers were significantly less desired to be stroked by romantic partners, female friends, male friends, female acquaintances and male acquaintances, *p*<.001. Female strangers showed a similar less positive outcome as male strangers. Being stroked by a female stranger was less desired in comparison to

romantic partners, female friends, male friends, female acquaintances and female strangers, *p<.001*. This significant difference was not found between female strangers and male acquaintances or between female strangers and male strangers, *p*=.05.

Figure 5.11

Average desire for strokes separated by the relation to the participant



Note. * indicates a significant difference between groups, p<.008.

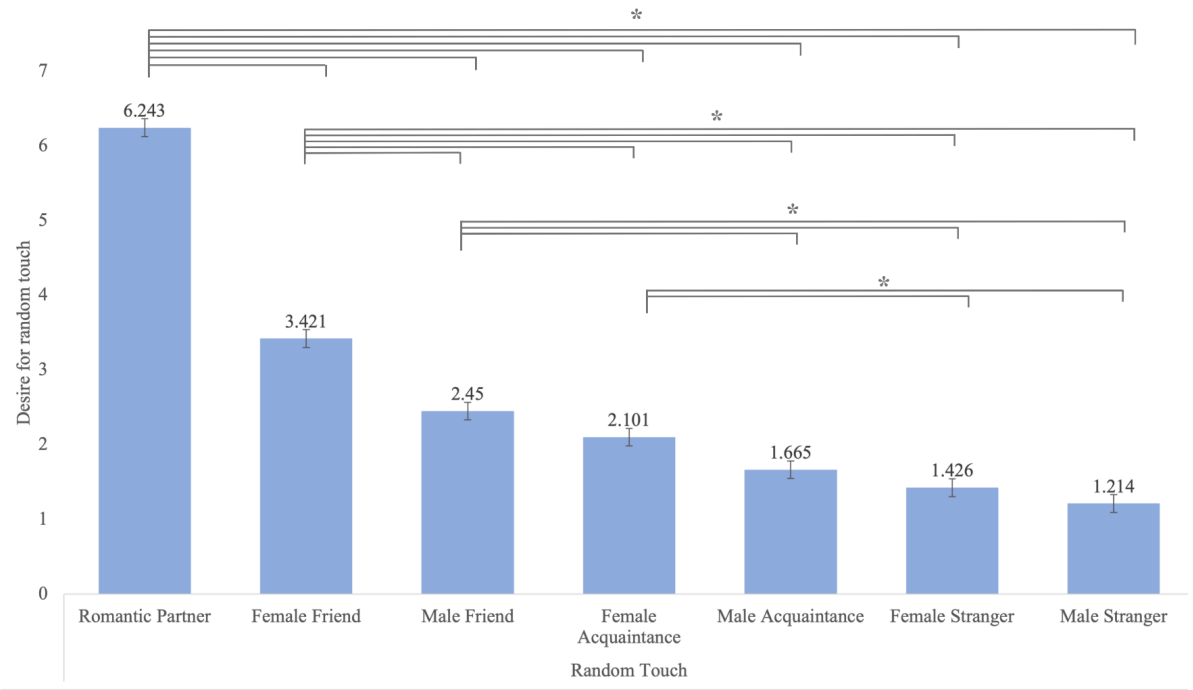
Desire for random touch was found to differ significantly depending on the person, F(6, 21608) = 215.4, *p*< .001, partial η2 = .056.

Similar to the comparisons above, the desire for random touch was found to be significantly more desired with romantic partners than with female friends, male friends, female acquaintances, male acquaintances, female strangers and male strangers, *p*<.001. Random touch with both male and female strangers was found to be significantly less desired than random touch from romantic partners, female friends, male friends, and female acquaintances, *p*<.001. Random touch with female friends was found to be significantly more desired than random touch from male friends, female acquaintances, female strangers, male acquaintances, and male strangers, *p*<.001. Random touch with male friends was found to be significantly less desired than random touch from

female friends and romantic partners but more desired than touch from female strangers, male acquaintances and male strangers, *p*<.001.

Figure 5.12

Average desire for random touch separated by the relation to the participant



Note. * indicates a significant difference between groups, p<.008.

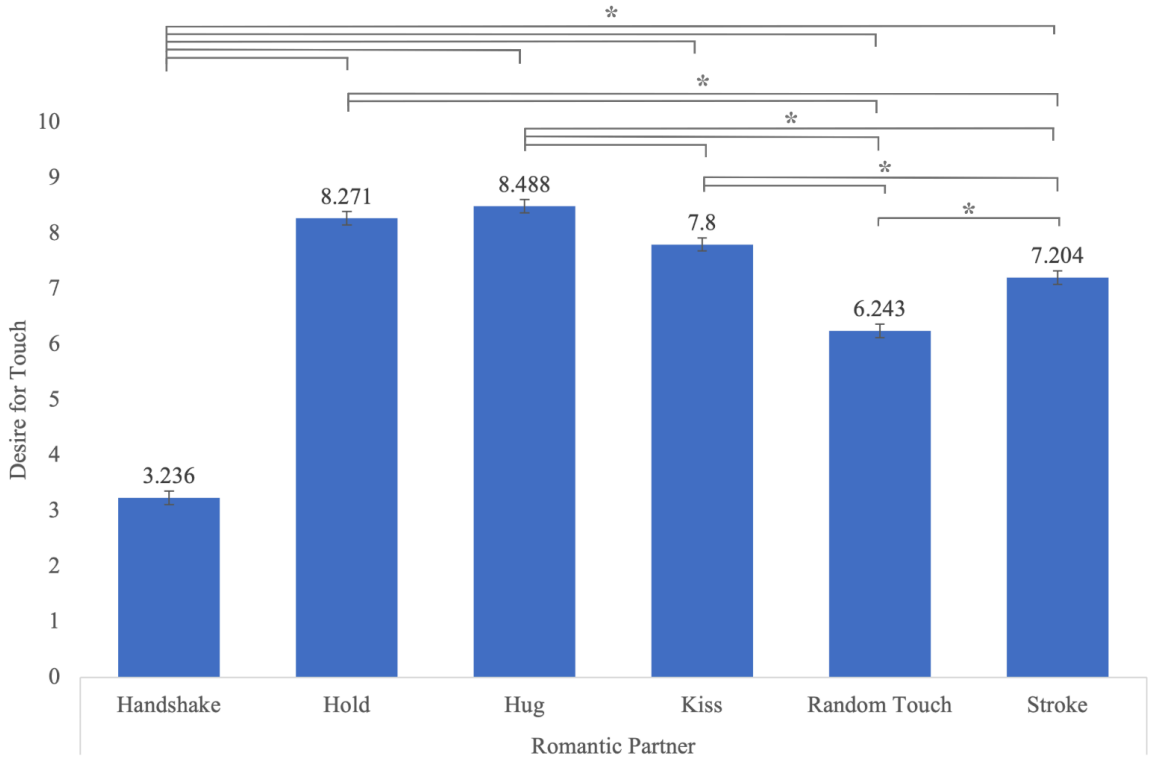
Another one-way ANOVA was conducted to assess whether there was a main effect of a person on desire for touch across types of touch shared. There were significant effects found across all person variables.

Desire for touch with a Romantic partner was found to differ significantly depending on touch type, $F(5, 21608) = 270.1$, $p < .001$, partial $\eta 2 = .059$.

Handshakes with romantic partners were found to be desired significantly less than all other forms of touch included; hugs, holds, kisses, strokes and random touch, *p*<.001. Being hugged and held on the other hand by a romantic partner is significantly more desired than handshakes, being stroked and being randomly touched, *p*<.001.

Figure 5.13

Average desire touch shared with a romantic partner separated by touch type



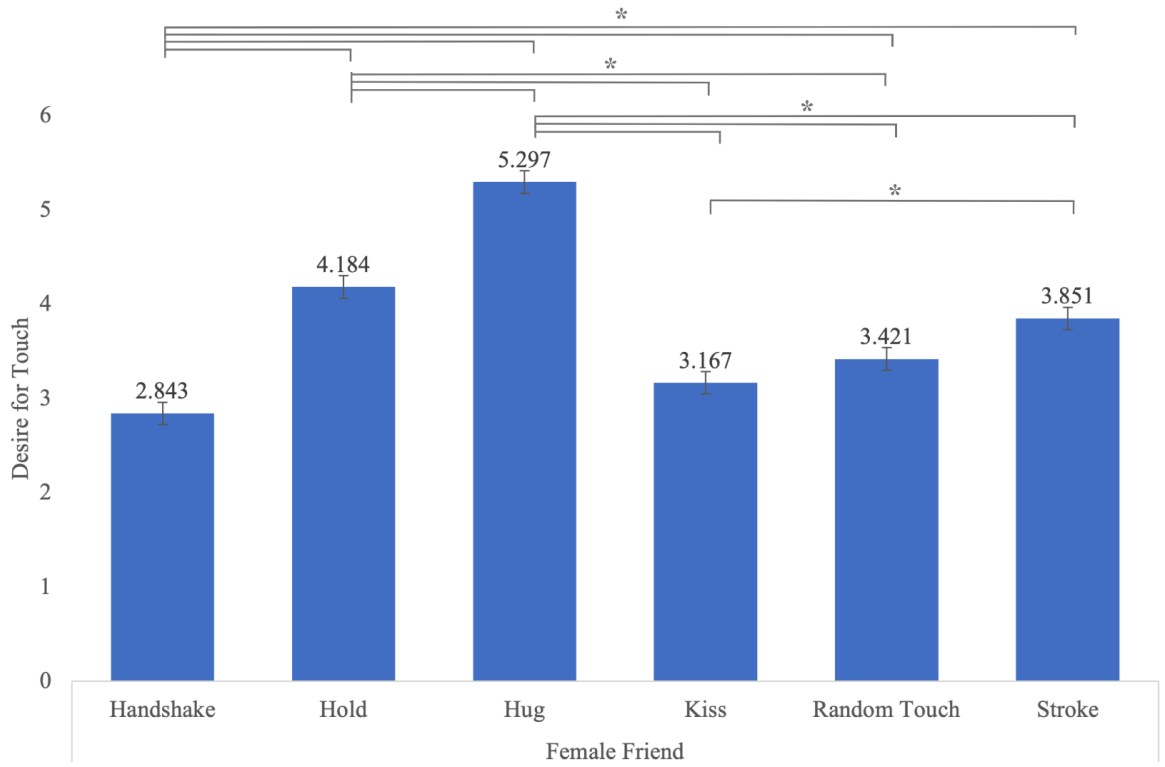
Note. * indicates a significant difference between groups, p<.007.

Desire for touch with a female friend was found to differ significantly depending on touch type, F(5, 21608) = 54.29, *p*< .001, partial η2 = .012.

Out of the touch types recorded participants preferred to be hugged by a female friend over being held, given a handshake, being stroked, being randomly touched, and given a kiss, *p*<.001. Handshakes and kisses were significantly preferred less over being held, hugged or stroked when it was shared with a female friend.

Figure 5.14

Average desire for touch shared with a female friend separated by touch type



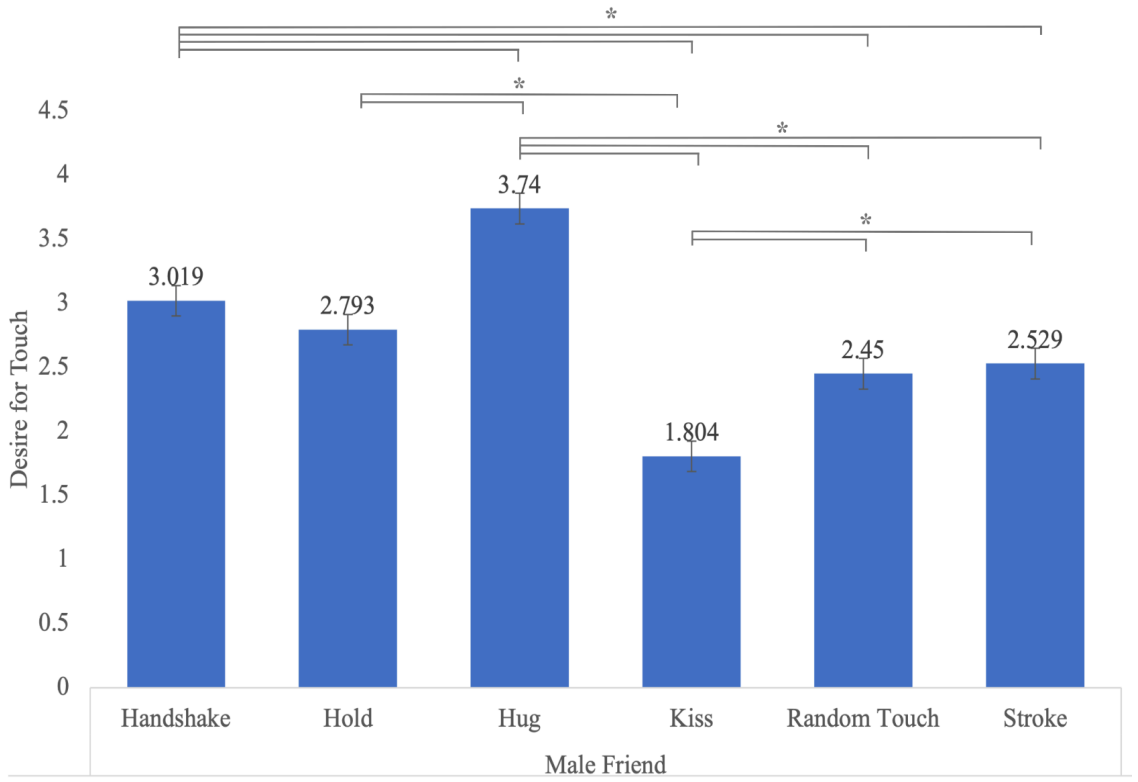
Note. * indicates a significant difference between groups, p<.007.

Desire for touch with a Male friend was found to differ significantly depending on touch type, F(5, 21608) = 29.38, p< .001, partial η2 = .007.

Handshakes with a male friend were found to be desired significantly more compared to experiencing a kiss, a stroke or random touch with a female stranger, p<.001. Experiencing hugs with a male friend was found to be significantly more desired than experiencing handshakes, kisses, strokes, random touches and being held, p<.001. Conversely, experiencing kisses with a male friend was significantly less desired compared to strokes, random touches being held (plus handshakes and hugs as addressed above), p<.001.

Figure 5.15

Average desire for touch shared with a male friend separated by touch type



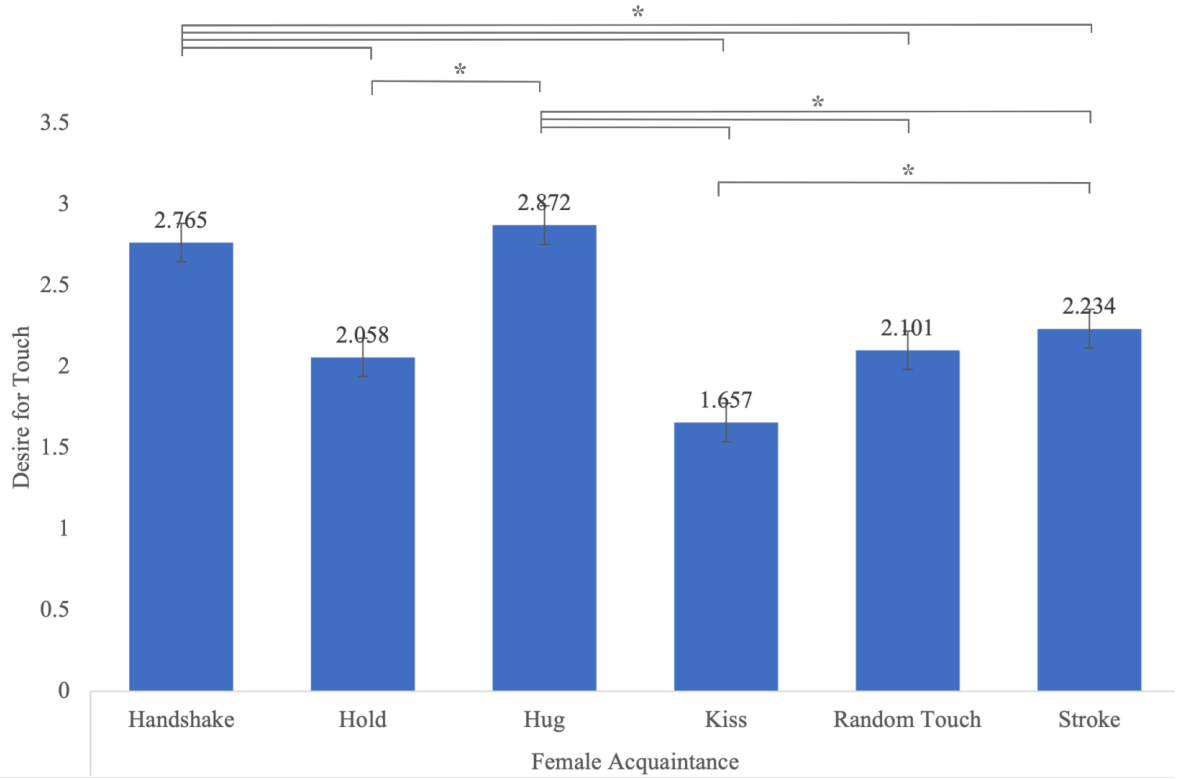
Note. * indicates a significant difference between groups, p<.007.

Desire for touch with a female acquaintance was found to differ significantly depending on touch type, F(5, 21608) = 14.91, *p*< .001, partial η2 = .003.

Similar to the above findings, hugs were significantly preferred over being held, stroked, randomly touched, and given a kiss when shared with a female acquaintance, *p*<.001. After hugs, handshakes were also found to be significantly more desired with female acquaintances compared to being held, stroked, being randomly touched, and given a kiss. Sharing a kiss with a female acquaintance was found to be significantly less desired than handshakes, hugs and strokes, *p*<.001.

Figure 5.16

Average desire for touch shared with a female acquaintance separated by touch type



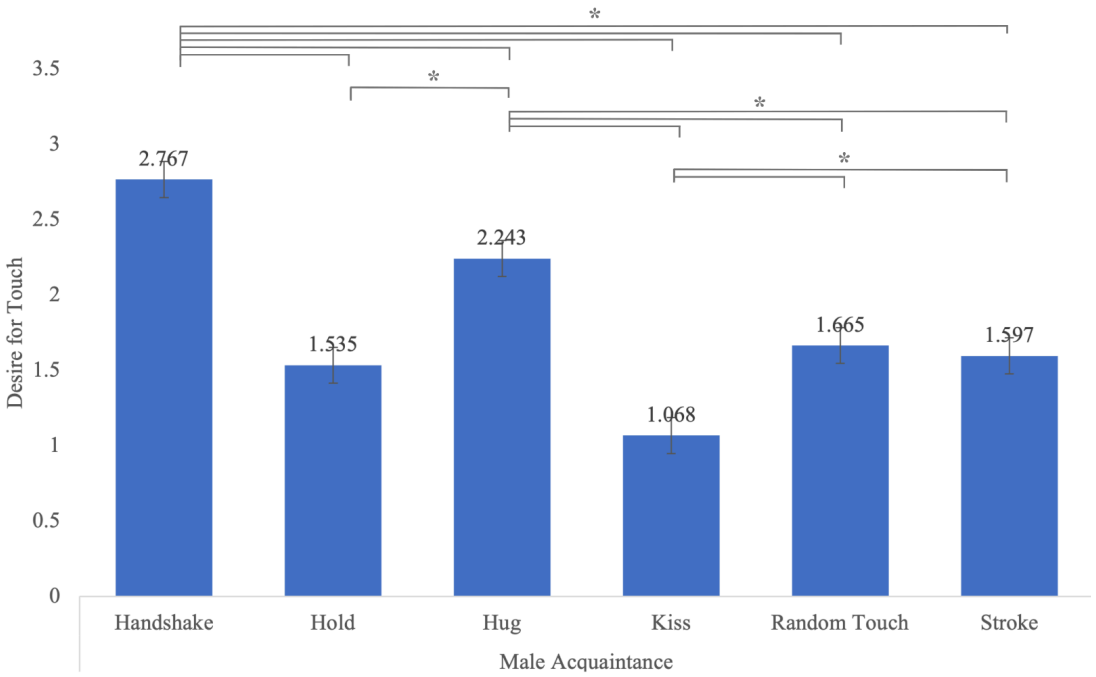
Note. * indicates a significant difference between groups, p<.007.

Desire for touch with a male acquaintance was found to differ significantly depending on touch type, F(5, 21608) = 25.34, *p*< .001, partial η2 = .006.

Handshakes with a male acquaintance were found to be significantly more desired than experiencing a hug, hold, kiss, stroke or random touch, *p*<.001. Similarly, hugs shared with a male acquaintance are significantly more desired compared to sharing a kiss, hold, stroke or random touch, *p*<.001. Kisses were found to be significantly less desired with a male acquaintance compared to a random touch or stroke, *p*<.001.

Figure 5.17

Average desire for touch shared with a male acquaintance separated by touch type



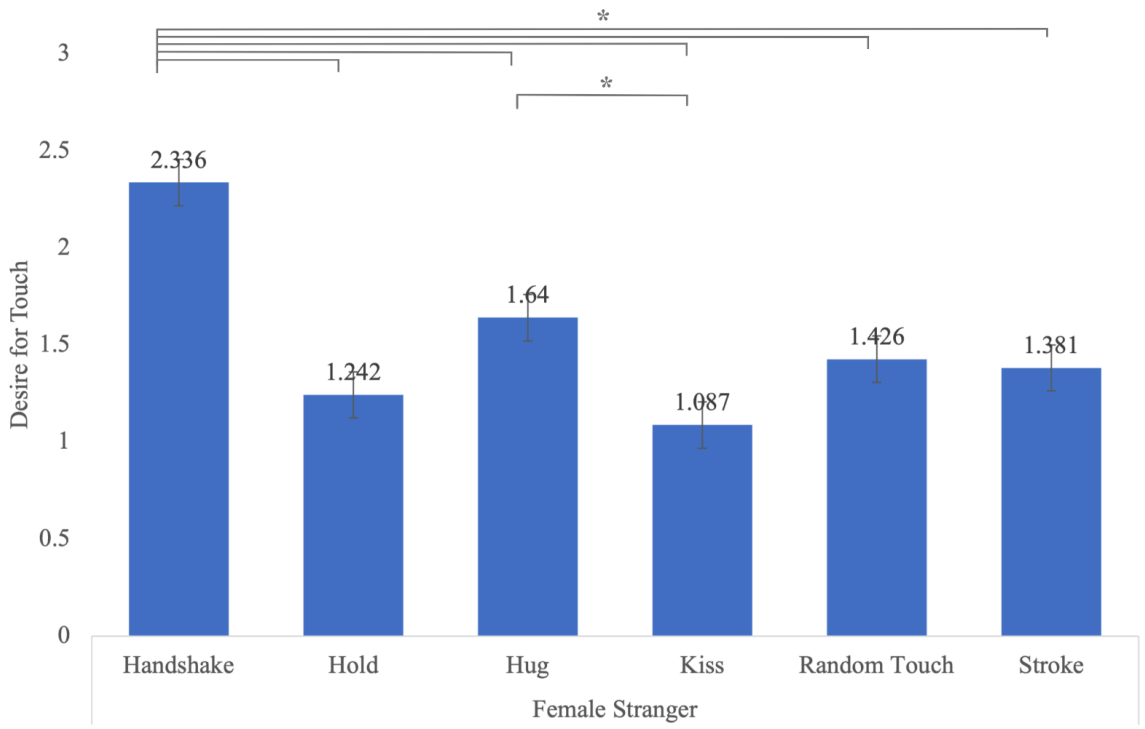
Note. * indicates a significant difference between groups, p<.007.

Desire for touch with a female stranger was found to differ significantly depending on touch type, F(5, 21608) = 13.7, *p*< .001, partial η2 = .003.

Handshakes with a female stranger were found to be desired significantly more compared to experiencing a hug, a kiss, a stroke, a random touch or being held by a female stranger, *p*<.001. Hugs were also found to be significantly more desired than kisses when experienced with a stranger, *p*<.001.

Figure 5.18

Average desire for touch shared with a female stranger separated by touch type



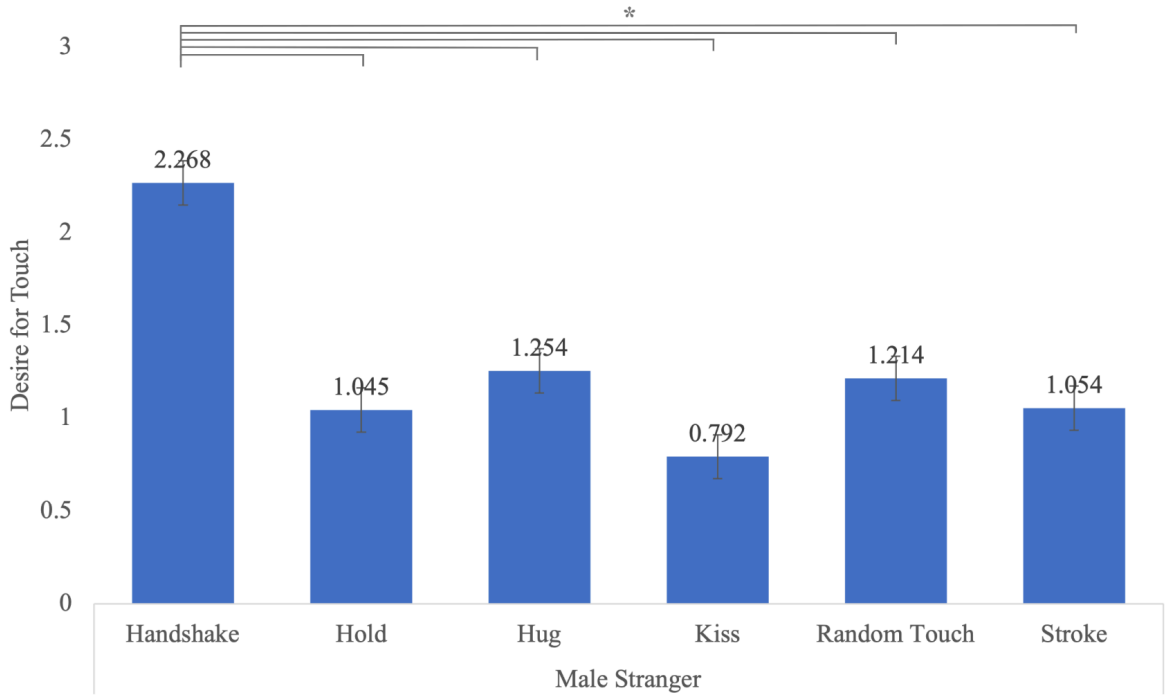
Note. * indicates a significant difference between groups, p<.007.

Desire for touch with a Male stranger was found to differ significantly depending on touch type, F(5, 21608) = 18.65, *p*< .001, partial η2 = .004.

This was found to be specifically regarding handshakes compared to hugs, holds, kisses, strokes and random touches. When concerning a male stranger handshakes were considered significantly more desirable compared to the other forms of touch, *p*<.001.

Figure 5.19

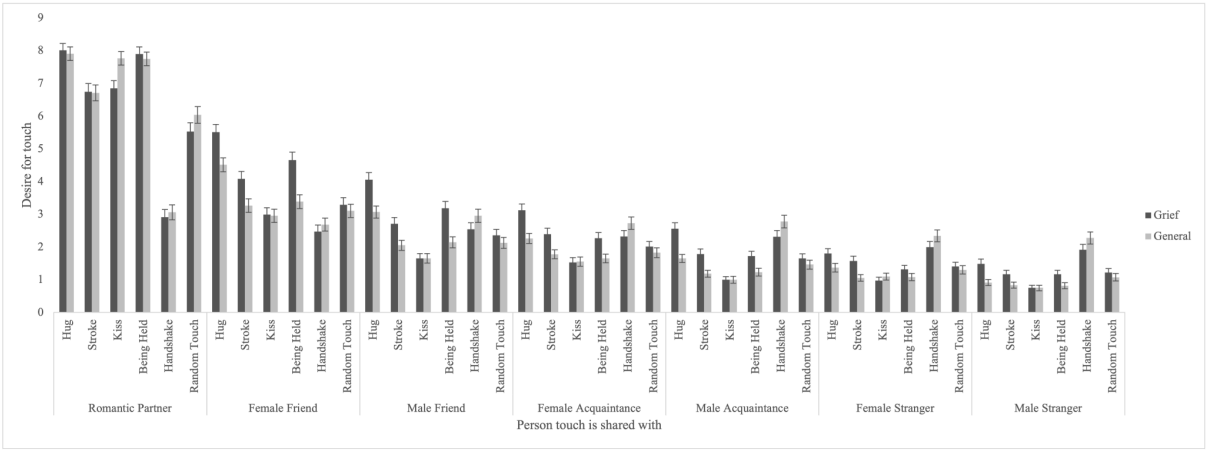
Average desire touch shared with a male stranger separated by touch type



Note. * indicates a significant difference between groups, p<.007.

Figure 5.20

The average desire for touch is grouped by the person with whom touch is shared.



Note. The graph depicts the mean desire for six types of touch, separated by who the individual giving touch is.

Analysis 3:

Using the scores from participants' responses on the Central Religiosity Scale (CRS) as the main predictor variable along with age, gender, and time since bereaved/loss, three separate multiple regressions have been conducted to investigate whether an individual's religiosity can predict their attitudes towards touch. One for each questionnaire was used to assess touch attitudes (i.e. TEAQ, STQ and THS) as each touches on a different facet of one's touch attitudes.

TEAQ

The overall model did not explain a substantial proportion of the variance in TEAQ scores, R^2= .044, F(4,108)= 1.124, *p*=.297. The beta coefficient for religiosity was not significant (t=.666, *p*=.507), suggesting that an individual's religiosity is not a predictor of an individual's attitude towards touch and experiences when paired with age, gender and time since loss. Beta coefficients also highlighted that age (t=.130, p=.197), gender (t=.949, p=.345) and time since the loss of a loved one (t=-1.297, *p*=.0197) did not significantly predict touch attitudes (based on the TEAQ scale).

STQ

The overall model explained a substantial proportion of the variance in STQ scores, R^2= .11, F(4,108)= 3.34, *p*=.013. Though the model as a whole was found to be significant, the beta coefficient for religiosity was not significant (t=-1.642, p=.103), suggesting that an individual's religiosity is not a predictor of an individual's attitude towards touch in social settings when paired with age, gender and time since loss. Similarly, age (t=-1.9, p=.058) and time since the loss of a loved one (t=-.027, *p*=.979) did not significantly predict touch attitudes (based on the STQ scale). Gender was the only predictor found to be significant (t=2.66, *p*=.009), suggesting that gender is a significant predictor for social touch attitudes.

THS

The overall model did explain a substantial proportion of the variance in THS scores, R^2= .11, F(4,108)= 3.39, *p*=.012. Though the model as a whole was found to be significant, the beta coefficient for religiosity was not significant (t=.669, *p*=.505), suggesting that an individual's religiosity is not a predictor of an individual's attitude towards touch in healthcare settings when

paired with age, gender and time since loss. Gender (t=-1.47, p=.144) and time since the loss of a loved one (t=-.532, *p*=.596) did not significantly predict touch attitudes (based on the THS scale). However, age (t=.22, *p*=.002) was found to be a significant predictor, suggesting that age can be seen as a significant predictor for touch attitudes in healthcare settings.

Discussion

Through the analyses reported here, it is clear that grief has a role in our feelings and attitudes towards touch. The first hypothesis was not supported as there was no statistically significant difference in touch attitudes based on whether an individual had experienced a recent loss. Significant main effects of subscales were found across the first analyses, consistent with the findings and trends of earlier chapters. These findings suggest that our attitudes towards touch are steady through emotional life experiences such as grief and bereavement.

Though the first analysis highlighted that attitudes towards touch (as explored by use of the TEAQ, STQ and THS scales) were not found to have differed based on time since the loss of a loved one, the next analysis brings to the surface a different distinction. The second analysis looked specifically at the desire for touch and found that our desire for touch does change based on context, type of touch and relation of the person to the individual touch is shared with. Based on past literature by Enmalm and Boehme (2024), it was expected that the desire for touch would differ based on whether the participants imagined themselves in a moment of grief or an everyday circumstance. The literature surrounding touch also highlights how the other individuals involved in touch interactions can impact our feelings towards touch; in other words, it matters who is touching us.

Therefore, the second analysis aimed to investigate this aspect of touch and whether it interacts with the context in which touch is received (within times of grief or in a general sense). The findings were in support of the hypothesis that there will be a difference in the degree of desire for affectionate touch based on whether the time of touch is during a moment of grief or in an everyday circumstance, as it was found that individuals show a greater desire for touch during moments of grief over everyday circumstances. Importantly, there is also a difference between the types of touch desired; participants were asked to input their degree of desire for six different types

of touch: hug, stroke, kiss, hold, handshake, and random touch. Of these six, there is a mix of affective and non-affective touch actions.

The results of the second analysis highlighted that though individuals desire touch more during moments of grief, this did not apply to all types of touch, but specifically to the more affective types of touch. Hugs, strokes, and being held were all desired more during moments of grief, regardless of the individual pictured doing the touch action. The intimate action of a kiss was only found to be significantly more desired when being kissed by their romantic partner. This form of affective touch was not found to be desired *more* during times of grief but rather in general circumstances. These findings suggest that it is not just touch that is desired more during the context of grief, but specific forms of affective touch are desired more, and potential boundaries within the types of affective touch are also suggested. Kissing is a more intimate form of touch than a hug or a stroke, as kissing typically occurs using a more intimate region of one's body (mouth). As found in previous chapters (3), in general, individuals are more comfortable with touch within the non-intimate regions of the body; this finding extends to partners (whom individuals are more likely to experience intimate touch with).

These findings in part can be explained by Floyd's Affection Exchange Theory (2015). The third postulate states that affectionate communication is adaptive with respect to human's ability to survive and fertility. Though the findings of this study does not touch on fertility, it can be linked to the idea of survival. With grief often comes loneliness (Abi-Hashem, 1999; Eisma & Buyukcan-Tetik, 2024). The loneliness associated with bereavement can have severe health outcomes (Henriksen et al., 2023; Valtorta et al., 2018), a recent study has also linked individuals who experience loneliness after sudden bereavement as associated with a higher risk of suicide attempts (Pitman et al., 2020). The literature surrounding touch has then highlighted how touch can decrease feelings of loneliness (Heatley Tejada et al., 2020) and paired with the findings of analysis two, highlight how an individual during moments of grief (where they are likely to feel lonely) are desiring affective touch more. Whether this was intentional for their viability and longevity was not investigated and can only be inferred based on the research linking loneliness and severe health outcomes. Future research should consider investigating *why* an individual

desires specific forms of affective touch more during moments of grief, are individuals consciously thinking of their feelings of loneliness or is this an innate desire?

The findings of this second analysis could also be explained by Floyd's fourth postulate: Humans vary in their optimal tolerances for affection and affectionate behaviour. The theory uses attachment primarily to explain how humans can vary in their tolerance for affection and affective behaviour but also makes it clear that there are other reasons we can vary in our tolerances towards touch; one of which centres an individual's *need* for touch. This study then also adds to this idea by displaying exactly that, the findings of the second analysis show that individuals will desire specific forms of touch to varying degrees based on the time in which the touch is to be shared and who the person is, in relation to them. As the closeness between the individual and the toucher grows further apart, the desire for touch changes. The results therefore show that the variation in need can be external through the context in which we are set to receive affectionate behaviour (touch) and internal through the person delivering the behaviour.

While Floyd's Affection Exchange Theory (AET) primarily focuses on affectionate communication and its role in human adaptability, the findings of this study add nuance to this theory by differentiating between an individual's attitudes towards touch, which appear to remain stable during times of grief, and their desires for specific types of affective touch in different emotional contexts. This distinction highlights the complexity of affectionate behaviours and how they can be driven by both context and relational factors, offering a more layered understanding of how AET can be applied in contexts such as grief.

This chapter also investigated whether religiosity could play a predictive role in understanding an individual's attitude towards touch after considering their current grieving status. In all three scales used to measure attitudes towards touch, an individual's religiosity was not found to predict their attitudes towards touch significantly when controlling for age, gender and time since the loss of a loved one.

Limitations and future directions

Though this study adds to a small literature surrounding affective touch and its application in times of grief, there are areas where the study could have been improved. The study looks at the

relationship between grief and touch but whether the impact of who the individual was to the participant was not reported or whether the loss felt like a large loss to the individuals. Therefore future research must take this into account when researching the desire for affective touch during grief, given the known link found in many studies in the emotional bond between individuals and *attitudes* towards affective touch (Chopik et al., 2014; Crucianelli & Filippetti, 2020; Jakubiak & Feeney, 2017; Krahé et al., 2016, 2018; Wagner et al., 2020). This addition could deepen the understanding of Floyd's aforementioned 4th postulate, since the theory leans on the idea attachment, *who* an individual has lost may potentially have consequences in how their desire for touch varies.

Additionally, whether multiple individuals were lost within the same time frame was not reported. These factors may have played a large role in how individuals reported their attitudes towards touch, their desires for touch and how well they could accurately respond to the core bereavement index questions.

As mentioned earlier, a deviation from the pre-registration was made due to the small number of participants in the groups who had experienced a loss. A better understanding of how grief impacts touch could have been explored if the group sizes were equal. Whether six months or a year since the loss of a loved one may impact one's desire for touch during moments of grief was not able to be investigated. Grief is known to come in waves (del Rosario, 2004; Berzoff, 2006) and a deeper understanding of the participant's current feelings surrounding their loss would have provided useful information in understanding these findings or more accurately grouping the participants for analyses.

Gender is known to affect attitudes towards touch (Stier & Hall, 1987; Russo, Ottaviani & Spitoni, 2020; Dueren et al., 2021; Bendas et al., 2017), and in the findings of analysis two, it was seen that touch from a female was significantly more desired than touch from a man (of the same level of relational closeness). Whether the participant was of the same gender or not was not explored. Furthermore, faith is a large component of this thesis but was not considered in the first two analyses of this study, this may play a role in any possible gender effects with touch desires, both in general and during moments of grief. Future research should incorporate an individual's

religiosity. Some of the world's largest faiths, such as Islam, have restrictions on touch between individuals of the opposite sex and therefore this will play a role in their desire for touch. Additionally, with rising numbers of young people holding a gender-neutral, non-binary identity (Twist & de Graaf, 2019), it would be interesting to see whether these differences persist for individuals identifying as non-binary.

Following on from this, the second analysis was able to bring forth many interesting findings and comparisons between the participant and individuals in their life, in every subsection of individual (ie. friend, acquaintance and stranger) the findings frequently highlighted a greater desire for forms of affective touch from the female rather than the male. Whether this is due to a historical understanding that the female in a male-female partnership is traditionally seen as a caregiver or because women have been found to touch more (Sorokowska et al., 2021) than men is not understood through this chapter. This could however be explored in future studies by exploring who the participant felt played key roles in providing affection in their childhood and who play those roles in the current day.

Analysis 1 and 3 both looked at touch within the healthcare setting whereas analysis 2 did not, it would be interesting for future research to investigate these touch desires in the context of grief for healthcare professionals. Though they may be strangers to a patient or a grieving relative, the level of unknown may not match the level of unknown of a stranger interacted with in public. Therefore, whether healthcare professionals are equivalent to strangers or acquaintances (in the context of analysis 2) would be interesting to uncover. This would be particularly useful for individuals working within healthcare settings, as it would help them understand how they can show compassion to their patients who are going through a loss and bereavement, in a safe manner that limits the crossing of any boundaries.

Despite the limitations, these findings drive the wider research of this thesis forward by opening new avenues for exploring how desires for specific types of affective touch can be used to improve well-being, specifically in contexts such as grief and bereavement. The divergence between findings that suggest stable touch attitudes and the differing touch desires suggests that interventions focused on increasing and understanding appropriate affectionate behaviours could

help alleviate feelings of loneliness and isolation associated with and during moments of grief. These insights have practical implications, as understanding that individuals may not exhibit outward changes in their general attitudes toward touch but may still experience an increased desire for certain forms of affective touch during moments of grief offers valuable insight for healthcare and therapy settings. This could inform more compassionate, tailored approaches to care and allow for more sensitive and effective approaches to emotional support.

This chapter plays a role in adding to the exploration of grief and its impact on affective touch. Clear distinctions are seen between touch attitudes and touch desires. Specifically, our desires for touch depend on the context of what we are going through, but our attitudes remain steady. This chapter supports the findings of previous chapters. It offers new insights that can be used to help navigate how to console grieving individuals, providing options for non-verbal communication that can be applied to an individual's partner, friend, acquaintance or stranger. Future research should use these findings and investigate whether experiencing these forms of touch alleviates feelings associated with grief to understand whether these desires for touch can also have a practical application that leads to positive outcomes.

Chapter 6: Conclusions

Overview

In this chapter, the empirical findings from chapters 3-5 of this thesis are discussed in a wider context. This thesis aimed to expand our understanding of how affective touch impacts our lives, with a strong focus on broadening the understanding of group differences between those who subscribe to a religiously led life and those who do not (Chapters 3 and 5). Moreover, the context of where and when touch is shared and how that impacts the relationship an individual has with touch is also explored (Chapters 3, 4 and 5). These findings are discussed in relation to previous research on affective touch and theories surrounding affective touch desires. The findings are also discussed in relation to potential future directions for research expanding the understanding of neural correlates of shared affective touch.

Introduction

The thesis opened with an introduction outlining the importance and value of affective touch throughout the human lifespan. Explaining that touch is one of our earliest senses to develop (Gallace & Spence, 2010; Mariani Wigley et al., 2023) and plays a large role in how we develop our understanding of the world around us (De Witte, 2011; Fulkerson, 2013; Novak & Schwan, 2021; Ratcliffe, 2008; Rickard & White, 2021). A body of research has found evidence that also points to affective touch being distinctly different to other forms of touch ie. affective touch can be registered differently within our body. Our body has a specific neuropsychological system (the CT-afferent system) that registers a form of affective touch, touch with slow caress-like characteristics (Ackerley et al., 2014; Gordon et al., 2013; Morrison et al., 2010; Pawling et al., 2017). Additionally, social psychological research understands that though touch is vital throughout the lifetime, an individual's attitudes, and how they feel and interact with touch will not be uniform and therefore a large body of research has focussed on individual differences in affective touch experiences and attitudes. Namely gender differences (Bendas et al., 2017; Dueren et al., 2023; Harjunen et al., 2017; Russo et al., 2020; Schirmer et al., 2022; Stier & Hall, 1984), age (Bjornsdotter et al., 2014; Cruciani et al., 2021; Schlintl & Schienle, 2023), emotional closeness of toucher to the receiver (Strauss et al., 2020; Suvilehto, 2018; Suvilehto et al., 2015) and

attachment style (Chopik et al., 2014; Crucianelli & Filippetti, 2020; Jakubiak & Feeney, 2017) have been extensively investigated across the years.

Recent research has broadened the scope of individual differences research and investigated cultural differences (Schirmer et al., 2023; Sorokowska et al., 2021; Suvilehto et al., 2019), as cultural differences have explored the question of how faith interacts with these factors is has briefly been touched on (Sorokowska et al., 2021) but not explored fully with present-day religious individuals factored in. To this end the developments of this thesis can be divided into four major themes; Understanding of relgious based individual differences; Faith based attitudes towards touch based on emotional closeness; Attitudes towards touch based on types of touch; and Attitudes towards touch based on situational context.

The first two data chapters address the first theme by incorporating secondary data analysis of global open-access data sets from the Touch Test (Penton et al., 2022; Dueren et al., 2022; Vafeiadou et al., 2022) (Chapters 3 and 4) along with follow-up primary data investigations (Chapter 3). These chapters targeted this gap in the literature surrounding people of faith, investigating whether there were differences in religious and non-religious individuals' attitudes and experiences of touch, spanning from childhood associations to current attitudes on intimate touch, and self-care to touch within public and treatment settings. The latter chapter (Chapter 4) also addresses the second theme through its use of the Touch Test data to investigate how these differences translate onto the comfortability of topical touch from other individuals (varying in emotional closeness to the participant). New data collected for the last empirical chapter (Chapter 5) addresses the third and fourth themes together. This chapter investigates how the affective touch attitudes and experiences targeted within the earlier chapters change within adverse situations in life i.e. bereavement and grief. Each chapter addressed the following specific questions:

1. Do individual differences in touch attitudes exist between religious and non-religious individuals?

2. Do individual differences in touch attitudes exist between different monotheistic religious groups?
3. How does an individual's comfortability with topical touch differ based on the individual touch is shared with?
4. How does grief affect touch attitudes?
5. How does grief affect the desire for touch?
6. Can attitudes towards touch be predicted by religiosity and time since the loss of a loved one?

The key findings of the thesis are summarised in this chapter. The implications of these findings are considered and what this means theoretically for theories of affective touch as well as practically for social, work and healthcare settings are outlined. Critical evaluation is offered where appropriate and suggestions for future research are offered.

Summary of findings

Chapter 3: Do individual differences in touch attitudes exist between religious and non-religious individuals?

As noted above, attitudes towards affective touch differ based on several factors that shape how we interact with the world around us. The inclusion of religion in past research surrounding affective touch has most often been combined with findings collected from non-western cultures, a pattern which has become increasingly outdated since the increase in the number of religious individuals across the globe (including the West) (Grim, 2014; Madni et al., 2022). Chapter 3 took this into account and examined whether individual differences between religious and non-religious groups exist within affective touch attitudes, looking exclusively at UK individuals who participated in the Touch Test. In the first study of chapter three, it was found that individuals who aligned themselves with a religious faith exhibited a greater positive attitude towards touch. These findings

of greater positive attitude towards touch were prevalent in all three of the scales used to understand touch attitudes across a variety of situations that individuals will experience; the Touch Experiences and Attitudes Questionnaire, Social Touch Questionnaire and the Touch in Health Scale.

Touch Experiences and Attitudes Questionnaire

The findings from the Touch Experiences and Attitudes Questionnaire (TEAQ) show that religious groups had a significantly more positive attitude towards touch that was related to family and childhood. Touch related to self-care was also found to be significantly more positive with the religious groups compared to the non-religious group. These findings can be explained by the strong communal aspect of religious practices as well as the emphasis placed on the sanctity of one's body within faiths (1 Corinthians 3:16, New International Version; Al-Infitar, 82:7-8; As-Sajdah, 32:7) . These findings highlight that in general touch attitudes measured here are positive, as no group was found to have a low score on the TEAQ, but specifically that the religious individuals had a more positive attitude in comparison to the non-religious group. These results in totality suggest that religious groups are more positive in their attitudes towards affective touch compared to non-religious counterparts, which is not in line with past literature. As mentioned above, research that has investigated the intersection between religion and touch has associated religious groups with negative attitudes towards touch due to prior connections between religious groups and conservative political values (Malka et al., 2012; Sorokowska et al., 2021). This may be due to sexual touch being the primary form of touch investigated when incorporating religion and therefore informing assumptions of religious groups. Findings here, however, are broadening the scope of touch previously studied by investigating multiple forms of affective touch and looking at religious individuals comparatively with non-religious individuals who reside within the West. The attitudes measured in this scale touch on both retrospective and current touch events, highlighting that an individual's religious affiliation may play a role in the formulation of these stable attitudes.

Social Touch Questionnaire

The significant difference between religious and non-religious groups found within the Social Touch Questionnaire (STQ) existed specifically in attitudes towards the Liking of Public

Physical Touch. Religious participants had a significantly lower score than the non-religious group indicating a greater positive attitude towards public physical touch. Similar to findings from TEAQ analysis this can be explained by the strong communal element within many religions. Past studies have found that repeated exposure to stimuli can affect an individual's attitude and perception (Grizzard et al., 2017; Gurr & Metag, 2022), therefore the greater positive attitude could also be attributed to the greater likelihood that religious individuals are more exposed to affective touch publicly; as many faiths facilitate weekly communal gatherings, Sunday church services for example.

Touch and Health Questionnaire

As with the TEAQ and STQ, significant differences were found that indicate a greater positive attitude towards touch in health and treatment settings from religious individuals compared to non-religious individuals. This difference was specifically found in the Communication Facilitation via Touch subscale indicating that religious individuals are more open to touch from and within healthcare settings from a healthcare provider. With the emphasis on the sanctity of the body apparent in many faiths, religious individuals may be more accustomed to and willing to engage in treatments. The finding within the TEAQ scale highlighting the religious individuals' greater positive attitudes toward self-care compliments this finding, if an individual has a more positive attitude towards self-care they are likely to be more open to communication facilitation via touch when engaging in tactile treatments. This connection seen here between subscales on the THS and TEAQ supports findings from prior research on touch attitudes, specifically the findings from the paper that introduced the THS scale (Vafeiadou et al., 2022).

While these findings suggest that it is clear there is a religious component to be understood when it comes to individual differences in touch research, there are many further possibilities future research should take here. Future studies aimed to investigate how consistent these differences remain within specific religious populations themselves and whether this difference remains when controlling for an individual's level of practising (religiosity).

Chapter 3: Do individual differences in touch attitudes exist between different monotheistic religious groups?

The first half of chapter 3's opening study provides strong evidence that an individual's religious standing can affect an individual's attitude towards touch. Despite the strength of this finding, the religious cohort used in the study primarily consisted of Christian participants. Other religious minorities were not sufficiently represented in this study. Each religious group will not have the same general experience as one another. Some religious groups, within the West, can be seen specifically as a minority group and therefore may be subject to experiencing what is termed "minority stress". Minority stress is studied to understand the detrimental effects of social stigmatisation and prejudice on members of a minority group (Meyer, 1995). The breadth of research has utilised this model to better understand the LGBTQIA+ community (Hesse & Floyd, 2024; Hoy-Ellis, 2023; Meyer, 1995). The conditions an individual experiences to be under minority stress include stigma, prejudice, and discrimination. All three conditions are also prevalent for religious minorities, such as individuals belonging to the Islamic faith. These experiences of minority stress will then inevitably impact their attitudes. Therefore it is imperative that when investigating potential religious differences, minority groups are looked at separately too.

To start addressing this the latter half of chapter 3's first study looks into whether individual differences exist within different religious groups. Specifically between the two largest faiths in the UK, Christianity and Islam. Islam was chosen to be studied here due to the substantial rise in the number of Muslims globally (Gusciute et al., 2021; Lugo et al., 2011; Wormald, 2015) coupled with the rise in discrimination experienced by this minority (Abbas, 2020; Awaad et al., 2024; Hailes & Tummala-Narra, 2024; Tineo et al., 2021) which falls into the category of minority stress. This study broadened the understanding of faith-related individual differences and aimed to begin bridging the gap in misunderstanding of groups that have been subjected to negative imagery. Using the Touch Test data UK Christian and Muslim participants were matched on age and gender. Due to the smaller number of Muslim participants, the matching procedure led to a reduction in participants. The findings in this study did not produce significant differences across all three affective

touch-related scales. Significant differences were only found in the Social Touch Questionnaire with Christian individuals exhibiting a greater positive attitude toward touch in social settings, this difference was prevalent across all three subscales; Dislike of Physical Touch, Liking of Familiar Physical Touch and Liking of Public Physical Touch.

The sample for the second study within Chapter three, investigating differences between Christians and Muslims within the Touch Test sample, lacked power due to its smaller sample size, additionally, the sample used did not account for how religiously practicing the individuals were, though matched on age and gender, religiosity data was not available. The follow-up study conducted to further investigate whether individual differences in touch attitudes exist between different monotheistic religious groups also took religiosity into account when matching participants. Findings of the final study for chapter 3 found that Christians and Muslims did not differ significantly on the Touch Experiences and Attitudes Questionnaire and the Social Touch Questionnaire. However, differences were observed in the Touch in Health Scale (THS) with the Christian participants indicating a more positive attitude towards *Comfort with Touch in Medical Settings* and *Engagement in Tactile Treatments* compared to the Muslim participants. These findings will be linked to factors that minority groups often deal with such as prejudice and discrimination. Recent research has highlighted the extent to which Muslims experience systemic discrimination and prejudice within the healthcare systems of the West has led to an aversion to engagement with healthcare treatments (Samari et al., 2018; Younis & Jadhav, 2020).

By combining the findings from all three studies, this chapter suggests several new inferences that should be taken into consideration when conducting future research that aims to understand not only touch and faith but culture and individual differences as well. Religion should be included in individual differences research and be incorporated into research based on the practices of the faith, how religious individuals and groups interact within society and the level of practicing an individual instead of working from outdated assumptions. The findings of this chapter oppose inferences made about religious groups in past studies(Carney et al., 2008; Burdette & Hill, 2009; Malka et al., 2012; Sorokowska et al., 2021). Past research has rarely touched on religion's role in affective touch attitudes but where it has, it has been categorised as a cultural-level factor

(Sorokowska et al., 2021), this chapter found that religion can be seen as an individual-level factor given that there were multiple significant differences found between religious groups as well as between religious and non-religious groups. The findings described above also directly oppose the assumptions made in research that religiosity would be negatively associated with affective touch. Where less positive assumptions have been reported it can be explained through minority experiences of prejudice and discrimination.

It is not entirely clear to what extent religiosity can affect an individual's attitude towards something as frequent and essential as touch, therefore future research should consider investigating on a larger scale how religious faiths and individual religiosity levels influence our attitudes towards touch to deepen the understanding not just for the general religious population but for other minority faiths too. A deeper understanding will help societally bridge gaps of misunderstanding, help improve interactions between individuals from different backgrounds and inform boards within healthcare and treatment settings.

Chapter 4: How does an individual's comfortability with topical touch differ based on the individual touch is shared with?

In addition to the studies reported above in Chapter Three, the thesis also investigated whether an individual's faith impacted their comfortability with touch on the body depending on the region (intimate or non-intimate) and individual administering touch (stranger, friend or partner). It was observed in the previous chapter that overall religious groups have a more positive attitude towards touch compared to the non-religious group. But whether these attitudes translate topically onto the body is less understood but equally as important since it is well-known that interpersonal touch is essential for social communication (Cascio et al., 2019; Crucianelli & Filippetti, 2020; Gallace & Spence, 2010). The literature surrounding topical touch has found evidence to suggest emotional closeness, gender and culture are significant factors in whether an individual is comfortable with touch on their body from another individual (Bellard et al., 2023; Cazzato et al., 2021; Schirmer et al., 2023; Suvilehto et al., 2015, 2019; Tomita, 2008). In line with the aims of the previous chapter, chapter 4 investigated whether an individual's subscription to religion also plays a

role in whether an individual feels comfortable with touch topically on their body. Three touch comfortability body maps were extracted from Touch Test data; touch from a stranger, friend and partner. Participants were asked to envision either touch separately from two individuals, their friend (or partner if they had one) or a stranger and then indicate where on the body they liked or disliked being touched. The areas were separated into intimate and non-intimate regions.

Comfortability of touch on the non-intimate regions of an individual's body was found to be greater than touch on intimate regions of the body when touch was envisioned from partners and friends, but not strangers. The results of this chapter found that, when considering touch from their partner, there were significant differences between religious and non-religious individuals in their level of comfortability with touch on their body. Non-religious individuals showed greater comfortability with touch on their body from their partner compared to religious individuals. The findings of this study differ from what the prior chapter found, where religious individuals may have a more positive attitude; this does not mean they are accepting of touch on the body more than non-religious individuals. Also highlighted in the findings of this chapter is what can be described as a common consensus that there are areas of an individual's body where touch is generally not accepted, regardless of closeness to the individual. Touch from partners and friends was both found to be significantly more comfortable on the "non-intimate" regions of the body compared to "intimate".

This study, similar to the first study of Chapter Three did not effectively take into account religiosity, data on whether these individuals were practising and knowledgeable about their faith was not available at this time. Additionally for this chapter, the type of partner was not disclosed ie. whether the partner was a boyfriend/girlfriend, someone they are cohabitating with, their marital partner, long term or short-term partner. We know that affective touch linked to romantic partners is associated with improved well-being (Debrot et al., 2013, 2021) and therefore the level of emotional closeness within a relationship is likely to have a role that should be included in research understanding individual differences in touch. Therefore these findings should not be taken alone and rather used as a springboard for future research investigating religious individual differences. Future studies should aim to identify several factors that will aid in the explanation of how religion

can play influential roles in an individual's level of comfort with topical touch ie; the level of understanding an individual has of their faith, the level at which an individual is practising their faith, the level an individual along with known factors such as gender, attachment and the type of partner the participant is envisioning.

Chapter 5: How does grief affect touch attitudes?

In addition to studies investigating whether individual differences exist through a form of religiosity, this thesis contributed to a growing body of research that has looked at how affective touch can impact how individuals experience and deal with difficult life moments, specifically grief and bereavement. The vitality in understanding how grief impacts touch attitudes and desires is tied to the research that highlights touch's positive impact on symptoms associated with immense and prolonged grief. Loneliness is a factor strongly associated with prolonged grief that is also a risk factor in serious health conditions (Henriksen et al., 2023; Pitman et al., 2020; Reiland et al., 2021; Valtorta et al., 2018; Vedder et al., 2021).

Loneliness is also a feeling that has frequently been associated with a lack of touch (Bu et al., 2020; Heatley Tejada et al., 2020; Li & Wang, 2020; McKenna-Plumley et al., 2021; Noone & McKenna-Plumley, 2022). As expressed throughout the thesis, touch plays a vital role in non-verbal communication essential in social interactions and social cohesion (Jablonski, 2021; Yu et al., 2022). During times of grief and bereavement, the need for social support is unwavering and a common way we provide such support is through affective touch (Breen, 2020). The first section of this chapter investigated the way context (grief) can influence our attitudes towards touch. Utilising the same questionnaires used in previous chapters (Touch Experiences and Attitudes Questionnaire, Social Touch Questionnaire and the Touch in Health Scale) this analysis looked at touch attitudes in two different contexts, recent grief and distant grief.

The findings of this analysis did not find evidence for a difference in attitudes towards touch based on context. Whether this could indicate that touch attitudes are durable over time and resistant to contextual factors (such as experiences of grief) would be a worthwhile facet to

explore. This would be interesting to explore given the findings that discuss contextual factors in how individuals experience affective touch. Recent reviews have highlighted a number of contextual factors that range from who is administering touch to where and when touch is administered to situational factors similar to the one addressed in this chapter (Saarinen et al., 2021; Suvilehto et al., 2023). These reviews however did not address how these factors may affect touch attitudes and therefore have not investigated the strength of touch attitudes.

Future research on touch attitudes and distressing contexts such as grief should look further at the intricacies of grief experienced, whether the loss experienced was sudden, the result of a terminal illness or with someone emotionally close to the individual. In addition to this, it would be beneficial to assess whether the touch attitude is strong in relation to the participants, the degree to which individuals have a positive or negative attitude towards touch must also be understood in terms of its strength. This is because an attitude strength can be in part defined by how durable it is, a recent review paper outlined a handful of factors that could impact an attitude strength such as the strength of conviction in which an attitude is held (certainty); how the attitude was formed and how much thought went into the formulation of the attitude (elaboration) and to what degree an individual cares about that particular attitude (importance) (Luttrell & Sawicki, 2020). Therefore though the finding of this analysis was not statistically significant the future directions of this research are significant.

Chapter 5: How does grief affect the desire for touch?

The second analysis investigated how grief can impact an individual's desire for touch. As mentioned previously a common way in which people console the bereaved is through affective touch. It is also well known within past literature (Suvilehto et al., 2015, 2019) and through the findings of chapter 4 that the emotional closeness of the person administering touch (ie. the emotional closeness of the individual) plays a role in how comfortable an individual is with touch. This analysis looks at how the desire for touch changes depending on when the touch occurred

(during grief or an everyday circumstance) , the type of touch and the emotional bond between the individual and the toucher.

This analysis found significant differences in desire for touch based on the context in which touch was experienced. These results complement findings in recent reviews on how context can influence the effect of affective touch (Saarinen et al., 2021; Suvilehto et al., 2023). These papers have highlighted that in the context of psychological distress or negative situations, touch can have a comforting function (Saarinen et al., 2021; Suvilehto et al., 2023). In relation to the study here, Saarinen and colleagues referred to a study (Kraus et al., 2019) whereby affective touch from a partner provided comfort when having to go through the psychological distress of looking at an image of a recently passed loved one. The findings of this analysis are complimentary as it was found that individuals *desired* affective touch more during moments of grief compared to everyday situations.

Similar to studies investigating gender differences (Beßler et al., 2020; Miller et al., 2014) the findings here also showed gender differences, specifically that touch from a woman was desired more than touch from a man within each subsect of an individual type, except strangers. Within the wider literature surrounding gender differences in affective touch, women have been found to be rated as more affectionate, trusting and composed than men (Russo et al., 2020). This may explain the greater indicated desire for touch from a woman. However, many gender related differences addressed in review literature cannot be applied here as the *gender of the participants* was not taken into account. Meaning where the research suggests women are more open to touch from others, including strangers (Russo et al., 2020), the analysis here cannot concur this. The gender of a participant and therefore whether the touch is between same-gender or different gendered individuals should be included in future research; particularly when incorporating religious individuals. Prominent faiths such as Islam hold regulations on touch between those of opposing genders, this may have a significant impact on an individual's desire for affective touch in general as well as during moments of grief.

In addition to gender findings, there were significant differences in the types of touch desired during moments of grief. Individuals preferred specific forms of affective touch more when

in grief; more intimate forms of affective touch such as kisses were not desired more whereas hugs and holds were, these findings add to the clear distinction made in the previous chapter that attitudes towards touch do not directly map onto topical touch. The previous chapter highlighted differences between comfortability with touch on intimate and non-intimate regions of the body, these can be linked to the types of affective touch assessed here. Hugs and hold for example will encapsulate touch in non-intimate regions whereas a kiss is more often shared in intimate regions.

Similar to studies investigating the role of emotional closeness in comfortability of touch the results of this analysis indicate that the closer the relationship between toucher and touched, the more touch was desired during moments of grief. The preference for specific individuals may be associated with feelings of vulnerability associated with grief (Machin PhD et al., 2015; Sim et al., 2014) meaning individuals desire the comfort that comes with affective touch more from people they are close to because these are more likely to be individuals they can open up to.

Future research could build on this by understanding what happens on a neural level when an individual engages in affective touch with another person, and whether the brain responds differently to touch from a person who is close to you vs a stranger or even a healthcare provider.. Functional near-infrared spectroscopy (fNIRS) is a neuroimaging technique that allows more free movements by participants. Therefore it would be a prime technique to use when investigating natural social interactions such as affective touch.

Studies using fNIRS have shown that a bond between two individuals can create neural synchronous activity when engaging in a shared activity, such as discussion or learning (De Felice et al., 2023; Pinti et al., 2020, 2023; Zhao et al., 2024). There is yet to be research that has looked at whether this connection exists within interpersonal social touch. To understand what happens on a neural level future studies should utilise these to allow researchers to understand interpersonal touch in real time. What happens in the brain when two individuals hug and does this differ depending on the closeness of the individual and the context in which they are living? Such research will help expand our understanding of the brain during social interactions.

Chapter 5: Can attitudes towards touch be predicted by religiosity and time since the loss of a loved one?

The final analysis of chapter five looked at whether attitudes towards touch could be predicted by an individual's religiosity and the presence of grief. Both religiosity and time since the loss of a loved one were not predictive of an individual's attitude towards touch when considered alone. When combined with age and gender, the models were found to be statistically significant in predicting STQ and THS attitudes towards touch. The model for the prediction of attitudes towards touch in a healthcare setting (THS) showed age to be the only significant predictor. The model for prediction of attitudes towards social touch (STQ) showed gender to be the only significant predictor. This supports previous findings on gender differences in touch but also supports the findings in the previous analysis where there was a clear gender divide in the desire for touch from males and females of varying closeness. As suggested above in future studies when understanding touch attitudes, consideration should be given to the strength of the attitude, this may affect the attitude's durability over time and circumstance and therefore in predictive models should be considered too.

Implications

The findings of this thesis relate to a greater call within research to expand our understanding of individual differences. The benefits of this research can be applied to touch based interventions within professional sectors such as treatment settings and the workplace.

Though this thesis placed a greater focus on understanding individual differences that arise from faiths, primarily Christianity and Islam, other faiths' preferences for touch remain misunderstood due to a lack of explicit research. The implications of this research highlight two seemingly opposite things; 1. Religious and non-religious groups are not that different in their attitudes towards touch in many circumstances, especially when relating to strangers and touch on the body and 2. Differences between religious and non-religious groups exist, but both groups

remain positive in their attitudes. Additionally, the differences observed show religious groups as more positive and these findings are likely linked to the overall communal nature that is strong within religious communities rather than past inferences that suggested negative associations due to conservative values (Sorokowska et al., 2021). In an era of increased religious discrimination, the implications of these findings allow not only researchers but also the public to begin to disassemble their prior judgements.

Theoretically, many of the findings within this thesis align closely with the existing theories surrounding affective touch, specifically Kory Floyd's Affection Exchange Theory (Floyd, 2015). The findings of this thesis specifically affirm the third and fourth postulate; affectionate communication is adaptive with respect to human viability and fertility and humans vary in their optimal tolerances for affection and affectionate behaviour, respectively. In both studies of chapter three, results could be explained by the third postulate, for the ability to survive successfully as a marginalised group there must be some form of adaptive affective touch, whether that is friends and family touch or intimate touch. Chapter 3 found significantly more positive attitudes towards touch in these subscales within the religious group. The results of chapters four and five are explained primarily through the fourth postulate. Both chapters found differences either in the degree of comfortability or the degree of desire, alluding to their tolerances. Chapter four affirmed a topical tolerance for touch whereas chapter five affirmed tolerance for touch in the form of desire for touch based on emotional closeness and context of the situation in which touch occurred.

Before the thesis is concluded it is important to make note of the importance of effect size over significant p-values, when our studies exhibit extremely large sample sizes. When samples are as large as the ones used in the early chapters of this thesis it is “easy” to achieve statistical significance; effect sizes are able to tell us more about the greatness of the differences observed. Some of the earlier findings (see Chapter 3) of significant differences between groups may have only been detectable due to the larger sample sizes, as the effect sizes reported were often small. This means for any replications of the early studies, another large sample will be required in order to have enough power to observe this difference again. A small effect size however does not

indicate a lack of importance in findings and any interpretation must be made within the context of the research.

Conclusions

Affective touch plays a significant role in multiple areas of human life and is a role that starts from the day a human is born and ends when an individual passes away. How every individual experiences, feels and desires touch will vary based on multiple factors, this thesis primarily focuses on advancing our understanding of how faith and religiosity can affect these experiences, feelings and desires towards affective touch.

In summary, this thesis has investigated facets of individual differences in affective touch research that have been misunderstood for decades and therefore the findings of this thesis both advance the understanding of religious differences in affective touch attitudes across contexts and modalities and challenge past assumptions. This thesis also adds to the literature on how affective touch can be beneficial in difficult times and helps guide on the forms of touch that are the most desired. The contribution of the work presented can be summarised into four themes that link together throughout the thesis:

1. Updates in individual differences in understanding
2. Touch differences taking into account emotional closeness
3. Touch differences taking into account touch type
4. Touch differences taking into account context

The developments in understanding individual differences in touch can be linked to how contexts may affect these attitudes. Within chapter three for example the results showed that Muslims had less positive attitudes towards touch in specific contexts. Context, touch type and emotional closeness are linked, how the context affects your desire for touch will be associated with what the touch is and who is giving the touch. This is evident throughout the thesis in findings in the third, fourth and fifth chapters. Touch type can be linked to developments in individual

differences based on the findings of both Chapter 3 and Chapter 4. Both chapters assessed touch in a way where different types of touch are alluded to.

To conclude, each study presented here has resulted in valuable additions and challenges to the field of affective touch and offers interesting possibilities for future research.

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