Male Body Image in Real and Virtual Environments

by

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Abstract

Physical appearance concerns are of interest to mental health professionals because of their association with a range of negative psychosocial outcomes and unhealthy body change strategies. Appearance concerns are particularly disruptive when they are potentially concealable, thus encouraging the adoption of unhealthy social avoidance strategies. The present study examined the relevance of appearance concerns to men’s online social interactions. The study was motivated by the increased use of the Internet as a medium for social interactions; by recent technological advances that have allowed sophisticated body analogues, or ‘avatars’, to be created and used by individuals online; and by the opportunity provided by the online environment to conceal one’s actual appearance from others. In Study 1 an online survey was used to measure body image of 131 men aged 18 to 68 years (\(M=33.12, SD=12.06\)) in terms of self-reported actual and ideal body weight and muscle, as well as the estimated weight and muscle of their avatar. These body dimensions were compared to men’s self-reported drive for thinness and musculature, and to their levels of anxiety, stress, and depression, as well as their, self-esteem, social interaction anxiety and social phobia separately for their real-world interactions and online interactions. The results indicated that men’s ideal body image was characterized by higher levels of muscle and lower levels of body fat than the actual body image. Furthermore, men’s avatar body image had higher levels of muscle and lower adiposity than their ideal. Additionally, virtual world self-esteem was found to be higher than real world self-esteem, and levels of social interaction anxiety and social phobia were lower in the virtual world. Hierarchical regression analysis revealed that the disparity between men’s actual weight and their avatar’s weight explained additional variance to
participants’ drive for thinness. Furthermore men’s self-esteem in the virtual world was able to explain additional variance in participants’ stress and men’s virtual world social phobia was able to explain additional variance to participants’ anxiety and stress. Study 2 extended Study 1 by measuring the subjective importance of appearance versus competency (i.e., their self-objectification) separately for the physical body and the avatar of 133 male participants were recruited for this study with a mean age of 34.09 years, ranging from 18 years to 62 years ($M=34.17$, $SD=11.02$). An important aspect of this study was the inclusion of a qualitative component in which open-ended questions were used to explore the meaning of the avatar, as well as the importance of the avatar’s appearance to participants. Study 2 replicated the difference between actual, ideal and avatar weight and muscle.

Hierarchical regression analysis revealed that additional variance was explained for avatar muscle mass in men who were dissatisfied with their muscle levels in real life, and objectified appearance in the virtual world. As Study 2 provided limited evidence that the avatar is relevant to men’s body image, a qualitative analysis was conducted to explore if the avatar was irrelevant to men’s body image or if it is only relevant to a particular group of men. The qualitative results suggested that men create their avatars either as tools to assist in game play, as a reflection of themselves or as a reflection of their ideals. Furthermore, appearance of the avatar was important to the majority of individuals across all categories, albeit, for different reasons. Given the disparity between the groups, it is likely that the avatar has different means to different individuals. The avatar appears to have some predictive properties of real world psychological functioning and body image. The diagnostic relevance of the avatar is something that still requires further exploration and identification. Participants create avatars for different reasons, and while some may create avatars as a compensatory
tool for appearance concerns the majority of avatar users likely do not fit into this category. Context is an important area of avatar use that needs more exploration in future studies.
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PREAMBLE

In modern society there are pressures to conform to unrealistic standards of appearance from a ‘tripartite’ of sources: media, peers, family (Keerya, van den Bergh, & Thompson, 2004; Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999). These pressures can have a range of psychological and behavioural consequences ranging from appearance concerns, low self-esteem, anxiety, social phobia and depression (Coles et al., 2006; Grabhorn, Stenner, Stangier, & Kaufhold, 2006; Olivardia, Pope, Borowiecki, & Cohane, 2004) through to disturbed body image and potentially unhealthy body-change behaviours (Derenne & Beresin, 2006). The focus of the literature has been on women and eating disorders (Grogan, 2008), but recently research has begun to explore body image in men. This research has discovered that not only do men report significant concerns with their appearance, but that these concerns can take the form of a drive for thinness and/or a drive for masculinity and physical bulk, which is a motivation, desire or engagement in activities that will achieve such a state (Hobza, Walker, Yakushko, & Peugh, 2007; Rydgeway & Tylka, 2005). Drive is defined as the desire and motivation. In the present thesis, drive for thinness and masculinity in men will be investigated in the online environment. The general rationale is that online social interactions have increased in popularity since the advent of the Internet, yet body image research has tended to neglect the relevance of appearance online. Perhaps the reason for this is that although modern online interactions have a visual component (i.e., they are no longer purely text-based), most representations of the body online take the form of body analogues, or ‘avatars’, that can deviate significantly from one’s actual body dimensions (Chan & Vorderer, 2006). And if one’s online body (i.e., avatar) is unlike one’s actual body, then it is probably irrelevant psychosocially.
In the present thesis, this common sense assumption will be challenged on the basis that the physical dimensions of avatars that men create online may reflect an attempt by these men to cope with their appearance concerns. If the avatars of some men represent an effort to conceal or compensate for real or imagined appearance concerns, then avatars may indeed be psychosocially relevant. In developing this argument, it will be necessary to go beyond the traditional body image literature – this literature has focussed on dimensions of appearance that are not easily concealed in real life interactions with others. Therefore, the present thesis will discuss how individuals manipulate social interactions in order to manage their concerns about themselves, but focus in how they manipulate their online appearance to manage such concerns. ‘Master status conditions’ are aspects of an individual that culture defines as atypical (Crocker et al., 1998). Importantly, a master status condition can be non-visible or, if visible, concealable (Frable, Blackstone & Scherbaum, 1990; Frable, Platt & Hoey, 1998). The literature review will focus on the consequences of attempting to conceal master status conditions, particularly those that are related to appearance, and will introduce the possibility that the online environment represents an under-investigated context in which the consequences of appearance-concealment may be highly prevalent and psychosocially relevant.

This review will conclude with the outline of a study that is designed to explore the nature of the relationships between self-reported severity of appearance concerns, strategies used to moderate social interactions in virtual environments, or worlds, in an attempt to conceal these concerns (e.g. the creation of physically-idealised e-Bodies in the form of online avatars), the psychosocial factors that contribute to the use of these strategies, as well as the psychosocial consequences of their use. These studies will examine the association between participants’ real, ideal
and avatar body image in terms of muscle and weight. Furthermore these studies will examine whether the creation of the avatar's body dimensions are associated with dysmorphic concerns, internalisation and objectification of body image appearance, and other psychosocial factors such as stress, anxiety and depression. A series of qualitative questions will also be used to examine the meaning of the avatar to participants and explore the importance of avatar appearance to them.
CHAPTER ONE

Master Status and Body Image

Chapter Overview

Chapter 1 provides an overview of master status and its relationship to body image as outlined in the literature. The rationale for providing this review is that the consequences of concealing master status, as documented in the literature may be relevant to men who use avatars, especially in terms of concealability and management of master status conditions. The idea is explored that the avatar can potentially be an avenue for individuals with appearance concerns and physical master status conditions to interact with other individuals over the Internet without concern relating to the discovery of their concealable master status condition.

Master Status

A master status condition is any attribute of an individual that is of cultural significance and that defines them as an outlier (Crocker et al., 1998). The attribute can be negative or positive as defined by the values and ideals of society. In some cases a master status condition is considered, by the person with the master status and/or those who interact with them, as so significant that all aspects of the person are only interpreted through the master status condition (Frable et al., 1990; Goffman, 1963). Negative master status conditions that are physical, and which are experienced as appearance concerns, are of particular interest in psychology because their presence is associated with poor psychosocial outcomes such as low self-esteem, anxiety,
social phobia and depression (Coles et al., 2006; Grabhorn et al., 2006; Olivardia et al., 2004).

Furthermore, individuals with appearance concerns can take extreme and potentially hazardous measures (e.g. disordered eating, cosmetic surgery, etc...) (Derenne & Beresin, 2006) to minimise the social impact of their perceived condition which can in turn have negative psychological consequences. For example, there is evidence to suggest that the extent to which an appearance concern can be concealed, and the strategies employed to achieve concealment, are important determinants of the psychosocial impact of the concern (Frable et al., 1990; Frable et al., 1998). In the present thesis, the literature examining the differential impact of visible versus concealable concerns will be reviewed. The focus of this review will be on concealment of appearance concerns, particularly concerns involving body image, social interactions that take place in virtual environments and visual representations of individuals on the Internet. Such interactions have increased in popularity since the advent of the Internet and they offer new opportunities for individuals to manage appearance concerns in ways that may be psychologically beneficial or, conversely, detrimental.

**Self-Perception among the Individuals with Negative Master Status Conditions**

Due to the range of both positive and negative reactions towards people who possess a master status, it has been theorised that it can affect individuals’ self-perception negatively (Frable et al., 1998). A master status differs from a stigma in the fact that a stigma represents and emphasises the discrimination and undesirable aspect of possessing a negative master status condition. A stigma is an attribute,
behaviour, or reputation which is socially discrediting in a particular way; it causes an individual to be mentally classified by others in an undesirable, rejected stereotype rather than in an accepted, normal one (Crocker et al., 1998). Therefore a master status condition can be internal or an explicit external attribute. A person with a negative master condition may not necessarily be stigmatised, but still be preoccupied with controlling their disclosure of it to prevent such social discrimination from occurring.

Having a stigma can lead to highly negative psychosocial issues such as increased risk of suicide among homosexual teenagers (Rotheram-Borus, Hunter, & Rosario, 1994; Savin-Williams, 1994), higher rates of depression and suicide amongst cancer patients than the general population (McDaniel, Musselman, Porter, Reed, & Nemeroff, 1995) and increased psychological distress in individuals from lower socio-economic standing than individuals from higher socio-economic standing (Belle, 1990; Kessler, House, & Turner, 1987). In contrast, research indicates that people who have more visible stigmas tend not to demonstrate these same patterns of negative self-evaluation, leading to a reduction in the possible psychosocial consequences (Frable et al., 1998).

When individuals are among group members who share the same stigma, they are more likely to receive positive reactions and evaluation of themselves than they would from non-group members (Frable et al., 1998; Jones et al., 1984; McConnell, Rydell, Strain, & Mackie, 2008). Being part of a group with similar members allows for the individual to receive moral and social support as well as providing a buffer from the possibly negative reactions of non-group members, enhancing their defences against any possible negative self-evaluation and conformity to the views of non-group members (Frable et al.; Goffman, 1963; Mest, 1988; Padden & Humphries,
1988). Furthermore the disclosure that occurs within social groups serves to strengthen the ties between the members and promotes the formation of identity of the group and its members (Galegher, Sproull, & Kiesler, 1998). Yet remaining among others with similar negatively evaluated master status conditions is not enough to manage the possible psychosocial consequences in day to day interactions.

The Management of Master Status Conditions

Ample research exists demonstrating that individuals with appearance concerns and physical master status conditions endeavour to consistently manage social interactions and relationships to minimise the impact of their concerns (Smart & Wegner, 1999). These efforts, and the strategies employed, depend in part on the extent to which the physical site of the concern is visible versus concealable (Frable et al., 1998). What is surprising, however, is that concealable sites of concern often lead to poorer psychosocial outcomes than visible sites of concern, due to the strategies employed by the individual to manage their concerns (Frable et al., 1990; Goffman, 1963; Lane & Wegner, 1995; Leary, 1995; Smart & Wegner). In a recent study conducted by Lawrence, Rosenberg and Fauerbach (2007), paediatric burn survivors were compared to an aged match sample in order to establish whether their levels of body esteem differed. It was found that the male burn survivors did not significantly differ, on average, from their control group in terms of body self-esteem. Furthermore, it was found that the female burn survivor group actually had higher body self-esteem in comparison to their control group (Lawrence et al.). This is likely due to the inability of the participants to hide their condition.
In contrast, other studies have shown that people who have reconstructive surgery on their face or neck following cancer treatment have strong negative psychosocial consequences, such as a negative perspective regarding their appearance, lower self-esteem, higher levels of distress and feelings of being less attractive than before (Moadel, Oestroff, & Schantz, 1998). Body concerns regarding the face are especially salient considering it is often seen as the vehicle through which one expresses their personality and their inner selves (Callahan, 2004). In order to deal with such an affront to their sense of identity, it has been theorised that many cognitive mechanisms must be employed (Callahan).

The stress-coping model describes a range of cognitive, emotional and behavioural elements which can be split into emotional-focused coping and problem-focused coping which manifest as behavioural outcomes (Scott, Oberst, & Dropkin, 1980). The disfigurement to the face and neck is considered a threat to the individual's sense of self identity and therefore in order to adapt the individual must go through the stages of confronting their issues. They must accept these issues and redefine their sense of self (Scott et al.), representing a further removal from their ideal self than before (Higgans, 1987). The main behavioural task needed to help the individual come to terms with their appearance, and thus facilitate self-image reintegration, is social interaction (Scott et al.). This is much like an individual exposing their master status to others. The issue of applying the stress-coping model is that it only focuses on management of body specific master status conditions which have resulted due to an incident in their life, specifically the surgical treatment of neck and facial cancer as well as the short term adjustment issues. Thus it does not necessarily explain coping methods used in the longer term (Newell, 2000), or for people who were born with a physical master status condition.
Social Interactions involving Concealable versus Visible Concerns

Much of the research relevant to the understanding of social interactions involving people with negative master status attributes has been conducted in the context of non-physical negative attributes, such as homosexuality and race. Due to the possibility that some physical master status conditions can be concealed it has been an area of interest to many researchers. Studies have been conducted on the different psychological effects resulting from interactions in cases where physical master statuses are visible and when they are hidden, such as a study conducted by Frable et al., (1990) in which the researchers sought to examine the effects of master status conditions in social interactions. In this study individuals who possessed a master status attribute were paired with people who did not. These pairs would be placed in a room for five minutes and their interactions were recorded. After the five minutes, the pairs were separated and asked to relay back what they remembered from the encounter.

It was found that individuals who possessed obvious and visible master status conditions focused primarily on the room in which the interaction took place and the appearance of their partner. In contrast, those who had concealable master status conditions recalled more of the conversation, such as what their partner said and were able to take their partner’s perspective (Frable et al., 1990). This is significant as it suggests that individuals with concealable master status attributes play closer attention to the conversation in order to better control it and prevent anything which may cause their master status to be revealed. Conversely those with visible stigmas acted as if the
interaction was undermined from the outset and paid little attention to the
closest conversation (Frable et al.; Jones et al., 1984).

This constant monitoring and management of conversations by individuals
who have a concealable master status has been well tested and documented and it has
been demonstrated that constant and mentally draining cognitive effort is required to
maintain this (Frable et al., 1990; Goffman, 1963; Lane & Wegner, 1995; Leary,
1995; Smart & Wegner, 1999). Not only does an individual with a concealable master
status have to ensure the path the conversation takes fails to draw near a point of
disclosure of the hidden master status condition, the individual also has to ensure that
the avoidant behaviour is not detected or arouse suspicions (Smart & Wegner). This
may suggest that having a concealable master status condition causes more mental
and emotional distress than someone who possesses a visible master status condition
(Smart & Wegner), as previous studies have shown that the individuals who possess
concealable stigmas tend to have lower self-esteem than individuals who have visible
stigmas (Frable et al., 1998).

The Preoccupation Model of Secrecy

The social monitoring associated with concealment of a master status may be
understood from the perspective of the preoccupation model of secrecy (Smart &
Wegner, 1999). The basis of the model is that the attempts to keep a master status
condition concealed relies on cognitive mechanisms which lead to an over
conscientious and obsessive relationship with the condition. The first stage of the
model is the attempt to restrict any thought relating to the master status condition.
Initially this works as it allows the individual to focus on managing the conversation
as well as maintaining the façade of honesty and truthfulness towards others (Smart & Wegner).

Due to the cognitive efforts required to manage thoughts relating to the concealable master status condition, a preoccupation regarding the master status attribute is being generated. This causes the suppressed thoughts to constantly intrude in the mind’s precept (Wegner, 1992; Wegner, Erber, & Zanakos, 1993). According to Smart and Wegner (1999) when an individual tries to suppress a thought, it makes the unwanted thought more accessible, allowing it to gain automatic access to the consciousness resulting in continuous intrusions. These continuous unwanted intrusions begin to cause anxiety and distress (Wegner & Gold, 1995) and are coupled with the cognitive effort to attempt to maintain suppression of these unwanted thoughts. This leads to the last stage of the model in which the intrusion of the unwanted thought into the consciousness and the suppression response create a cycle. This creates a higher level of obsession with the concealable master status which can last long after the original circumstances to hide it and even after the secret is exposed (Smart & Wegner; Wegner, Lane, & Dimitri, 1994).

Reactions of People to Master Status Conditions

An individual who attempts to conceal a master status implies by their actions that they anticipate adverse reactions from others should their master status be discovered. Indeed, there is evidence to suggest that negative reactions to negative master status conditions are not uncommon, and can lead to stigmatisation. Often individuals will treat those with a highly negative master status condition differently than those without. This is often achieved through individuals attempting to avoid the
stigmatised to lengths which suggest a fear of contamination (Pryor, Reeder, Yeadon, & Hesson-McInnis, 2004). A study conducted by Wheeler, Farina and Stern (as cited in Jones et al., 1984) showed that individuals who had been in close proximity with individuals who had a mental illness often felt the desire to wash their hands afterwards. Other studies have shown that people would sit or stand further away from someone who had a stigma, such as HIV or a physical disability, than someone who did not (Kleck, 1969; Mooney, Kohn, & Swift, 1992; Snyder, Kleck, Strenta, & Mentzer, 1979). People will also cut interactions short with those who possess a negative master status (Kleck, Ono, & Harstof, 1966) as well as view objects negatively and with avoidance that were once in the possession of someone who has a stigma such as HIV, even if the object was never worn or used and there was no chance of contamination (Rozin, Markwith, & McCauley, 1994; Rozin, Markwith, & Nemeroff, 1992).

Despite the multitude of studies demonstrating the negative reactions of individuals towards those who possess a negative master status, there is also evidence which shows that in certain situations individuals react more favourably towards those with a master status than towards those without (Carver, Glass, & Katz, 1978; Katz, 1977; Pryor et al., 2004). It has been suggested that while individuals may demonstrate revulsion towards someone who has a negative master status they will also possibly treat them with sympathy and attempts at kindness (Katz). These positive and negative emotional reactions will often occur simultaneously in the consciousness, such as in response to seeing someone with a physical disability (Kleck, 1969; Kleck et al., 1966). One study demonstrated that when able bodied participants were asked to help an individual in a wheel chair learn origami, two identifiable behavioural reactions were measured (Hebl & Kleck, 2000). The first
being that the able bodied participant’s verbal reports of their interactions and
ingress of their disabled partner were very positive and supportive, however
signs of anxiety and avoidance were identifiable in their non-verbal behaviours (Hebl
& Kleck). These conflicting reactions have been reasoned to be the participant’s
conscious attempts to conform to the social ideal of being kind to individuals who
have a physical disability competing with their underlying unconscious and automatic
negative views of people who are handicapped (Hebl & Kleck).

It has been hypothesised that these automatic negative reactions to someone
who has a negative master status are a defensive mechanism, resulting in avoidance
behaviour to prevent any chance of possible contamination from occurring (Rozin et
al., 1994). Another possible explanation of individuals’ reactions to master status
conditions comes from Weiner’s attribution-emotion model of stigmatisation (Pryor
et al., 2004; Weiner, 1993, 1996; Weiner, Perry, & Magnusson, 1988). In this model
individuals react differently towards individuals who are stigmatised depending on the
extent to which the individual may be held responsible for their stigmatised condition
(Corrigan et al., 2002). However, these considerations of responsibility regarding the
stigma may take time to be calculated, suggesting that if a person was given more
time to consider their impressions of someone with a stigma that was not caused
through any fault of the individual, a more positive reaction will be expected than
compared to any reaction immediately elicited (Pryor, Reeder, & Landau, 1999).
Pryor et al., (1999) demonstrated this in an experiment where by participants were
asked to have lunch with a young girl who had AIDS. This was deemed to be an
uncontrollable stigma. People who were given 15 seconds to respond gave the
prospect of this lunch time encounter a more positive rating than people who
responded instantly (Pryor et al.).
However when the same experiment was conducted, this time with the socially deemed controllable stigma of drug addiction, responses from both the immediate and delayed condition were negative (Pryor et al., 1999). This suggests that the positive emotions, such as pity, may in fact be based upon a rule system which is deliberate and requiring cognitive effort meaning it may take more time to process than immediate defensive reactions such as disgust and avoidance (Leiberman, Gaunt, Gilbert, & Trope, 2002; Pryor et al., 2004). It has been suggested that while these defensive reflexive reactions to people with stigmas are always operating, the rule based adjustments may be enabled or disabled.

In spite of this, if an individual is given ample time, valid and succinct motivation and the necessary cognitive drive it is possible for individuals to change their original reactions (Pryor et al., 1999). The impressions that are formed between individuals with a master status condition and those without can be explained by the *continuum model of impression formation* (Fiske & Neuberg, 1990) which proposes that the behaviour of an individual is the guide for how they are perceived, not the individual’s membership status within a social group.

For example, an obese individual can be considered an outsider in Western idealised society; however, when the obese individual interacts with an individual within the healthy weight range the interaction is not necessarily spoilt from the onset. If there is ample time in the interaction to perceive the obese individual’s behaviours, and if the healthy weight individual has the cognitive motivation, the obese individual will be seen in a positive light if their demonstrated behaviours are positively skewed (McConnell et al., 2008). This model only explains creation of explicit attitudes, specifically the attitudes which the individual has conscious control over, through use of categorical heuristics and adaptive perceived information processing but fails to
delve into the implicit creation of attitudes, which are unconscious and uncontrolled (McConnell et al.; Rydell & McConnell, 2006).

Recently, it has been proposed that the processes which create and manage implicit attitudes work on a different system than those involved in the generation of explicit attitudes (McConnell et al., 2008; Rydell & McConnell, 2006; Rydell, McConnell, Strain, Claypool, & Hugenberg, 2007). The systems of evaluation model (McConnell et al.) is made up of two different mechanisms in which people evaluate information and actions in relation to the formation of attitudes towards others. The first mechanism is the associative system which creates associations through contiguity and similarity through information that has been collected over time and created links within the individual’s memory (McConnell et al.). The other mechanism in this model is the rule-based system which makes use of a higher level of cognitive processing, relying on the ability of the individual to create symbolic representations and manage logical manipulations (McConnell et al.). This allows for the generation of implicit and explicit attitudes through explaining the creation of concepts and novel predictions and their embedding in the memory system (McConnell et al.). The rule-based system explains how explicit attitudes are formed and managed through drawing upon past experiences, and the associative system demonstrates the creation and expression of implicit attitudes, which require conscious effort and cognitive management to form, change and evolve (McConnell et al.) which can result in a spontaneous change in attitude expression (Fazio, 1995).

When this model is used in the context of being exposed to an individual who differs more dramatically from the norm, other factors come into play, such as how the individual in focus identifies with a group and the associations which have been applied to that group. Group association cues are applied in terms of implicit attitudes
having more strength when a person is confronted with a master status, such as physical disability and obesity, and to the degree in which they are positively or negatively associated (McConnell et al., 2008). For example, when a person is faced with an individual whom they have associated with a salient deviant group, like child molesters, strong implicit attitudes are already in place which may prevent the creation of new implicit views based upon observed information (Castelli, Zogmaister, Smith, & Arcuri; McConnell et al., 2008). It has been shown that master status attributes such as obesity (Crandell et al., 2001) and attractiveness (Dion, Berscheid, & Walster, 1972; Nosek, 2005) have as strong an effect on the attitudes expressed towards the individual and implicit attitudes towards stigmatised groups tend to be negative regardless of the positive behaviours conveyed about the individuals who are associated with the stigmatised group (McConnell et al.). A study conducted by McConnell et al. showed that when individuals were presented with an overweight, physically unattractive, or African American person, their implicit attitudes towards the negative master status group were negative regardless of their behaviours. However when the individuals were presented with a physically attractive person, the implicit attitudes of the individual were positive, despite any negative behaviours conveyed about the individual (McConnell et al.). This demonstrates the power and concreteness of social values on implicit attitudes towards individuals who possess a master status, be it a positively or negatively associated one, regardless of the provision of explicit information.

*Self-Presentation and Discrimination*
The desire to conceal one’s negative master status is driven by the need to fit into social norms (Sechrist, Swim, & Stangor, 2004). This also affects the desire of the individual to report any incidences of discrimination against them. A study conducted by Kaiser and Miller (2001) looked at the effects of reporting discrimination with African American students in regards to receiving poor marks in their subjects. If the student reported it was due to discrimination, rather than due to their own failings, others perceived the student negatively and as a complainer. This negative reaction towards the student was still present even when the chances that discrimination occurred were high (Kaiser & Miller). This shows that there is a cost associated with making a claim of being discriminated against, outside the group of people who share the same master status condition (Stangor, Swim, Van Allen, & Sechrist, 2002).

It is possible that people who have a negative master status are well aware of the potential costs of reporting discrimination, derived from their own previous experiences and from the experiences of others. In many cases the individual may have assumed that the cost of reporting does not outweigh the benefits, as it could potentially only serve to further deviate them from the norm (Sechrist et al., 2004). However, there is research that suggests that the lack of reporting of discrimination among people with master status conditions may also reflect the individual’s need for control over their own achievements and failings (Sechrist et al.). If an individual blames being discriminated against as the cause for any failing, they often report lower levels of internal control than those who minimise these events and attribute them to a failing in their own ability (Valentine, Silver, & Twigg, 1999).

In contrast, research by Sechrist et al., (2004) indicates that this is unlikely, demonstrating that women with a higher need for internal control tended to attribute
negative events to discrimination in order to regain control compared to women with a lower desire for internal control. Being female in a patriarchal society can act as a master status condition. This is in line with other research studying personal control and reporting sexual assault (Frazier, Berman, & Steward, 2001). In fact it is likely that failing to make attributions to discrimination can cause lower levels of self-esteem as the individual has blamed the event on themselves and attributed it to them being incompetent and unwilling to rely on their own abilities in the area of which the discrimination occurred (Schmitt & Branscombe, 2001).

**Conclusion**

From the literature on master status conditions, it appears that individuals may attempt to conceal negative master status conditions to be accepted by others in society (Sechrist et al., 2004). This is often because of the apparent reaction to individuals with negative master status conditions. In some cases others avoid individuals with negative master status conditions to lengths that parallel avoiding contamination (Pryor et al., 2004). Individuals who have the ability to conceal their master status condition often experience higher levels of stress and expenditure of cognitive energy in an attempt to keep their condition concealed by others this (Frable et al., 1990; Goffman, 1963; Lane & Wegner, 1995; Leary, 1995; Smart & Wegner, 1999). Furthermore individuals with concealable master status conditions also have lower self-esteem than those who have visible conditions (Frable et al., 1998).

It makes sense that the Internet offers the potential to manage master status conditions, especially physical ones, with lower levels of cognitive load and stress due to the reduced chance of being discovered. Individuals with physical master status
conditions, leading to higher levels of body dysmorphia and dissatisfaction may also find the use of avatars as a potential compensatory mechanism. Chapter 2 of this thesis will explore body image and the Internet.
CHAPTER TWO

The Internet, Social Interaction and Body Image

Chapter Overview

The Internet offers individuals with a visible master status condition the opportunity to seek out and engage in social interactions while concealing their body. Chapter 2 explores the impact of the Internet on social interaction and body image. It also examines concealability and privacy on the Internet as these are relevant factors in the potential concealment of a master status condition. The psychology of avatar creation on the Internet will also be explored and the concept of self-discrepancy over the Internet.

The Internet and Social Interaction

The advances in computer graphical processing and increase in the speed of data transmission has allowed for a new form of socialisation to occur. Through the use of digital representations, created and customised by the users, individuals are able to reflect their identities, as they communicate and socially interact with other Internet users (Galanxhi & Nah, 2007). According to Suler (1999) the Internet provides users with the ability to change, explore and enhance their identities. This allows for the potential creation of a false identity, or perhaps an enhanced or an ideal identity, and gives users the opportunity to interact in an environment in which anonymity is protected and allows for easy disengagement from uncomfortable interactions (Galanxhi & Nah; Suler).
Human interactions on the Internet work on similar principles as they do in real life settings, and self-disclosure is still a necessity in the development of meaningful online relationships (Joinson, 2001). In real life, self-disclosure usually increases as the level of trust between individuals begins to develop, and in turn it promotes the development of more trust between the individuals. Only then do individuals begin to communicate deeper and more vulnerable emotions (Bargh, McKenna, & Fitzsimmons, 2002). However, the online domain appears to speed up this process with self-disclosure of a more intimate level occurring at a quicker rate (Parks & Floyd, 1996; Rosen, Cheever, Cummings, & Felt, 2008).

This level of self-disclosure bypasses the initial phase of discussing work, hobbies and superficial socially acceptable behaviours usually necessary to develop enough trust to take the relationship further. This is exemplified by the intimate level of detail provided in the personal self-disclosure of participants in a study conducted by Rosson (1999). In this study participants were asked to post to an online forum regarding their good and bad life experiences. Participants expressed high levels of detail and self-disclosure (Rosson). Further evidence to support the increased self-disclosure of online communication, compared to face-to-face interaction, is a study conducted by Joinson (2004), whereby pairs of individuals were asked to discuss dilemmas. The participants were split into a face to face communication group and an online discussion group. It was found that in online discussion, disclosure was 4 times more frequent than in the face to face group, suggesting that not having the corresponding person in the conversation in face to face proximity likely aids in the expression of self-disclosing communication (Joinson).

Until recently non-verbal communication over the Internet was not possible, somewhat diluting the reality of Internet based communication due the importance
non-verbal signals play in face to face interactions (Yee, Bailenson, Urbanek, Chang, & Merget, 2007). A recent study by Yee et al., explored the physical dimensions of avatar communication on social interaction in the virtual world application Second Life. Second Life has users from all over the world interacting through personalised avatars, creating an effect of physical proximity between users as they converse. Yee et al., looked at factors such as distance between avatars during communication, eye gaze and turn-taking. It was found that interpersonal distance between males communicating on Second Life was maintained at a much larger distance than between female dyads, supporting the dominant opinion that males maintain a larger interpersonal distance (Hayduk, 1983; Yee et al.). It was also found that there was some support for eye gaze moderating conversation flow much like in real life (Yee et al.).

One limitation of this study is that it does not take into account the underlying operations of Second Life which may have influenced the physical interactions, and that it may in fact be not be worthwhile to the individuals to control their character’s eye gaze (Yee et al.). However, Yee et al., believe that the there is a high level of similarity between Second Life and real world interactions that is likely not due to chance. Another criticism of the study is that it fails to take any of the social interactions observed into the context of the interaction, meaning that variables such as whether the interaction was a first meeting, a planned event or even a virtual date was not analysed. Therefore many of the contextual variables which are important in social interactions could not be taken into account when examining the physical attributes such as avatar distance and eye gaze (Yee et al.). Despite the limitations of this study, it does present an interesting point in that nonverbal communication can be carried out in a virtual environment to better mimic real life interactions.
Privacy and Concealability on the Internet

The potentially positive effects of anonymity upon psychological wellness has not been studied extensively, unlike the potential negatives, especially in relation to the Internet (Christopherson, 2007). Anonymity on the Internet gives users not only the ability to leave situations in which they feel are out of their control, but offers higher levels of control in regards to the information that others can elicit from them (Christopherson; Pederson, 1997). Such control over personal information has been shown to have positive effects on the psychosocial functioning of people (Werner, Altman, & Brown, 1992). However, it has been shown that taking away one’s right to privacy over personal information and disclosure has been linked to aggressive and social unacceptable behaviours (Christopherson).

According to Pederson (1979) there are six types of privacy that a person can employ. The first being reserve which is the hesitation to disclose information about oneself; the second is isolation which is the desire to be physically away from others and alone, the third and fourth is intimacy with friends and intimacy with family. The fifth type of privacy is solitude, which is the desire to be alone and unobserved by others, and the final is anonymity which is being around others but not being monitored by them (Pederson). Following on from this Pedersen (1997) used factor analysis to explore the different attributes within each of the subsets of the aforementioned privacy model. Through this factor analysis it was found that the main attributes associated with anonymity were catharsis, autonomy and recovery. Catharsis is the ability to express ones thoughts and emotions without any hindrance. Anonymity allows for this without the fear of social judgment and being identified
and targeted for possible retribution (Christopherson, 2007). The Internet allows for
this anonymous sharing of emotions and thoughts.

Autonomy is defined as the ability for experimentation and expression of
newly developed behaviours without the possible social consequences (Christopherson, 2007). It allows for the recreation of identity without being
discovered and ostracised, leading to a type of freedom in the behaviours and actions
that the individual may carry out. The final factor associated with anonymity was that
of recovery, defined as the resulting feeling of refuge and calmness from the
exploration of one's current situation (Pederson, 1997). A similar concept has been
described by Walther (1996) in which he concludes that online communication can be
described as "hyperpersonal", allowing someone to disclose in a safe, anonymous and
distant environment (Walther). This is due to the fact online friendships can offer
greater levels of emotional support and empathy in comparison to friends in real life,
despite the possible boundaries of social cues and lack of proximity (Walther,
Slovacek, & Tidwell, 2001). This enhanced empathy comes from the ability to be
strategic in the way an individual presents themselves in online communication. If an
individual takes the time to develop appropriate responses and reactions to those they
are interacting with they will be presented more positively then they could in real life
(Walther et al.). This form of strategic presentation can lead to a more intimate and
personal relationship, however, it can also cause the negative consequence of
idealisation, whereby the individual is viewed as far better than their actual selves are
(Walther et al.).
The Internet and Deception

In real life deceiving others regarding identity can be achieved to some success, with individuals only being able to detect lies in face-to-face settings at a roughly 50% rate (Kalbfleisch, 1992; Kraut, 1980). This difficulty could be due to an inherent difficulty for the deceiver to fully disassociate themselves from the deception (Galaxnhi & Nah, 2007). In terms of deceiving others regarding body characteristics, it can be assumed that it can only be accomplished at a greater level of difficulty due to the ability of others to visibly view the deceiver. On the Internet, however, deception regarding body characteristics and other attributes is quite attainable (Riva, 2002). It is important to note the context of deception, such as in a game where users create avatars to represent themselves, it may not be classed as a deception but in an online dating situation it may be.

A study conducted by Galanxhi and Nah (2007), demonstrated that in online communication where people are represented by digital avatars, there is no significant increase in anxiety for people who were deceiving others online than for people who were being truthful. However, in an online environment where text was exclusively used to communicate with no digital representation of users, there were significantly higher levels of anxiety shown in the deceiving group when compared to the truthful group. Galanxhi and Nah, attribute this reduction in anxiety during avatar based communication during deception to the ability to put on a mask that aids in creating a different identity.

Furthermore they reason that the avatar allows for an increase in anonymity, that helps aid in preventing others from discovering their deception (Galaxnhi & Nah, 2007). Essentially having a digital representation of oneself aids in shaping a new
identity in which the deception is not considered deception but a reflection of the created character. According to Galanxhi and Nah the use of avatars does not increase trust in the other users perceiving and communicating with the avatar, unlike the increase in trust that results from face-to-face communication. In contrast to this, Nowak and Rauh (2008) found that avatar use can increase credibility if these avatars are perceived to be high on anthropomorphism and low on androgyny in their design.

Expression of thoughts, feelings and behaviours that may be considered socially deviant can result in positive psychological effects for the individual (Christopherson, 2007). While the Internet allows for this, it also allows for the expression of socially deviant activity to hurt others in an environment that can be free of real punishment. One such example is the first documented case of cyber-rape in which a user of an online socialisation website used a program to control the actions of other players, and through this he proceeded to force their online selves into graphic and violent sexual acts (Dibbel, 1993). It was reported that the individuals who were virtually raped experience real negative psychosocial effects in the real world, such as increased anxiety (Dibbel). This suggests that despite the anonymity of the Internet, people still wish to be embodied by, and invest emotional energies into, their representations, meaning that virtual interaction may not be as protected and separate from reality as people may think (Yee et al., 2007). The reason why the virtual rapist carried out his socially deviant activity may be due to the disinhibition effect of the Internet, whereby people express negative emotions and desires online that they would have avoided in real life (Suler, 2004).

The psychology of users and their avatars.
There has been a great deal of research into the concept that individuals find others who are similar to themselves, in terms of appearance or beliefs, as more attractive, persuasive and are regarded more positively than those who are different (Berschied & Walster, 1979; Brock, 1965; Shanteau & Nagy, 1979). Other visual cues also can lead to attributing positive perceptions of others, such as facial similarity. Bailenson, Iyengar, Yee and Collins, (2006) demonstrated that facial similarity was so powerful a cue that it could affect voting behaviour of individuals in high profile elections, such as the United States 2004 presidential election. This suggests that avatar appearance would have similar effects on how individuals treat and perceive each other on the Internet.

A study conducted by Yee and Bailenson (2009) found that in avatar based virtual worlds, individuals with tall attractive avatars were found to perform better in terms of game goals, such as character level progression (higher levels indicate more powerful characters and further progression in the game), than unattractive and short avatars. However, due to interaction effects it is not known how different combinations of avatar attributes, such as short and attractive, will manifest. As a result it cannot simply be stated that attractive avatars will do better than unattractive avatars.

In another study conducted by Yee and Bailenson (2007) participants who were assigned attractive avatars were found to have increased levels of self-disclosure and were more willing to initiate conversations with members of the opposite sex when compared to participants who were assigned less attractive avatars. It was also found that participants with taller avatars demonstrate more confidence in a negotiation task than participants who were assigned shorter avatars. The effect whereby individuals make inference regarding how they should behave based on their
avatar’s appearance has been dubbed the Proteus effect (Yee and Bailenson, 2007). This online effect has been shown to carry over to real life settings.

**Motivations for creating avatars.**

Rumaszewski et al. (2007) reported that 14% of men and 4% of females chose to create avatars of the opposite sex in the online environment of Second Life, while 82% of users chose to remain as their real world sex. This suggests that the majority of users who create avatars prefer to remain the same gender despite the ability to choose the opposite. Hsu, Lee and Wu (2005) reported from their study that individuals had higher levels of enjoyment in games in which the characters were more similar to themselves then compared to games where the characters were less similar. Furthermore, Axelsson (2002) reported that individuals in virtual environments were used to represent their users’ qualities. Axelsson suggests that individuals choose to create avatars which present overt attributes of their personalities and these attributes tend to stabilise as individuals continue their participation in the virtual environment.

However, there is evidence to suggest that many individuals create characters unlike themselves for the purpose of identity play or role playing (Hussain & Griffiths, 2008; Kafai, Field & Cook, 2007; Taylor, 2002; Trepte & Reinecke, 2010). It is also possible that individuals use this opportunity to create possible alternate identities and to engage in different personality types, with a study by Konijn and Bijvank (2009) suggesting that adolescents are particularly engaged in this type of identification with computer game characters as they are still forming their own identities. Trepte and Reinecke view the above evidence to suggest that users who
create dissimilar avatars may be compensating for what they view as failings or shortcomings in their real life personalities.

However, depending on the virtual world or game environment, avatars will feature attributes which will assist in accomplishing the environments goals. For example, Bruckman (1993) demonstrated that male online gamers sometimes will present themselves as females in order receive higher levels of attention and assistance from other players. Furthermore Riegelsberger, Counts, Farnham and Phillips (2006) demonstrated that some individuals choose to have their gaming qualities, such as being aggressive or competitive, to be represented by their profiles and furthermore use their representations as a method of manipulating other players’ behaviour. Thus the avatar can be viewed as a tool or means to increase in game competitiveness.

Trepte and Reinecke (2010) demonstrated that in non-competitive games players preferred to create avatars that resembled their own personality. It appeared players were more likely to create an avatar that was similar to themselves when they had greater life satisfaction. The study also demonstrated that individuals chose dissimilar avatars in competitive games and when they were found to have less satisfaction with their lives. Trepte and Reinecke also showed that the greater the similarity between the individuals and their avatars personalities, the greater the individual identified with their avatar. This relationship was stronger in non-competitive games.

Another interesting aspect of Trepte and Reinecke’s (2010) study was that how well the player identified with their avatar was important for overall game enjoyment, however, this was separate from their avatar’s similarity to themselves. For example players could identify with an avatar which was dissimilar if the avatar
was create for the purpose of accomplishing game goals and the individual was seeking mastery and skill as their primary attributes. In order to achieve enjoyment from the game, individuals will create avatars for a more utilitarian purpose as accomplishing game challenges are strong predictions of video game enjoyment (Klimmt, Hartmann & Frey, 2007; Sherry, Lucas, Greenberg & Lachlan, 2006).

Taylor (2003) suggests that it is important to regard the context of the creation of avatars, as the user's goals in terms of self-representation are heavily influence by the environment that they are entering. However, a recent study by Vasalou and Joinson, (2009) showed that participants created avatars that were self-reflective and self-representational despite the context they were created in, whether it was blogging, dating or gaming. This supports Axelsson’s (2002) statement that individuals use avatars to present their stable aspects. This suggests that individuals would rather draw on their existing believes and personalities than taking advantage of the opportunity to explore or role-play alternative characters.

**Body Image and Appearance Concerns**

So far this review has covered the topic of general master status conditions in relation to self-identity, perceived identity, secrecy, discrimination and social interaction. In the following sections this review will consider the specific influence of appearance-related master status conditions in the context of the literature on body image. The purpose of this specific direction is, as shall be presented below, that body appearance, particularly thinness in women and lean muscul arity in men, are highly valued cultural attributes in western societies (Hobza et al., 2007; Rydgeway & Tylka, 2005) which also happen to promote narrow and unrealistic appearance ideals.
Individuals who deviate from the body ideal of society, particularly due to physical deformities, are considered unattractive and are associated with ill health (Thompson & Kent, 2001), and are therefore considered to have a negative master status condition. These individuals tend to experience a range of negative psychosocial outcomes, such as low self-esteem, social phobia, disordered eating and depression (Coles et al., 2006; Grabhorn et al., 2006; O'Dea & Abraham, 2002; Olivardia et al., 2004), occurring in both sexes. Therefore, the body is likely to be a salient master status condition. Furthermore, as will be discussed later in this review, the body is more and more becoming a particularly relevant field of exploration in relation to the Internet, especially in terms of interpersonal socialisation and communication, and that the psychosocial concerns related to body image do have a place in the virtual world.

It has been theorised that there are many factors involved in the development of body and appearance concerns, such as low self-esteem, media, parental and peer influence, the internalisation of society’s ideals, and the process of comparing oneself to others (Keerya et al., 2004; Thompson et al., 1999). The *tripartite influence model of body dissatisfaction and eating disturbance* theorises that body image concerns and eating disorders comes from three major influences relating to sociocultural attributions (Thompson et al.). These main influences, that can cause an individual to perceive their body image negatively, are the individual’s peers, their parents and the media to which they are exposed to. The tripartite model also suggest that there are two underlying mechanisms which mediate these body image related concerns, namely social comparison and thin-ideal internalisation (Thompson et al.).

The role of the media in the tripartite model has been extensively studied, with studies finding that there is a significant correlation between media exposure and
disordered eating, exemplified by the fact that female university students display bulimic symptoms positively correlating to being exposed to thin magazine models (Stice & Shaw, 1994). Furthermore, a study conducted by Harrison and Cantor (1997) looked at the relationship between disordered eating symptomology and media use in female university students. The study also looked at male university student media use in terms of thinness as being accepted as their ideal body image. The researchers hypothesised that exposure media which represented females as thin and promoted such body types, such as fitness and fashion programs and magazines and films with thin female characters, would have a greater strength of prediction than simply overall media consumption (Harrison & Cantor). It was found that such exposure, especially magazines, did serve as a better predictor of eating disorder symptomology, thinness desires and ineffectiveness in women than overall media exposure (Harrison & Cantor). Furthermore, it was found that exposure to programs with obviously overweight individuals as the main character had a strong predictive value for body dissatisfaction. For the male sample, it was found that the exposure to media that promoted thinness did encourage them to believe thinness and dieting were their personal ideals, however the study did not examine the existence of any eating disorder symptoms (Harrison & Cantor).

A recent study found that the self-esteem of men was strongly predicted by physical attributes, as well as status and resources, and that men who viewed idealised media images were often more susceptible to fluctuations in their self-esteem (Wade, 2000), often causing dissatisfaction in their own physical attributes (Newton & Minhas, 2005). Presumably, this is in part due to the unrealistic and unattainable ideals set by society and the media (Tom, Chen, Liao, & Shao, 2005). Furthermore research has indicated that what males perceived to be the ideal weight of women is
actually more than what women believe their ideal weight should be. Similarly, males often perceive their ideal muscle mass to be more than what females believe a male's ideal muscle mass should be (Demarest & Allen, 2000; Fallon & Rozin, 1985). This suggests that a misperception in society exists regarding the ideals desired by the opposite sex, and that being attractive to the opposite sex in terms of body ideals is easier to obtain than the social ideals (Tom et al.).

Despite the fact that media does play a large role in the promotion of the 'ideal' body image, it is necessary to understand why some individuals are more vulnerable than others, after all we are all exposed in one way or another to the cultural ideals of appearance. The recent research suggests that the main cause of negative psychosocial consequences relating to body image relates to how much of the social ideals presented to the individual are internalised in relation to the individual's own perceived body appearance (Dittmar, 2005). Another study showed that a quick exposure to models in magazines, who were extremely thin, was able to increase the level of anxiety in young women in regards to body image if they had internalised the social ideal of thinness in women (Brown & Dittmar, 2005). Self-discrepancy theory may explain these appearance concerns if they are viewed as psychological manifestations of the subjective difference between an individual's self-perceived body and their ideal body (Higgins, 1987). The self-discrepancy theory involved three domains of self: the actual, ideal and ought (Higgins). The attributes possessed by us, or our significant relations believed we possesses, are encompasses by the actual self. The ideal self are the attributes that we feel we should possess, or our significant others feel we should possess, and the ought self represents the ideals we or our significant others feel we are obligated to possess (Higgins).
Individuals use the ideal and ought self to evaluate themselves as they serve as guides and standards to aspire to (Kowner, 2004). However, according to Higgins (1987) the larger the discrepancy between the perceived actual self and the ideal and ought selves, the greater the resulting negative emotional and motivational state. Since the standard of the ideal body image is set so high in modern Western society, it can be assumed that many people have a large discrepancy between their perceived actual and ideal. This causes a large amount of body dissatisfaction in individuals resulting in lower body related self-esteem (Kowner). The validity of the self-discrepancy theory has been further reinforced in later studies which demonstrated that body dissatisfaction positively correlated with the differences in the perceived actual self and the ideal self (Keeton, Cash, & Brown, 1990; Kowner; Strauman, Vookles, Berenstein, Chaiken, & Higgins, 1991).

The Internet and Self-Discrepancy

Research has indicated the identities that people create on the Internet to represent themselves are created from aspects of their actual and ideal self, creating an avatar or virtual self which can be closer to their ideal self than reality (Lawson, 2000; McKenna & Bargh, 2000). To the author’s knowledge there no studies which have actually explored this concept of the creation of an ideal self in terms of body image in a virtual world, however there are some studies which have explored self-discrepancy between actual, ideal and virtual self on the Internet in terms of personality characteristics. Bessiere, Seay and Kiesler (2007) conducted a study on the psychosocial aspects of participants in a virtual world, proposing that people who are dissatisfied with their own personality will use the virtual world as a tool for self enhancement. This study was conducted by exploring personality ratings of the
participant’s actual self, virtual character and ideal self. The study concluded that the virtual representations of themselves were less neurotic, more extraverted and more conscientious then their actual self. It also demonstrated that the larger the discrepancy between the ideal and actual self the greater the levels of low self-esteem and depression (Bessiere et al.) adding support to the self-discrepancy theory originally proposed by Higgans (1987).

One criticism of this study is that the virtual environment in which this study was conducted, World of Warcraft (WoW), was not ideal, as it is in fact a massive multiplayer role playing game (MMORPG) in which players band together to complete tasks such as slaying dragons and looking for treasure. Given the goal orientated style of play in WoW, in which adventuring and combat is a necessity, is likely to shape the character’s personality as well as the fact that there are intrinsic etiquette rule which govern the virtual world. If a player is not conscientious, giving and sharing items found in goal orientated tasks, he or she may be left out of groups and not asked to take part in missions. Therefore potentially is a large element of conformity involved. While the study did not seek to explore body image, the limited control over character appearance also denies most attempts at the virtual representation of the player matching their ideal in terms of appearance, which has been shown to have a great influence in terms of self-satisfaction (Coles et al., 2006; Grabhorn et al., 2006; O'Dea & Abraham, 2002; Olivardia et al., 2004).

A study conducted by McDonald and Kim (2001) suggested that young players of video games consider the characters they play as ideal selves’ and that if they make a comparison between their actual selves and these ideal selves, the participants experienced feelings of dejection. This lends further support to the application of discrepancy theory in the area of computer based character creation.
Nick Yee is a researcher concerned with psychological aspects of online role playing games, and has a private website (http://www.nickyyee.com) on which he posts his current projects. One of his research projects looked at a group of female (n=1069) and male (n=3360) players of WoW in terms of avatar comparisons to their actual self. Yee (2008) found a positive correlation between the actual height of players and their in game avatars ($r = .10$ for women and $.15$ for men), showing that most people select characters which were closer to their real height. It was also found that men would pick average or attractive avatars, while women were more likely to pick an attractive avatar (Yee, 2008). However, given the sample size of this study, the resulting correlations are not very strong, despite being significant.

The study also showed that men were more likely to pick avatars which represented masculine features and ideals, such as strength and size, while females were more likely to pick avatars that were more graceful and attractive (Yee). While this is more of a demographic report rather than a psychological study, it does raise support for the creation of ideal representations of the self on the Internet. However, much like the study conducted by Bessiere et al., (2007), the same drawbacks of studying self-discrepancy in the environment of WoW apply, whereby users can only select premade avatars and cannot adjust physical dimensions to any great extent.

Previous research has shown that individuals in the Western world, live in a society that encourages an ideal of physical perfection, such as thinness in women and lean muscularity in men, that most individuals do not and cannot obtain, which may lead to negative psychosocial consequences that can intrude in most aspects of the individuals’ lives (Coles et al., 2006; Grabhorn et al., 2006; O'Dea & Abraham, 2002; Olivardia et al., 2004). Yet the current capabilities of personal computers and the Internet now allows users to create an avatar which can represent their ideal physical
selves. This provides an avenue to bridge the issues of self-discrepancy between the perceived self and the ideal self and allow individuals to interact with others as their ideal physical selves. The Internet provides the capabilities to maintain anonymity so that an individual can recreate themselves (Christopherson, 2007) and manage any form of self-disclosure regarding master status conditions in an environment which deception is easily facilitated (Galanxhi & Nah, 2007). Furthermore, the Internet offers almost real life level levels of social interaction, and in fact encourages higher levels of intimacy, disclosure and honesty (Pederson, 1997; Walther, 1996; Walther et al., 2001; Whitty, 2008). It is surprising that despite previous research conducted on human interactions over the Internet, in addition to the large amount of research that has been conducted on body image; very few studies have explored the concept of the impact of an avatar on the psychosocial functioning of people in the real world and virtual world. Perhaps this is due to the fact that programs which allow users to fully control physical aspects of their avatar, and then to socialise with others in an online domain, have only recently reached a level of sophistication in which real world comparisons can be made.

Conclusion

This review sets the premise for a study which will use measures of body image as well as measures of appearance internalisation, self-esteem, social anxiety and psychological functioning which measure depression, anxiety and stress to explore the relevance of participants’ avatars compared to their perceived and ideal body images in the online and offline world. Participants will select their ideal and actual body images through a body image grid which will allow for measurement of
physical dimensions of particular salience to body image concerns, such as weight, muscle mass and body shape. It is expected that, in accordance with discrepancy theory (Higgans, 1987), the discrepancy between the real self and the avatar will have predictive properties regarding participants’ levels of self-esteem, social phobia, social interaction anxiety and psychopathology such as stress, anxiety and depression. Furthermore, psychological questionnaires will be used to assess different aspects of participants’ real world and virtual world functioning to allow for a comparison between these domains. This will be achieved by providing the same questionnaires twice, first asking to participants to answer the questionnaires in terms of their offline life and body image and then asking the participants to answer the second set in terms of their virtual life and body image.

The rationale for conducting such a study is that as people continue to interact over the Internet, it is necessary to explore the current theories regarding body image in this new domain, the “physical” virtual world. No previous study has attempted to look at body image in the virtual world; however, a previous study has looked at self-discrepancy theory in the virtual world in terms of desired personality characteristics (Bessiere et al., 2007). The implications of such a study will further inform the literature as well as set the premise for future studies regarding the possibility of improving psychosocial functioning related to body image through the Internet.

Furthermore, in terms of master status conditions, the Internet offers a viable avenue to conceal their appearance concerns, or to disclose them in an environment in which consequences can be easily managed.

On the basis of the ample research that exists showing that men desire higher levels of muscle and less body fat than they possess (Demarest & Allen, 2000; Fallon & Rozin, 1985; Tiggemann, Martins, & Kirkbride, 2007) it was hypothesized that:
Hypothesis 1: Participants’ ideal body image will be of lower adiposity and greater muscularity than their self-reported actual body.

Although there is no previous research from which to derive predictions concerning the body dimensions of men’s avatars, there were several reasons to suspect that avatars will possess hyper-idealised body dimensions, particularly in relation to muscle. Specifically, it was argued that the avatar will reflect these ideals of more muscle and less body fat, but be different than the ideal. This difference is expected to be attributed to the fact that the avatar can exist not only as a representation of the ideal, but as a compensatory mechanism in line with self-discrepancy theory (Higgins, 1987). It was thought that users will use the avatar as a compensatory tool in which users can recreate themselves (Christopherson, 2007) and conceal body image concerns. Therefore it was hypothesised that:

Hypothesis 2: Participants’ avatars will be of lower adiposity and greater muscularity than their self-reported ideal bodies.

Due to previous research showing that ideal weight and muscle are linked to participants’ drives for thinness and drive for muscularity (Hobza, et al., 2007; Rydgeway & Tylka, 2005), it was further hypothesised that:

Hypothesis 3: Participants’ drive for thinness will show a relationship with participant’s ideal weight with higher drive for thinness being shown in individuals whose self-reported ideal muscle represents higher levels of thinness than the participant’s self-reported thinness.

Hypothesis 4: Participants’ drive for muscularity will show a relationship with participant’s ideal muscle with higher drive for muscularity being shown in individuals whose self-reported ideal muscle represents higher levels of muscle than the participant’s self-reported muscle.
As stated previously, it was thought that these drives will also influence the creation of the participants’ avatars and therefore it was hypothesised:

*Hypothesis 5: Participants’ drive for thinness will show a relationship with participant’s avatar weight with higher drive for thinness being shown in individuals whose self-reported avatar represents higher levels of thinness than the participant’s self-reported thinness.*

*Hypothesis 6: Participants’ drive for muscul arity will show a relationship with participant’s avatar mus cule with higher drive for muscul arity being shown in individuals whose self-reported avatar muscle represents higher levels of muscle than the participant’s self-reported muscle.*

According to self-discrepancy theory, the larger the difference between the actual and ideal selves, the higher the levels of self-dissatisfaction and lowered self-esteem (Higgins, 1987; Kowncr, 2004). Research conducted by Bessier et al., (2007) has suggested that in terms of personality, virtual presentations of self in the form of avatars reflect the ideals of actual personality. Furthermore, the larger the discrepancy between the actual and ideal self correlates with the increased likelihood of poorer psychosocial outcomes. It was therefore hypothesised:

*Hypothesis 7: The difference between avatar weight and participants’ self-reported real weight will explain additional variance for participants’ drive for thinness over the difference between participants’ real weight and ideal weight.*

*Hypothesis 8: The difference between avatar muscle and participants’ self-reported real muscle will explain additional variance for drive for muscul arity over the difference between participants’ real weight and ideal weight.*
Hypothesis 9: Participant's self-esteem, social anxiety and social phobia in the virtual world, will have a differential influence on participants' psychological functioning, in terms of anxiety, depression and stress.

It was expected that participants will have higher levels of self-esteem and less levels of social anxiety in an online context than in the real world. This is due to being able to easily hide master status conditions as well as present an ideal virtual body, leading to less stress and anxiety relating to the management of body image dissatisfaction (Frable et al., 1990; Goffman, 1963; Lane & Wegner, 1995; Leary, 1995; Smart & Wegner, 1999).
CHAPTER THREE

Study 1

_Psychosocial Factors and the Effect of Avatar Creation among Adult Males_

The aim of this study is to explore the relationship between male participants’ psychosocial functioning and their avatar’s physical dimensions. Measures were used to examine participants’ self-esteem, social interaction anxiety and social phobia, their levels of anxiety, stress and depression as well as their internalisation of body appearance from the media, their drive for musculature and thinness and physical comparisons made to others. The same questionnaires were also used to explore the same psychological functioning in the virtual world, through participants’ avatars. A body image matrix was also employed to explore the difference between participants’ actual, ideal and avatar body image.

Method

Participants

In total, 157 male adults were recruited to participate in the study. Participants were excluded from the study if large amounts of data were missing from their responses (over 5%) or if they failed to meet the inclusion criteria outlined in the study description and the Plain Language Statement and Consent form (Appendix 1), such as having an avatar, being over 18, or being male. A total of 131 suitable participants remained.
Recruitment

Recruitment was conducted online with a brief description of the research study and a link to the Plain Language Statement and Consent form, as well as the questionnaire, sent to webmasters of Internet based forums, blogs and websites which discussed topics relating to online computer games, avatar creation and Internet based research. These websites were hosted in several different countries, including Australia, the United States of America and the United Kingdom. The webmasters would post the description of the study and the corresponding hyperlink to the questionnaire on their website if they wished to assist in the recruitment process.

Informed Consent. Participants were instructed to read the Plain Language Statement prior to consenting to take part in the study and being given access to the online questionnaire. The Plain Language Statement described the aims and purpose of the study, the inclusion criteria of the study and the possible risks associated with taking part in the study. Participants were instructed in the Plain Language Statement that if they wished to proceed with the study they were to indicate this by clicking the ‘I Agree’ link which was located at the bottom of the Plain Language Statement. Participants were informed that by doing so this would be considered that they had given informed consent to participate in the study. It also stated that participants must be fluent in written English due to the nature of the study which required participants to respond to psychological tests written in English. Participants were placed into a draw to receive a $100AUD gift voucher for an online book and electronics store. This was achieved through the participants entering in their email address into a separate webpage after the questionnaire was finished, with the email addresses stored separately to the data. Participants were informed that they could withdraw from the study at any point and that all information collected was unidentifiable.
Materials

**Demographic Information.** The questionnaire contained demographic questions asking participants’ age, gender, country of residence and whether they have an Internet avatar. Participants responded through typing their answer in the response text box, except in the case of gender and Internet avatar where a radio button was used. These demographic questions also served to filter out participants who did not match the study’s inclusion criteria, such as being male and over 18.

**The Internet Use Questionnaire (IUQ).** The IUQ (Appendix 2), developed by Campbell, Cumming and Hughes (2006), is divided into two parts and asks participants the activities and applications they use the Internet for, such as emailing, online gaming and gambling. It also asks participants to rank these activities according to use. The second part of the IUQ queries participants in regards to the time they spend using the Internet and the division of time between the activities and applications used, for example a participant may indicate they use the Internet on average for 3 hours per day, 10% of that time used for emails and the other 90% used for online gaming. The IUQ serves to gather data regarding the normal Internet usage patterns of the participants and has no psychometric properties to report.

**The Internet Effects Questionnaire (IEQ).** The IEQ (Appendix 3) developed by Campbell et al. (2006) consists of 18 items which examine the participants’ beliefs regarding their Internet usage and their opinion of individuals who use the Internet. It asks questions such as “Do you believe that the Internet is just a modern means of communication not unlike using the telephone, or writing a letter using a paper and
pen? “and “Do you think that people, who use the Internet too often, have poor social skills?”

*The Social Interaction Anxiety Scale (SIAS).* The SIAS (Appendix 4), developed by Mattick and Clarke (1998), is a 20 item self-report scale which measures social interaction fear across different individual and group situations. The participant selects their response on a 5 point Likert scale which ranges from 0, “not at all characteristic or true of me” to 4, “extremely characteristic or true of me”. Some examples of questions presented are “I am nervous mixing with people I don’t know very well” and “I find it easy to make friends my own age.” The SIAS has been shown to have high internal consistency, validity and test-retest reliability (Orsillo, 2001; Rodebaugh, Woods, Heimberg, Liebowitz & Schneier, 2006). It was developed to be administered with Social Phobia Scale. Participants were asked to complete this measure in terms of their real life interactions followed by interactions when socialising on the Internet.

*The Social Phobia Scale (SPS).* The SPS (Appendix 5), developed by Mattick and Clarke (1998), is a 20 item self-report scale which measures an individual’s fear of being observed by others while performing tasks with questions such as “I worry other people will think my behaviour is odd” and “I feel anxious if I have to write in front of other people”. The SPS is generally administered with the SIAS. Participants are asked to rate to what extent that each item of the SPS represents them. A 5 point Likert scale is used for each item, which ranges from 0, representing “not at all characteristic or true of me” to 4, representing “extremely characteristic or true of me”. The SPS has high validity, internal consistency and test-retest reliability (Orsillo, 2001). Participants were asked to complete this measure in terms of their real life interactions followed by their interactions when socialising on the Internet.
The Sociocultural Attitudes towards Appearance Scale-3 (SATAQ-3). The SATAQ-3 (Appendix 6) consists of 30 items which measure the influence of media on an individual’s attitudes towards their appearance, across four dimensions, being internalisation, awareness, information and pressures. It also includes items to measure the media influence relating to athleticism and sports. The forms of media examined are television, magazines and movies. Participants selected from a 5 point Likert scale whether they agree to the statements in the SATAQ-3, such as “I felt pressure from TV and magazines to change my appearance” and “I try to look like sports athletes”. The responses range from “Definitely Disagree” to “Neither Agree nor Disagree” to “Definitely Agree”. The SATAQ-3 has been shown to have good reliability across the subscales and high convergence (Thompson et al., 2004). Eight additional items were created and added to the SATAQ-3 for the purpose of this study, measuring the influence of the Internet across the areas of internalisation, awareness, information, pressures and athleticism.

The Depression, Anxiety and Stress Scale-21 Item (DASS). The DASS (Lovibond & Lovibond, 1995), shown in Appendix 7, is 21 item self-report inventory which measures the level of depression, anxiety and stress in both clinical and general populations. It asks participants to rate the presence and severity of symptoms occurring over the last 7 days on a 4 point scale. The total scores in each domain are doubled to fit with the clinical ratings of the DASS 42. The DASS separates physical anxiety, which is made up of fear symptomatology from mental stress which consists of nervous energy and tension. It has adequate reliability and test-retest reliability, demonstrating .71 for depression, .81 for stress and .79 for anxiety (Brown, Chorpita, Korotitsch & Barlow, 1997). Factor analyses by Brown et al., has demonstrated the validity of the three measured domains (p < .05). The DASS anxiety scale correlates
with the Beck Anxiety Inventory (BAI) at .81 and the DASS depression scale correlates with the Beck Depression Scale (BDI) at .74 (Lovibond & Lovibond).

The Physical Appearance Comparison Scale (PACS). The PACS (Thompson, Heinberg, & Tantleff, 1991), shown in Appendix 8, is a 5 item scale which measures an individual’s tendency to compare their own physical appearance to that of others across different social situations. Participants select from a 5 point Likert scale their responses to questions, such as “At parties or other social events, I compare my physical appearance to the physical appearance of others”. Responses range from 1, “never” to 5, “always”. In a study of 80 female college undergraduates, internal consistency was found to have a Cronbach’s alpha of 0.78 and test-retest reliability of 0.72. Participants were asked to complete this questionnaire in terms of their real life and their Internet avatar based interactions i.e. “Comparing your avatar’s “looks” to the “looks” of others’ avatars is a bad way to determine if your avatars are attractive or unattractive”.

The Personal Wellbeing Index (PWI). The PWI (Appendix 9) measures subjective wellbeing across 8 different life domains, those being standard of living, health, achieving in life, relationships, safety, community-connectedness, future security and religion or spirituality (International Wellbeing Group, 2006). These domains are measured on a 10 point Likert scale, ranging from “completely dissatisfied” to “neutral” to “completely satisfied”. Thomas (2005) has reported that the PWI correlates at .78 with the Satisfaction with Life Scale and has satisfactory reliability in Australia and overseas, with a Cronbach alpha between .70 and .85 (International Wellbeing Group). The PWI has also shown to have moderate inter-domain correlations, between .30 and .55 and item-total correlations at .50. Furthermore the PWI has been shown to have good test-retest reliability (Lau &
Cummins, 2005). The PWI also has been shown to be sensitive across demographic groups in Australia and internationally (Cummins et al., 2005; Lau et al., 2004; Tiliouine, Cummins & Davern, 2005). Five additional items were added to the PWI for use in this study, measuring subjective satisfaction with aspects of the individual’s Internet life. These five questions measured satisfaction with Internet friendships, Internet activities, being part of the Internet community, feeling safe on the Internet and overall satisfaction with the individual’s life on the Internet.

*Dysorphic Concerns Questionnaire (DCQ).* The DCQ, shown in Appendix 10, is a validated scale which measures dysmorphic concerns in participants (Oosthuizen, Lambert & Castle, 1998). It consists of 7 questions relating to body dysmorphism, such as “Have you ever considered your body to be malformed or disfigured in some way?” measured on a 4 point Likert scale, with 0 being “not at all” and 4 being “Much more than most people”. The higher the participants’ score, the greater the indication of body dysmorphism. It has been found to have good internal consistency with a Cronbach alpha of 0.88 and also correlated strongly with the Beck Depression Inventory ($r=0.49; p < 0.01$).

*The Coopersmith Self-Esteem Inventory Adult Short Form (CSEI).* The CSEI (Appendix 11) is a 25 item questionnaire designed to measure self-esteem in an adult population (Coopersmith, 1989). Participants are asked to rate whether each statement is “like me” or “unlike me” in response to statements such as “I wish I were someone else” and “My family understands me”. The total score is the total of the endorsed “like me” responses multiplied by 4, giving a possible score of 100. The higher the score, the higher the level of participants’ self-esteem, with scores above 75 considered higher and scores below 25 considered low (Coopersmith). The CSEI has
found to be a reliable and valid measure of self-esteem in the adult population (Francis, 1997).

*The Somatomorphic Matrix (Modified)*. The Somatomorphic Matrix (Cafri & Thompson, 2004), shown in Appendix 12, provides participants with a 34 images of men, arranged in a 10 x 10 grid which represents 10 degrees of body fat and 10 degrees of muscularity. The body fat axis begins at 4% body fat and increases by increments of 4%. The muscularity axis begins at a fat free mass index of 16.5 kg/m2 with increments of 1.5 kg/m2 (Cafri & Thompson). Participants select the image which best represents their body from the matrix. In the current study participants were also asked to select the best representation of their ideal body image and their avatar’s body image. While the somatomorphic matrix does not have good reliability, with only self-muscularity ($r=0.78$) and ideal body at ($r=0.79$) were found to be reliable, it is expected that it will be suitable for the purpose of this study. Self body fat ($r=0.64$), and ideal muscle ($r=0.55$) were not found to be reliable scales (Cafri, Roehrig & Thompson, 2004).

*Drive for Thinness Scale.* The drive for thinness scale (Appendix 13) developed by Garner, Olmstead & Polivy (1982) is a subscale from the Eating Disorder Inventory. It consists of 7 items that measure dieting concerns, fear of becoming overweight and preoccupation with weight. Each item is measured by a 6-point Likert Scale with 1 being “never” and 6 being “always”. Higher scores indicate higher drive for thinness. Spillane, Boerner, Anderson and Smith (2004) found the Cronbach’s alpha of the drive for thinness scale to be 0.84 in a male population.

*Drive for Muscularity Scale (DMS).* The DMS (McCready & Sasse, 2000) shown in Appendix 14, measures participants’ preoccupation with gaining muscle mass. There are 15 items in the scale, measured on a 6-point Likert Scale with 1 being
“never” and 6 being “always”. Higher scores indicated higher drive for muscularity.
In a male population the Cronbach’s alpha was found to be 0.89 (McCreary & Sasse).

Procedure

Participants were recruited over the Internet. This was considered to be an appropriate and effective means of recruitment to allow for a wide range of socio-economic backgrounds, age groups and males who had an avatar. Participants were directed to the Plain Language Statement and questionnaire via a hyperlink posted under the study description on the participating websites. The content was hosted on a secure Deakin University server, using 128bit SSL encryption to ensure protection of privacy. Participants were required to read the online Plain Language Statement which described the study and if after reading the plain language statement they still wished to take part in the study they were required to indicate that they had understood what was required, they fit the inclusion criteria of the study and they were aware of the potential risks involved. Participants were required to consent to being a participant through activating the link on the plain language statement which launched the study questionnaires.

Online gaming, Internet research and avatar creation websites were contacted via email to enquire if they would be interested in participating in the research project. This initial email contained an explanation of the study, a link to the Plain Language Statement and online questionnaire and the researcher’s contact details. Details of the ethics application and acceptance were also provided. Webmasters who wished to participate were provided with a shorter description of the study that they could post on their websites. Five websites agreed to post the study description and a link to the
study. Websites who were interested were also advised that they would receive a report on the results of the research once the study was concluded.

Participants who were interested in completing the questionnaire were required to read the Plain Language Statement, indicate consent by clicking on the ‘I Agree’ link and this would load up the questionnaire. Participants were informed through the Plain Language Statement that the questionnaire would take 30 to 60 minutes to complete, that participation was voluntary and anonymous and that they could withdraw from the study at any point. Participants were required to respond to each item on the questionnaire through clicking a radio button to indicate their choice. After completion of the questionnaire, participants could provide their email address, which was stored separately to the collected data, to enter a draw for a $100 voucher to a web based book store.

Data Analysis

Statistical analyses were conducted on a Pentium Core 2 Duo 2.2 ghz computer with 4gb RAM running Microsoft Windows 7. SPSS (Version 17.0) was used for all statistical analyses.
Results

Demographics

All participants, 131 male adults with a mean age of 33.12 years, ranging from 18 years to 68 years ($M=33.12$, $SD=12.06$), were asked to indicate their age, country of residence, and their Internet use based on type and frequency. Participants were also asked to enter their height and weight so that a Body Mass Index (BMI) could be calculated. 26 participants did not enter either a weight or height value, or both, to allow for BMI calculation. BMI of the remaining participants ($n=105$) had a mean of 28.17 ($SD=6.87$) which is in the high end of the overweight range, with the minimum BMI being 14.20 (underweight) and the maximum being 51.70 (obese). Table 1 below shows participants’ country of residence. Participants are from predominantly Western, industrialised and English speaking countries. This likely reflects the method of recruitment; where by advertising for the study occurred on blogs that used the English language. Furthermore the questionnaire was only available in English.
Table 1

Country of residence of participants

<table>
<thead>
<tr>
<th>Country of Residence</th>
<th>N</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>America</td>
<td>42</td>
<td>33.5</td>
</tr>
<tr>
<td>Australia</td>
<td>22</td>
<td>16.8</td>
</tr>
<tr>
<td>Canada</td>
<td>11</td>
<td>8.2</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>9</td>
<td>7.2</td>
</tr>
<tr>
<td>Italy</td>
<td>2</td>
<td>1.5</td>
</tr>
<tr>
<td>Netherlands</td>
<td>2</td>
<td>1.5</td>
</tr>
<tr>
<td>New Zealand</td>
<td>2</td>
<td>1.5</td>
</tr>
<tr>
<td>Brazil</td>
<td>1</td>
<td>0.8</td>
</tr>
<tr>
<td>Finland</td>
<td>1</td>
<td>0.8</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>1</td>
<td>0.8</td>
</tr>
<tr>
<td>Japan</td>
<td>1</td>
<td>0.8</td>
</tr>
<tr>
<td>Denmark</td>
<td>1</td>
<td>0.8</td>
</tr>
<tr>
<td>Portugal</td>
<td>1</td>
<td>0.8</td>
</tr>
<tr>
<td>Romania</td>
<td>1</td>
<td>0.8</td>
</tr>
<tr>
<td>Slovenia</td>
<td>1</td>
<td>0.8</td>
</tr>
<tr>
<td>South Africa</td>
<td>1</td>
<td>0.8</td>
</tr>
<tr>
<td>Sweden</td>
<td>1</td>
<td>0.8</td>
</tr>
</tbody>
</table>

Table 2 displays the use of different Internet functions by the participants.

Participants were allowed to select multiple uses. Participants, who selected ‘other’ as a usage type reported the function they used. User responses in this category consisted of file sharing, accessing pornography, educational purposes, blogging, forums, online shopping, working from home, social networking and voice over Internet and webcam calling.
Table 2

Participants’ internet use type

<table>
<thead>
<tr>
<th>Type</th>
<th>N</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Email</td>
<td>129</td>
<td>98.5</td>
</tr>
<tr>
<td>Online Chat</td>
<td>118</td>
<td>90.1</td>
</tr>
<tr>
<td>Online Browsing</td>
<td>128</td>
<td>97.7</td>
</tr>
<tr>
<td>Online Trading</td>
<td>49</td>
<td>37.4</td>
</tr>
<tr>
<td>Online Gambling</td>
<td>14</td>
<td>10.7</td>
</tr>
<tr>
<td>Online Gaming</td>
<td>122</td>
<td>93.1</td>
</tr>
<tr>
<td>Other</td>
<td>98</td>
<td>74.8</td>
</tr>
</tbody>
</table>

Participants reported usage of the Internet use by most frequent, second most frequent and third most frequent. This is show in Table 3 below.

Table 3

Internet use based on frequency

<table>
<thead>
<tr>
<th>Type</th>
<th>Most Frequent</th>
<th>Second Most Frequent</th>
<th>Third most Frequent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>Percent (%)</td>
<td>N</td>
</tr>
<tr>
<td>Email</td>
<td>26</td>
<td>19.8</td>
<td>29</td>
</tr>
<tr>
<td>Online Chat</td>
<td>8</td>
<td>6.1</td>
<td>14</td>
</tr>
<tr>
<td>Browsing</td>
<td>40</td>
<td>30.5</td>
<td>60</td>
</tr>
<tr>
<td>Online Games</td>
<td>55</td>
<td>42.0</td>
<td>24</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>1.5</td>
<td>3</td>
</tr>
</tbody>
</table>

Participants indicated how many hours a day they spend on the Internet, 0.8% indicated that they spent less than 1 hour a day, 2.3% indicated between 1 to 2 hours a
day, 24.4% indicated between 2 to 4 hours a day, 45.8% selected between 6 to 8 hours a day and 26% selected more than 8 hours a day. One user did not indicate their daily use.

Participants also indicated how many hours per day they felt they should use the Internet for. 1.5% selected less than 1 hour, 14.5% selected between 1 to 2 hours, 41.2% selected between 2 and 4 hours and 23.7% selected between 6 and 8 hours. 14.5% indicated that they should use the Internet for more than 8 hours a day and 4.6% of participants did provide a response. 96.9% of participants felt the Internet was a positive addition to their lives, while 0.8% felt it was not a positive addition and 2.3% did not respond.

*Body Image – Real, Ideal and Virtual*

Participants selected their body shape on a grid of muscle mass and body fat. This was repeated in terms of their ideal and their avatar. The mean scores of participants' selections are displayed in Figure 1 and are presented on the scale used to determine body weight and muscle mass. The graph indicates that participants have lower self-reported body muscle and higher self-reported body fat than their ideal body image. Furthermore the graph shows that the avatar is separate to the ideal, appearing to be a more extreme version in terms of less body fat and greater muscle mass.
Figure 1. Graph of mean participants’, real, ideal and avatar body fat and muscle with standard error bars.
To determine if weight and muscle are significantly different across the actual, virtual and ideal weight and muscle, a two way (3x2) repeated measure ANOVA was conducted. Mauchly’s test of sphericity was significant for the main effect concluding there are significant differences between the variances of differences and sphericity is violated, $\chi^2(2)=32.51, p<0.01$. The second polynomial of weight*muscle did not violate sphericity as it is only two levels. The interaction effect violated sphericity, $\chi^2(2)=44.586, p<0.01$. As for both values $\varepsilon>0.75$, the Huynh-Feldt correction was used.

Both main effects were significant, $F(2, 215) = 63.476, p<0.01$ and $F(1, 130) = 46.95, p<0.01$. The within subject interaction effect was not significant $F(2, 203)=2.71, p>0.05$, however, the between subjects interaction effects was significant, $F(1,130)=2816.35, p<0.05$. This indicates that muscle mass and body fat in terms of real, ideal and avatar are significantly different to each other. This provides support for hypothesis 1 which proposed that participants’ ideal body image will be of lower adiposity and greater muscularity than their self-reported actual body. Hypothesis 2, participants’ avatars will be of lower adiposity and greater muscularity than their self-reported ideal bodies, is also supported.

The influence of Sociocultural Factors on Body Image, body change and avatars.

Pearson’s correlations were conducted to examine the relationship between the actual body image of participants, as obtained in terms of muscle and body fat, with their drive for muscularity, drive for thinness and physical comparisons to others. Participant’s internalisation of body image ideals was also included in this comparison. Table 4 demonstrates that participants’ body weight significantly correlates with their drive for thinness, $r(129)=0.29, p<0.01$, however there is no
significant relationship with drive for muscularity, physical comparisons to others or any form of internalisation measured. Participants’ muscle mass has a significant relationship with physical comparisons to others, \( r(129)=0.19, p<0.05 \), but does not correlate with drive for muscularity or any form of internalisation.
Table 4

Pearson’s correlations of participants’ \( n=131 \) self-reported real body weight and muscle with drive for muscularity, drive for thinness, appearance internalisation and physical comparison to others.

<table>
<thead>
<tr>
<th>Real Body Weight</th>
<th>Real Body Muscle</th>
<th>Drive for Thinness</th>
<th>Drive for Muscularity</th>
<th>Physical Comparisons</th>
<th>General Internalisation</th>
<th>Athletic Internalisation</th>
<th>Pressures</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real Body Weight</td>
<td>-</td>
<td>0.02</td>
<td>0.29**</td>
<td>-0.08</td>
<td>-0.02</td>
<td>0.05</td>
<td>0.02</td>
<td>-0.01</td>
</tr>
<tr>
<td>Real Body Muscle</td>
<td>-</td>
<td>0.12</td>
<td>0.10</td>
<td>0.19*</td>
<td>0.09</td>
<td>-0.08</td>
<td>0.08</td>
<td>0.01</td>
</tr>
<tr>
<td>Drive for Thinness</td>
<td>-</td>
<td>0.30**</td>
<td>0.34**</td>
<td>0.27**</td>
<td>0.21*</td>
<td>0.29**</td>
<td>0.19*</td>
<td></td>
</tr>
<tr>
<td>Drive for Muscularity</td>
<td>-</td>
<td>0.25**</td>
<td>0.38**</td>
<td>0.50**</td>
<td>0.23**</td>
<td>0.20*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical Comparisons</td>
<td>-</td>
<td>0.35**</td>
<td>0.31**</td>
<td>0.27**</td>
<td>0.27**</td>
<td>0.27**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Internalisation</td>
<td>-</td>
<td>-</td>
<td>0.68**</td>
<td>0.68**</td>
<td>0.54**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Athletic Internalisation</td>
<td>-</td>
<td>-</td>
<td>0.52**</td>
<td>0.42**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pressures</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\[ M = 417.76, \quad SD = 136.30, \quad \alpha = 0.69 \]

\*\* = \( p<0.01 \) (2-tailed)  \* = \( p<0.05 \) (2-tailed)
Pearson’s correlations were conducted to examine if the other dimensions of body image, such as the ideal and avatar, were similarly influenced. It was found that participants’ ideal weight had a negative correlation with drive for muscularity, $r(129) = -0.20, p < 0.05$, as well as a negative relationship with general internalisation, $r(129) = -0.19, p < 0.05$, and athletic internalisation, $r(129) = -0.21, p < 0.05$. This does not support hypothesis 3, that participants’ drive for thinness will show a significant relationship with participants’ ideal weight, nor does it support hypothesis 5, that participants’ drive for thinness will show a significant relationship with participants’ avatar weight.

Ideal muscle significantly correlated with drive for muscularity, $r(129) = -0.26$, $p < 0.01$ and athletic internalisation in a negative direction, $r(129) = -0.19, p < 0.05$. Avatar weight did not significantly correlated with any body image drive, physical comparison or internalisation, however, avatar muscle was found to significantly and negatively correlate with participants’ drive for muscularity, $r(129) = -0.18, p < 0.05$. These data support hypothesis 4, participants’ drive for muscularity will show a relationship with participants’ ideal muscle with higher drive for muscularity being shown in individuals whose self-reported ideal muscle represents higher levels of muscle than the participant’s self-reported muscle. Furthermore it supports hypothesis 6, participants’ drive for muscularity will show a relationship with participant’s avatar muscle with higher drive for muscularity being shown in individuals whose self-reported avatar muscle represents higher levels of muscle than the participant’s self-reported muscle. These results are presented in Table 5.
Table 5

Pearson's correlation of participants' (n=131) ideal and avatar weight and muscle with drive for thinness, drive for muscularity, appearance internalisation and physical comparison to others.

<table>
<thead>
<tr>
<th></th>
<th>Drive for Thinness</th>
<th>Drive for Muscularity</th>
<th>Physical Comparisons</th>
<th>General Internalisation</th>
<th>Athletic Internalisation</th>
<th>Pressures</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ideal Weight</td>
<td>0.12</td>
<td>-0.20**</td>
<td>-0.08</td>
<td>-0.19*</td>
<td>-0.21*</td>
<td>-0.13</td>
<td>-0.14</td>
</tr>
<tr>
<td>Ideal Muscle</td>
<td>0.01</td>
<td>-0.26**</td>
<td>-0.03</td>
<td>-0.02</td>
<td>-0.19*</td>
<td>0.05</td>
<td>-0.02</td>
</tr>
<tr>
<td>Avatar Weight</td>
<td>-0.02</td>
<td>0.01</td>
<td>-0.14</td>
<td>-0.11</td>
<td>-0.08</td>
<td>-0.10</td>
<td>-0.12</td>
</tr>
<tr>
<td>Avatar Muscle</td>
<td>0.05</td>
<td>-0.18*</td>
<td>-0.01</td>
<td>-0.03</td>
<td>-0.13</td>
<td>-0.9</td>
<td>0.02</td>
</tr>
</tbody>
</table>

\[
M \quad 1.12 \quad 1.00 \quad 8 \quad 2.21 \quad 2.83 \quad 1.97 \quad 2.06 \\
SD \quad 0.79 \quad 0.65 \quad 3.63 \quad 0.90 \quad 0.88 \quad 0.95 \quad 0.85 \\
\alpha \quad 0.69 \quad 0.87 \quad 0.57 \quad 0.53 \quad 0.57 \quad 0.77 \quad 0.55
\]

\*\* = p<0.01 (2-tailed)  *=p<0.05 (2-tailed)

As the avatar was not found to significantly correlate with any aspects of body image internalisation in the real world or physical comparisons to others in the real world, it is necessary to examine if there are influences from the Internet that specifically target the virtual body. Pearson’s correlations were conducted to first examine the relationship between body image ideals internalisation in the real world and internalisation in the virtual world. It was found that internalisation from the Internet significantly and positively correlated with real world equivalents. This is presented in Table 6.
Table 6

*Pearson's correlations of participants' (n=131) appearance internalisation from real world media sources and the internet.*

<table>
<thead>
<tr>
<th></th>
<th>General Internalisation</th>
<th>Athletic Internalisation</th>
<th>Pressures (Internet)</th>
<th>Information (Internet)</th>
<th>Pressures (Internet)</th>
<th>Athletic Internalisation (Internet)</th>
<th>General Internalisation (Internet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information (Internet)</td>
<td>0.26**</td>
<td>0.22*</td>
<td>0.23**</td>
<td>0.45**</td>
<td>-</td>
<td>0.31**</td>
<td>0.38**</td>
</tr>
<tr>
<td>Pressures (Internet)</td>
<td>0.36**</td>
<td>0.3**</td>
<td>0.49**</td>
<td>0.27**</td>
<td>-</td>
<td>0.30**</td>
<td>-</td>
</tr>
<tr>
<td>Athletic Internalisation</td>
<td>0.34**</td>
<td>0.25**</td>
<td>0.19*</td>
<td>0.24**</td>
<td>-</td>
<td>-</td>
<td>0.46**</td>
</tr>
<tr>
<td>General Internalisation</td>
<td>0.36**</td>
<td>0.22*</td>
<td>0.38**</td>
<td>0.33**</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

\[M\] 2.21  2.83  1.97  2.06  1.89  1.52  1.92  1.80

\[SD\] 0.90  0.88  0.95  0.85  0.86  0.82  0.93  0.87

\[\alpha\] 0.53  0.57  0.77  0.55  -0.66  0.69  -0.52  -0.42

**p<0.01 (2-tailed)  *p<0.05 (2-tailed)**

Pearson’s correlations were then conducted to examine participants’ avatar body image, in terms of avatar weight and avatar muscle, in relation to physical comparisons made to other avatars in the virtual world as well as body image internalisation from Internet based sources. This is presented in Table 7.
Table 7

*Pearson’s correlations of participants’ (n=131) avatar weight and muscle with internalisation from the Internet and physical comparison to others in the virtual world.*

<table>
<thead>
<tr>
<th></th>
<th>Avatar Weight</th>
<th>Avatar Muscle</th>
<th>Physical Comparison (Virtual)</th>
<th>General Internalisation (Internet)</th>
<th>Athletic Internalisation (Internet)</th>
<th>Pressures (Internet)</th>
<th>Information (Internet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avatar Weight</td>
<td>-</td>
<td>-0.12</td>
<td>-0.06</td>
<td>0.07</td>
<td>0.02</td>
<td>-0.03</td>
<td>0.16</td>
</tr>
<tr>
<td>Avatar Muscle</td>
<td>-</td>
<td>-</td>
<td>0.05</td>
<td>0.08</td>
<td>-0.18*</td>
<td>0.02</td>
<td>-0.19*</td>
</tr>
<tr>
<td>Physical Comparison (Virtual)</td>
<td>-</td>
<td>0.24**</td>
<td>0.11</td>
<td>0.38**</td>
<td>0.06</td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Internalisation (Internet)</td>
<td>-</td>
<td>0.46**</td>
<td>0.46**</td>
<td>0.36**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Athletic Internalisation (Internet)</td>
<td>-</td>
<td>0.30**</td>
<td>0.38**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pressures (Internet)</td>
<td>-</td>
<td>0.31**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information (Internet)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$M$</td>
<td>320.27</td>
<td>398.03</td>
<td>6.92</td>
<td>1.80</td>
<td>1.92</td>
<td>1.52</td>
<td>1.89</td>
</tr>
<tr>
<td>$SD$</td>
<td>127.69</td>
<td>247.73</td>
<td>3.94</td>
<td>0.87</td>
<td>0.93</td>
<td>0.82</td>
<td>0.86</td>
</tr>
<tr>
<td>$\alpha$</td>
<td>0.62</td>
<td>-0.42</td>
<td>-0.52</td>
<td>0.69</td>
<td>-0.66</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

** = p<0.01 (2-tailed)  * = p<0.05 (2-tailed)

The results show that avatar weight does not significantly correlate with physical comparisons in the virtual world or internalisation of body image ideals from the Internet. Avatar muscle, however, does show some weak but significant
relationship with internalisation of athletic ideals from the Internet, $r(129) = -0.18$, $p < 0.05$, as well as body image information from the Internet, $r(129) = -0.19$, $p < 0.05$.

Physical comparisons made from participants’ avatars to other avatars over the Internet significantly correlated with general internalisation from the Internet, $r(129) = 0.24$, $p < 0.01$ and body image pressures from the Internet, $r(129) = 0.38$, $p < 0.01$.

**Body Image and Disparity**

To conducted a regression exploring the effects of the difference between real and ideal weight as well as real and avatar weight, difference variables were created by subtracting real weight from ideal weight and real weight from the avatar weight. A two-step hierarchical regression was conducted in which drive for thinness was regressed on the difference variable of real and ideal weight in the first step followed by the inclusion of the difference variable between real and virtual weight. The results show that the disparity between real and ideal weight is significant in contributing to drive for thinness. Furthermore, the results indicate that the difference between real and avatar weight significantly contributes to participants’ drive for thinness even in competition with the disparity between actual and ideal weight. This supports hypothesis 7, that the difference between avatar weight and participants’ self-reported real weight will explain additional variance for participants’ drive for thinness over the difference between participants’ real weight and ideal weight.

A difference variable for real and ideal muscle was created by subtracting the value of real muscle from ideal muscle. A difference variable for real and avatar muscle was also created by subtracting real muscle from avatar muscle. A two-step hierarchical regression was conducted in which drive for muscularity was regressed on the difference variable of real and ideal muscle in the first step followed
by the inclusion of the difference variable between real and virtual avatar. The results indicate that only the difference between real and ideal muscle was significant in both steps of the regression. Therefore, the difference between real and avatar muscle does not significantly affect drive for muscularity amongst the participants’ group and therefore fails to support hypothesis 8 which stipulates that the difference between avatar muscle and participants’ self-reported real muscle will explain additional variance for drive for muscularity over the difference between participants’ real weight and ideal weight. The results of the regressions are displayed in Table 8.

Table 8
Results of a series of two-Step Hierarchical Regressions with drive for thinness and drive for muscularity as the dependent variables regressed on real-ideal muscle difference in the first step and real-avatar muscle difference in the second step.

<table>
<thead>
<tr>
<th></th>
<th>Step 1</th>
<th>Step 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$R$</td>
<td>$R^2$</td>
</tr>
<tr>
<td><strong>Drive for Thinness</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Real-Ideal Weight Difference</td>
<td>0.21</td>
<td>0.05</td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Real-Ideal Weight Difference</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Real-Avatar Weight Difference</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Drive for Muscularity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Real-Ideal Weight Difference</td>
<td>0.39</td>
<td>0.15</td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Real-Ideal Weight Difference</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Real-Avatar</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Real world and virtual world experiences of self and body change.

A three paired repeated t-test was conducted with the first pair being participant self-esteem in the real world and participants’ self-esteem in the virtual world, the second pair being participants’ social interaction anxiety in the real world and participants’ social interaction anxiety in the virtual world and the final pair being participants’ social phobia in the real world and participants’ social phobia in the virtual world. This was done to examine if real world and virtual world experiences of self, in terms of self-esteem, and others, in terms of social anxiety and phobia, are significantly different in relation to participants’ actual selves and their avatars. The results indicate that self-esteem in the virtual world is significantly higher than in the real world. Furthermore social interaction anxiety and social phobia are significantly lower in the virtual world. These results are shown in Table 9.
Table 9

Three paired repeated t-test of participants’ (N=131) self-esteem, social interaction anxiety and social phobia in both the real and virtual world.

<table>
<thead>
<tr>
<th></th>
<th>M</th>
<th>SD</th>
<th>SE</th>
<th>R</th>
<th>Lower</th>
<th>Upper</th>
<th>t</th>
<th>df</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pair 1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Esteem Real</td>
<td>-2.78</td>
<td>4.00</td>
<td>0.35</td>
<td>0.69**</td>
<td>-3.47</td>
<td>-2.09</td>
<td>-7.96**</td>
<td>130</td>
</tr>
<tr>
<td>Self-Esteem Virtual</td>
<td>41.86</td>
<td>5.50</td>
<td>0.48</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Pair 2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Interaction Anxiety Real</td>
<td>13.18</td>
<td>14.30</td>
<td>1.25</td>
<td>0.65**</td>
<td>10.71</td>
<td>15.65</td>
<td>10.55**</td>
<td>130</td>
</tr>
<tr>
<td>Social Interaction Anxiety Virtual</td>
<td>31.43</td>
<td>18.68</td>
<td>1.63</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Pair 3</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Phobia Real</td>
<td>6.00</td>
<td>7.27</td>
<td>0.64</td>
<td>0.85**</td>
<td>4.73</td>
<td>7.25</td>
<td>9.43**</td>
<td>130</td>
</tr>
<tr>
<td>Social Phobia Virtual</td>
<td>14.03</td>
<td>13.31</td>
<td>1.16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* **= p<0.01 (2-tailed)  *=p<0.05 (2-tailed)
To explore if these differences are differentially relevant, Pearson’s correlations of self-esteem, social interaction anxiety and social phobia in the real and virtual world with drive for thinness and drive for muscularity were conducted. The correlation demonstrates that real world experiences of self and others correlated significantly with virtual world experiences of self and others as well as drive for muscularity and drive for thinness with the exception being real world social anxiety not significantly correlating with drive for muscularity. Virtual world experiences of self and others, in terms of self-esteem, social interaction anxiety and social phobia, significantly correlate with drive for thinness, however, do not significantly correlate with drive for muscularity. The results are presented in Table 10.
Table 10

*Pearson’s correlations of self-esteem, social interaction anxiety and social phobia in the real and virtual world with drive for thinness and drive for muscularity.*

<table>
<thead>
<tr>
<th></th>
<th>Self-Esteem (Real)</th>
<th>Self-Esteem (Virtual)</th>
<th>Social Interaction Anxiety (Real)</th>
<th>Social Phobia (Real)</th>
<th>Social Interaction Anxiety (Virtual)</th>
<th>Social Phobia (Virtual)</th>
<th>Drive for Thinness</th>
<th>Drive for Muscularity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Esteem (Real)</td>
<td>-</td>
<td>0.69**</td>
<td>-0.82**</td>
<td>-0.76**</td>
<td>-0.69**</td>
<td>-0.33**</td>
<td>-0.33**</td>
<td>-0.23**</td>
</tr>
<tr>
<td>Self-Esteem (Virtual)</td>
<td>-</td>
<td>-0.53**</td>
<td>-0.47**</td>
<td>-0.56**</td>
<td>-0.56**</td>
<td>-0.23**</td>
<td>-0.23**</td>
<td>-0.06**</td>
</tr>
<tr>
<td>Social Interaction Anxiety (Real)</td>
<td>-</td>
<td>0.80**</td>
<td>0.65**</td>
<td>0.67**</td>
<td>0.70**</td>
<td>0.28**</td>
<td>0.28**</td>
<td>0.16**</td>
</tr>
<tr>
<td>Social Phobia (Real)</td>
<td>-</td>
<td>-0.64**</td>
<td>0.85**</td>
<td>0.29**</td>
<td>0.18**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Interaction Anxiety (Virtual)</td>
<td>-</td>
<td>0.80**</td>
<td>0.24**</td>
<td>0.03 **</td>
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<tr>
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<td>0.95</td>
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<td>0.87</td>
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</table>

\*\* = \( p<0.01 \) (2-tailed)  \* = \( p<0.05 \) (2-tailed)
Real-world and virtual-world experiences of self and of others on psychological functioning.

To that explore the relationship between participants’ self-esteem, social anxiety and social phobia, and participants’ psychological functioning, in terms of anxiety, depression and stress Pearson’s correlations were conducted. The correlations showed that participants’ stress, anxiety and depression was significantly correlated with each other. Further participants’ stress and anxiety was significantly correlated real and virtual self-esteem, social interaction anxiety, social phobia, drive for muscularity and drive for thinness. Participants’ depression similarly correlated with real and virtual world experiences of self, but showed no significant correlation with drive for muscularity. The results are presented in Table 11. This suggests that participants’ experience of self-esteem, social anxiety and social phobia on the Internet may be relevant to their psychological functioning in real life, in terms of depression, stress and anxiety.
### Table 11

*Pearson’s correlations of participants’ self-reported stress, anxiety and depression, drive for thinness and muscle, with social interaction anxiety, social phobia and self-esteem in real and virtual environments.*

<table>
<thead>
<tr>
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<th>Anxiety</th>
<th>Depression</th>
<th>Social Interaction Anxiety Real</th>
<th>Social Phobia Real</th>
<th>Social Interaction Anxiety Virtual</th>
<th>Social Phobia Virtual</th>
<th>Self-Esteem Real</th>
<th>Self-Esteem Virtual</th>
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<th>Drive for muscularity</th>
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<td>0.19*</td>
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<td>0.41**</td>
<td>0.36**</td>
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<td>-0.34**</td>
<td>0.34**</td>
<td>0.19*</td>
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<td>0.49**</td>
<td>0.40**</td>
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<td>0.70**</td>
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<td></td>
<td>0.80**</td>
<td>-</td>
<td>0.69**</td>
<td>-0.56**</td>
<td>0.32**</td>
<td>0.12</td>
<td></td>
<td></td>
</tr>
<tr>
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<td></td>
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<td>-</td>
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<td>0.31**</td>
<td>0.36**</td>
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<td></td>
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<td>0.69**</td>
<td>0.31**</td>
<td>0.36**</td>
<td>0.69</td>
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<td></td>
</tr>
<tr>
<td>Drive for Thinness</td>
<td>-</td>
<td></td>
<td></td>
<td>0.80**</td>
<td>-</td>
<td>0.69**</td>
<td>0.31**</td>
<td>0.36**</td>
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<td>Drive for muscularity</td>
<td>-</td>
<td></td>
<td></td>
<td>0.80**</td>
<td>-</td>
<td>0.69**</td>
<td>0.31**</td>
<td>0.36**</td>
<td>0.69</td>
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</tr>
</tbody>
</table>

\[M\] \(= 7.75\) \(SD\) \(= 6.03\) \(\alpha\) \(= 0.78\)

\[** = p < 0.01 \text{ (2-tailed)} \] \[* = p < 0.05 \text{ (2-tailed)} \]
To further explore if there is an additional or qualitatively different contribution made by the virtual world experiences self-esteem, social interaction anxiety and social phobia on participants’ depression, stress and anxiety, a series of two step hierarchical regressions were conducted. The results indicated that self-esteem in the real world significantly explained 43% of the variance for depression. Self-esteem in the virtual world did not significantly contribute when added in the second step of the regression, thus not explaining any additional information. Social interaction anxiety in the real world was able to significantly explain 30% of the variance for depression but social interaction anxiety in the virtual world made no significant contributions, suggesting it does not have any effect on participants’ depression. Social phobia in the real world was able to explain 24% of the variance for depression, however, the addition of social phobia in the virtual world to the model did not significantly contribute to the variance explained.

In terms of participants’ anxiety, self-esteem in the real world significantly explained 18% of the variance for participants’ anxiety but the addition of self-esteem in the virtual world does not add anything significant to the model. Social interaction in real life is able to significantly explain 17% of the variance but social interaction anxiety in the virtual world did not significantly contribute to the model when added in step two. Social phobia in the real world was able to significantly explain 21% of the variance for anxiety. The addition of social phobia in the virtual world significantly explained an addition 4% variance. This suggest that social phobia in virtual world has increases participants’ anxiety levels to a small but significant degree in real life.

Participant’s stress, when regressed on self-esteem in the real world had 31% of the variance explained and when self-esteem in the virtual world is placed in
competition with self-esteem in the real world, it was found that self-esteem in the virtual world significantly contributed an additional 2% variance to the model, suggesting that there is a small but significant effect on participants’ stress levels in a negative direction. Social interaction anxiety in the real world was able to significantly account for 19% of the variance for participants’ stress. The addition of social interaction anxiety in the virtual world in step 2 did not significantly contribute to the model. Social phobia in the real world was able to significantly explain 17% of the variance for participants’ stress with an additional 3% variance explained with the addition of social phobia in the virtual world. This suggests that social phobia in the virtual world significantly impacts on participants’ stress in a positive direction. The results of this series of two-step hierarchical regressions are shown in Table 12.

These results partially confirm hypothesis 9, which proposed that participants’ self-esteem, social anxiety and social phobia in the virtual world, will have a differential influence on participants’ psychological functioning, in terms of anxiety, depression and stress. Social phobia in the virtual world was able to provide additional information when in competition with social phobia in the real world for participants’ anxiety and stress. Furthermore self-esteem in the virtual world was also able to explain additional variance for participants’ stress when in competition with self-esteem in the real world.
Table 12

*A series of Two-step Hierarchical Regressions with participants’ depression, anxiety and stress as dependent variables alternatively regressed on participants’ self-esteem, participants’ social interaction anxiety and participants’ social phobia alternatively in the real world in the first step with the addition of participants’ self-esteem, participants’ social interaction anxiety and participants’ social phobia in the virtual world in the second step.*

<table>
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<tr>
<th>Step 1</th>
<th>$R$</th>
<th>$R^2$</th>
<th>$\Delta R^2$</th>
<th>B</th>
<th>SE(B)</th>
<th>$\beta$</th>
<th>$t$</th>
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### Depression

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### Anxiety

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### Stress

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** = p<0.01 (2-tailed)  * = p<0.05 (2-tailed)
Discussion

The results of study 1 supported hypothesis 1, that Participants’ ideal body image will be of lower adiposity and greater musculacity than their self-reported actual body, with participants’ ideal body dimensions would be significantly different from their actual body dimensions in terms of body fat and muscle mass, with the ideal having more muscle and less fat. This is in line with previous research which suggests males desire more muscle and less fat (Demarest & Allen, 2000; Fallon & Rozin, 1985; Tiggemann et al., 2007) and thus their ideals will reflect this.

Participants were also found to have avatars that were significantly different from both their ideal and actual body, showing significantly higher levels of muscle mass and lower levels of body fat, supporting hypothesis 2 that participants’ avatars will be of lower adiposity and greater musculacity than their self-reported ideal bodies. This difference was an extrapolation of the difference between the actual and ideal. This is in support of previous studies that have indicated that individuals on the Internet represent themselves closer to their ideal self than their actual self, at least in terms of personality (Lawson, 2000; McKenna & Bargh, 2000). This data is in contrast to a study conducted by Bessiere et al. (2007) which found that there was no significant difference between the participants (n=51) actual self and virtual self in terms of personality traits and in fact the virtual self was closer to their actual self than their ideal self.

Interestingly, participants’ BMI was found to have a positive, strong, significant relationship with real body weight, a positive, moderate, significant relationship with ideal body weight and a positive, weak, significant relationship with virtual body weight. No significant relationships were found between BMI and actual,
ideal and virtual muscle mass. This gives some validation to the method of individuals selecting their actual body shape from a grid of muscle mass and body fat.

While it was hypothesised that the difference between the avatar and ideal would be significant with the avatar having more muscle and less weight, it was thought that this would be due to a compensatory role that the avatar may play for individuals who have a physical master status condition or dysmorphic body image. To explore this, the influence of sociocultural factors on the participants’ body image, their body change behaviours and their avatars was examined. It was expected that the avatar would be able to contribute to the exploration of such factors in addition to what was already explained by participants’ ideals. It was found that participants’ weight correlated with drive for thinness and participants’ muscle weakly correlated with participants making physical comparisons to others. Participants’ drives were also explored, with drive for thinness and drive for muscularity found to correlate with physical comparisons made to others and internalisation of appearance ideals from external sources. The tripartite influence model of body dissatisfaction and eating disturbance suggests that individuals with body image concerns and eating disorders have internalised body image ideals from their peers, parents and the media ideals (Keerya et al., 2004; Thompson et al., 1999). The relationship between participants’ drives and internalisation of body image support the research which suggests such internalisation can lead to body change behaviour (Hobza et al., 2007; Rydgeway & Tylka, 2005), which can potentially be unhealthy (Derenne & Beresin, 2006).

A surprising outcome of study 1 was that participants’ ideal weight and ideal muscle was only weakly correlated with aspects of internalisation of body image ideals from external sources. Ideal weight was weakly and negatively correlated with
general internalisation and athletic internalisation, while ideal muscle was only weakly correlated with general internalisation. It was expected that participants’ ideals would reflect internalisation of body image ideals as previous studies have shown that ideal male body image is generally related to having increased levels of muscle that is often from internalised ideals (Adams, Turner & Bucks, 2005; Labre, 2005; Ridgeway & Tylka, 2005). Current evidence supports the theory that men are now becoming more dissatisfied with their appearance (Lynch & Zellner, 1999; Weltzin et al., 2005).

Hypothesis 5, participants’ drive for thinness will show a relationship with participant’s avatar weight with higher drive for thinness being shown in individuals whose self-reported avatar represents higher levels of thinness than the participant’s self-reported thinness, was not supported as participants’ avatars in terms of weight showed no relationship with body change drives or internalisation. Avatar muscle was found to weakly and negatively correlate with drive for muscularity, supporting hypothesis 6, that participants’ drive for muscularity will show a relationship with participant’s avatar muscle with higher drive for muscularity being shown in individuals whose self-reported avatar muscle represents higher levels of muscle than the participant’s self-reported muscle.

Once more this was unexpected as it was believed that individuals would possibly use the avatar as a compensatory tool to hide body dysmorphic concerns and physical master status conditions and present an idealised body (Riva, 2002) which exaggerated masculine qualities which participants may be lacking (Biocca & Nowak; 2002). It was expected that both weight and muscle would correlate strongly and significantly. It could be possible that the avatar is not created to fulfil internalised body image ideals, or has a much more complex relationship than initially thought.
However, it is also possible that real world internalisation is not relevant to individuals who use avatars. This could be due to a media effects phenomenon, whereby the impact that a specific media has on an individual is mediated by the extent to which the individual differentiates the specific media from reality (Yee et al., 2007). It could be that participants did not identify their avatar as an extension of reality, as this was not measured in the current study, and therefore their real world media internalisation effects did not carry over. There is also the limitation of the current study which did not take the context of which the avatar was used, such as in online game play or socialisation, and this may have affected the inability of the avatar to predict internalisation of media in participants.

Internet based internalisation was explored, as well as participants comparing their avatars to other avatars. Avatar weight did not show any relation to online physical comparisons or Internet base internalisation. Avatar muscle was only found to weakly and negative correlate to some aspects appearance information internalised from the Internet.

Previous research has suggested that online game players are highly motivated by the desire to have interpersonal needs met (Lo, Wang & Fang, 2005a, 2005b). Research has supported the fact that individuals who are more physically attractive are more likely to interact with others and develop more friendships as well as attract others and develop higher quality personal interactions with others (Townsend & Levy, 1990a; Lo, 2008). A study by Lo examined this effect in online environments and found that avatars that were viewed as more attractive, due to costume and accessory enhancements, displayed higher interpersonal attraction than those with standard items. This suggest that real world theories that apply to interpersonal attraction are valid in online environments and as a result creating an avatar with
higher levels of muscle and lower levels of body fat may be an avenue to assist users in developing stronger interpersonal relationships. The current study did not explore the importance of interpersonal online relationships in this context and as a result this is an area which requires more research in terms of physical avatar attributes. This could explain the lack of a relationship between participants’ ideal and avatar bodies and appearance internalisation from external sources.

This is in contrast to a study by Vasalou and Joinson (2009) which examined how participants (n=79) customise their avatars in different online settings, such as gaming, blogging and dating. It was found that regardless of the setting, individuals chose to create avatars that were self-reflective and self-representative. This was done through examining the attributes that the participants would choose to display in their avatar. While actual physical dimensions in terms of body fat and muscle mass were not explored, areas such as athletic ability and physical attractiveness were. These attributes, among others, were rated on a 10 point scale and participants were then asked to rate themselves among these same dimensions. The mean rating of physical attractiveness and athletic ability was higher in the virtual world across all domains than how participants rated themselves in real life (Vasalou & Joinson). However, these differences were not significant, suggesting that individuals still chose to represent themselves closer to their actual self than their ideal. Vasalou and Joinson identify that in the dating domain participants created more attractive avatars than in the other domains, however, these avatars were still not significantly different from how participants rated their own attractiveness. This supports Axelsson’s (2002) theory that the avatar represents stable aspects of individual’s personalities and not idealised versions and other recent studies that have also shown that individuals prefer
avatars that are similar to themselves in terms of gender role, appearance and sex (Hu et al., 2005; Rymaszewski et al., 2007; Trepte et al., 2009).

Due to the disparity between real and ideal weight and muscle and real and avatar weight and muscle, the effects of this disparity on body change behaviours were explored. According to previous studies, males tend to show a general desire to have more muscle mass resulting in a discrepancy between their actual and ideal body types (Grieve, Newton, Kelly, Miller & Kerr, 2005). Higgin’s (1987) self-discrepancy theory suggests that individuals that the greater the discrepancy between the actual self and the ideal self the greater the negative psychosocial effects and the greater the need the individual feels to reduce these discrepancies. Study 1 found that drive for thinness in participants was influenced by the difference between participants’ real and ideal weight. When the difference between real and avatar weight was also added to the model, it was able to explain additional information, suggesting the avatar has some significance in predicting body change drive for thinness in participants. This confirms hypothesis 7, that the difference between avatar weight and participants’ self-reported real weight will explain additional variance for participants’ drive for thinness over the difference between participants’ real weight and ideal weight.

The disparity between real and ideal muscle also influenced drive for muscularity, but the disparity between real and avatar muscle did not contribute any additional information. This was unexpected and did not provide support for hypothesis 8, which stipulates the difference between avatar muscle and participants’ self-reported real muscle will explain additional variance for drive for muscularity over the difference between participants’ real weight and ideal weight. Once more it
appears the avatar tells very little about participants’ body change drives than already explained by the ideal.

Research by Markus and Kunda (1986) suggested that individual’s represent themselves in a dynamic and multifaceted way, as opposed to a stable presentation. This means that while individuals have stable traits that they access, individuals will act differently in different situations depending on their role, external cues and other factors (Aaker, 1999). In online environments, individuals may be role-playing characters that are not idealised in terms of personality traits, but may in fact be totally different. This means that the avatar may not have any relation to internalised appearance ideals, explaining why the avatar body fat and muscle mass was unable to predict appearance internalisation in the current study. It could also be due to the low levels of endorsement of media internalisation across all the measured domains, and the low endorsement of drive for muscularity and drive for thinness in the participants, as well as low endorsement of dysmorphic concerns, meant that participants did not tend to internalise media in terms of body image. Prior studies that suggest that media exposure to ‘perfect’ male bodies often results in poorer male body image, due to self-objectification (Baird & Grieve, 2006; Lorenzen, Grieve & Thomas, 2004; Morry & Staska, 2001) so it is possible the participant group has either had low levels of exposure or did not internalise such exposure to a dysfunctional extent.

Another aspect of the current study was exploring the difference between real-world and virtual-world experiences of self (self-esteem) and of others (social anxiety and phobia). It was hypothesised that the disparity between real and virtual would have a differential influence on participant’s body change behaviours. Self-esteem was found to be significantly higher in the virtual world and social interaction anxiety
and social phobia were found to be significantly lower. Drive for thinness was found to correlated negatively and weakly with self-esteem in both the real and virtual world, and weakly with social interaction anxiety and social phobia both real and virtual. Self-esteem has been shown to be linked to body image, with high self-esteem being a protective factor against body dissatisfaction and body change (Grogan, 2010). Drive for muscularity correlated weakly and negatively with real world self-esteem, but not virtual. It also weakly correlated with real world social phobia.

Mean participants’ self-esteem in the real world was at an average level of self-esteem, while virtual world self-esteem is in above average range. This higher level of self-esteem in the virtual world suggests that participants’ avatars could possibly be compensatory in terms of self-esteem, leading to more positive outcomes for participants. This is in contrast to the research by Bessiere et al. (2007) who found that self-esteem in the real and virtual world were not significantly different. A pilot study by James, Lin, Steed, Swapp and Slater (2003) looked at social anxiety occurring in online environments. It was found that socially neutral online settings provoked less anxiety than situations in which individuals were primed to interact. However repetition of exposure would result in lower levels of anxiety. Other studies have shown that individuals with high levels of social anxiety in real life tend to show symptoms of social anxiety in online environments (Wieser, Pauli, Grosseibl, Molzow & Muhlberger, 2010).

McDonald and Kim (2001) conducted a study in which it was show that characters in video games a can be viewed as ideal selves by adolescents and that when participants made comparisons between themselves and these characters, negative feelings emerged such as low self-esteem. Furthermore Bessiere et al (2007) also demonstrated that participants who played online avatar based games rated their
avatars significantly more positively across different personality attributes, such as neuroticism, extraversion and conscientiousness than their actual selves.

Study 1 went on to explore whether real-world and virtual-world experiences of self (self-esteem) and of others (social anxiety and phobia) have a differential influence on participant’s psychological functioning, in terms of anxiety, depression and stress. Hypothesis 9 was partially confirmed which proposed that participant’s self-esteem, social anxiety and social phobia in the virtual world, will have a differential influence on participants’ psychological functioning, in terms of anxiety, depression and stress. Drive for muscularity found to have a relationship with participants’ stress and anxiety, while drive for thinness was found to relate to stress, anxiety and depression. Evidence from the literature suggests body image concerns are linked to psychopathology, such as anxiety and depression (Cash, Philips, Santos & Hrabosky, 2004; Hughes & Gullone, 2011; Kostanski & Gullone, 1998). Individuals who use avoidance strategies and appearance fixing and are unable to employ acceptance strategies in response to body image threats have been found to have lower self-esteem and poorer psychosocial outcomes (Cash, Santos & Williams, 2005). Previous research has also supported the link between stress and body image drive, with successful programs being developed that are successfully addressing disordered eating and body image though stress reduction training (Hughes & Gullone).

Participants’ depression and anxiety was found to be influenced by participants’ self-esteem in the real world, but virtual world self-esteem did not contribute any additional information. However, stress was found to be influence by both real world self-esteem and by virtual world self-esteem. This suggests that virtual world activities which may enhance or reduce self-esteem may have an impact
on participants’ psychosocial functioning in real life, such as suggested by the Proteus Effect (Yee et al., 2009). Furthermore virtual world social phobia also was found to effect real world stress and anxiety, further supporting the link between the avatar and real world functioning. Considering recent studies which have found that the self-esteem of men was strongly predicted by physical attributes, as well as status and resources (Wade, 2000) it was thought that there would be a relationship between the avatar and self-esteem. However results did not support this in the current thesis. This could be due to participant’s not using the avatar as a means of improving self-esteem due to body concerns and thus no correlation was found. However replicating the study with a clinically significant population for body image concerns may reveal evidence to support the avatars’ role in promoting self-esteem due to reducing body image concerns.

Summary and Conclusions

Participants’ avatars were shown to be separate entities to participants’ real and ideal body image, supporting hypothesis 2 that the avatar will have more extreme levels of muscle and less body fat than the ideal. However, study 1 provided very little support for the avatar being a compensatory mechanism for real world body image disturbances. It appeared that the avatar had very little relationship with appearance internalisation as well as body change drives, which the exception being that the disparity between real weight and avatar weight can contribute additional information over the disparity between real and ideal weight to drive for thinness. This partially supported the hypothesis that participants’ body change drives will be predicted by disparity between the real and ideal, and the real and avatar. It was
expected that drive for musculature would be more relevant considering the male population, but this did not appear to be supported.

There was also no support for the physical dimensions of the avatar, in terms of weight and muscle, in being indicative of psychopathology in the real world, however participants’ online self-esteem was found to be higher than their real world self-esteem, and their social interaction anxiety and social phobia were lower in the online environment. Self-esteem, social interaction anxiety and social phobia all had predictive effects on real world depression, stress and anxiety. Virtual world self-esteem and social phobia also contributed additional information to participants’ stress, when in competition their respective real world counterparts. Virtual world social phobia also contributed additional information to participants’ anxiety when in competition to real world social phobia. This all suggests that online experiences of self and others can lead to real world psychopathological consequences.

More information is required regarding the meaning of the avatar to participants. It is likely that the avatar serves many roles to different individuals and can be context dependent. Previous research has shown individuals can create avatars which are different to themselves to role play (Hussain & Griffiths, 2008; Kafai et al., 2007; Konijn and Bijvank, 2009; Taylor, 2002), to compensate for real world failings (Trepte & Reinecke, 2010), or as a more utilitarian tool to achieve game based goals (Bruckman, 1993; Riegelsberger et al., 2006). Taylor (2003) stated that contextual information is very important in examining the creation of the avatar, as it will influence the reasons as to why the avatar is created. In contrast, a study by Vasalou and Joinson, (2009) indicated that contextual factors do not play a part in avatar creation as participants created avatars that were self-reflective and self-
representational across all examined contexts, such as blogging, dating and gaming. Axelsson's (2002) suggests avatars present users’ stable aspects.

This sets the premise for a second study, which will include qualitative questions to examine the meaning of the avatar to individuals. Furthermore, the meaning of the avatar’s appearance to participants will also be explored as study 1 placed major emphasis on the concept that avatar appearance is relevant to user psychopathology and body image ideals. It will also be relevant to examine appearance objectification in participants as well as competency in both the real world domain and the virtual world domain. This will allow for further insight into the importance of appearance in the online context and the importance of competency.
CHAPTER FOUR

Study 2

The findings in study 1 suggest that context in which the user creates an avatar may be an important aspect of avatar creation and this has been supported in previous research Taylor (2003). Study 2 sought to replicate some of the findings in study 1, such as the difference between self-reported real body weight and muscle, ideal weight and muscle and avatar weight and muscle. While study 1 did include a measure of body image dysmorphia, this was likely not suitable for a non-clinical sample. Study 2 used a male body dissatisfaction scale which is more appropriate for the general population as well explore participant’s appearance objectification in the real world and virtual world and the importance they place on competency in these same domains. It was expected that appearance dissatisfaction, appearance objectification and competency will provide additional information about participants’ avatar creation.

Study 2 also incorporated a qualitative element to explore the meaning of the avatar to participants. This provided contextual information which may allow for more insight into the link between avatar body dimensions and participants’ real world functioning. Previous research into avatar creation has shown varied results, with some studies showing that the avatar is a compensatory mechanism (Trepte & Reinecke, 2010), is for roleplaying (Hussain & Griffiths, 2008; Kafai et al., 2007; Konijn and Bijvank, 2009; Taylor, 2002) and is simply a tool in a game (Bruckman, 1993; Riegelsberger et al., 2006). The qualitative analysis explored if these factors were relevant in the study population.
Based on the results from study 1, and previous research which indicates males desire more muscle and less fat (Demarest & Allen, 2000; Fallon & Rozin, 1985; Tiggemann et al., 2007) and that the avatars of males often reflect hypermasculinity (Biocca & Nowak, 2002; Mosher & Tomkins, 1988) it was hypothesised that:

*Hypothesis 1: Participants’ ideal body image will be of lower adiposity and greater muscularity than their self-reported actual body.*

*Hypothesis 2: Participants’ avatars will be of lower adiposity and greater muscularity than their self-reported ideal bodies.*

Past research has suggested that the higher the levels of body dissatisfaction and appearance objectification in men, the more likely they are to possess higher levels of body change drives (Morry & Staska, 2001; Lorenzen et al., 2004; Baird & Grieve, 2006). It was further hypothesised that:

*Hypothesis 3: Participants’ drive for thinness will be significantly correlated with participant’s dissatisfaction with weight and their objectification of appearance.*

*Hypothesis 4: Participants’ drive for muscularity will be significantly correlated with participant’s dissatisfaction with muscle and their objectification of appearance.*

Study 1 did not include any measures which examined the importance of competency and the objectification of appearance in participants. Research supports the theory that self-objectification can lead to individuals wanting more muscle and less body fat (Baird & Grieve, 2006; Lorenzen, Grieve & Thomas, 2004; Morry & Staska, 2001). It was therefore hypothesised:
Hypothesis 5: Participants’ self-reported ideal weight will have some of the variance explained by participants’ real world appearance objectification and participants’ competency.

Hypothesis 6: Participants’ self-reported ideal muscle will have some of the variance explained by participants’ real world appearance objectification and participants’ competency.

Prior research suggests that game competitiveness can influence avatar creation (Trepte and Reinecke, 2010). Furthermore, objectification of appearance ideals has been shown to increase body change drives and increase body image dissatisfaction (Olivardia et al., 2004; Schwartz & Tylka, 2008; Tylka et al., 2005). An important aspect to also acknowledge is that objectification of appearance may only affect avatar creation if participants view the internet as a domain where appearance is relevant. It therefore was hypothesised:

Hypothesis 7: Avatar weight will be predicted by participants’ dissatisfaction with their weight and objectification of appearance in the virtual world.

Hypothesis 8: Avatar muscle will be predicted by participants’ dissatisfaction with their muscle and objectification of appearance in the virtual world.
Method

Participants

133 male participants were recruited for this study with a mean age of 34.09 years, ranging from 18 years to 62 years ($M=34.17$, $SD=11.02$). All participants were asked to supply their age and country of residence. Participants were also asked to enter their height and weight so that a Body Mass Index (BMI) could be calculated. Table 13 shows participants’ country of residence.

Table 13

*Country of residence of participants in Study 2.*

<table>
<thead>
<tr>
<th>Country of Residence</th>
<th>N</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>42</td>
<td>31.6%</td>
</tr>
<tr>
<td>United States of America</td>
<td>40</td>
<td>30.4%</td>
</tr>
<tr>
<td>Canada</td>
<td>12</td>
<td>9.1%</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>8</td>
<td>6.1%</td>
</tr>
<tr>
<td>Ireland</td>
<td>4</td>
<td>3.0%</td>
</tr>
<tr>
<td>Germany</td>
<td>2</td>
<td>1.5%</td>
</tr>
<tr>
<td>Netherlands</td>
<td>2</td>
<td>1.5%</td>
</tr>
<tr>
<td>Sweden</td>
<td>2</td>
<td>1.5%</td>
</tr>
<tr>
<td>China</td>
<td>1</td>
<td>0.8%</td>
</tr>
<tr>
<td>Denmark</td>
<td>1</td>
<td>0.8%</td>
</tr>
<tr>
<td>Finland</td>
<td>1</td>
<td>0.8%</td>
</tr>
<tr>
<td>France</td>
<td>1</td>
<td>0.8%</td>
</tr>
<tr>
<td>India</td>
<td>1</td>
<td>0.8%</td>
</tr>
<tr>
<td>Italy</td>
<td>1</td>
<td>0.8%</td>
</tr>
<tr>
<td>Malaysia</td>
<td>1</td>
<td>0.8%</td>
</tr>
<tr>
<td>Russia</td>
<td>1</td>
<td>0.8%</td>
</tr>
<tr>
<td>South Africa</td>
<td>1</td>
<td>0.8%</td>
</tr>
<tr>
<td>Switzerland</td>
<td>1</td>
<td>0.8%</td>
</tr>
</tbody>
</table>

Participants stated how many avatars they used. Five participants did not respond but it was assumed that they had at least one avatar as they had indicated a
positive response to the question “Do you have an avatar.” The number of avatars users had ranged from 1 to 100 with a mean of 7.58 ($SD=12.53$).

Procedure

Study 2 followed the same procedure as described in study 1.

Recruitment.

135 participants completed or partially completed a questionnaire which was hosted online on a secure Deakin University based server. Recruit process was identical to study 1 with the exception of an advert that was placed on Facebook, a social networking site. The advert was targeted towards individuals who had an interested in avatar based applications and games. Participants were excluded from the study if they did not have an avatar, and if the study was not completed or if they failed to meet the inclusion criteria outlined in the study description and the Study 2 Plain Language Statement and Consent Form (Appendix 15).

Informed Consent. Participants were required to read the Plain Language Statement prior to consenting to take part in the study and being given access to the online questionnaire. The process of informed consent was identical to study 1.

Demographics. Participants’ demographic data was collected in the survey. Participants were asked their age, gender and country of residence. Participants were also asked if they had an avatar, how many they had and used and the applications or programs they used their avatars in. Participants were also asked which avatar meant the most to them personally. This is shown in Appendix 16.
Materials

Inventories from Study 1. The drive for thinness scale (Appendix 13; Garner et al., 1982) and the drive for muscularity scale (Appendix 14; McCreary & Sasse, 2000) were used in study 2 to measure participants’ drives for thinness and muscle. As described in the method section of study 1, the somatomorphic matrix (modified) (Appendix 12; Cafri & Thompson, 2004) was also used in study 2. Participants were asked to select their real, ideal and avatar body image from a matrix of body fat to muscle mass. Participants’ actual height and weight was also asked.

Avatar relevance. Participants were asked 8 questions relating to their Internet and avatar use (Appendix 17). The participants were able to respond on a Likert scale, ranging from 0 to 10. The questions asked were, “How important is it that you feel socially connected with other people who are also online?”, “How socially connected do you feel with other people who are online?”, “How important to you is making friends online?”, “Do you feel your avatar is an accurate physical representation of you?”, “To what extent is your avatar’s appearance determined by your online role?”, “To what extent is your avatar’s appearance determined by your personal preferences?”, “To what extent do you identify with your avatar?” and “How strongly attached are you to your avatar?”.

Self-Objectification Questionnaire. The Self-Objectification Questionnaire (Noll & Fredrickson, 1998), shown in Appendix 18, consists of 5 ratings relating to appearance self-objectification 5 relating to body competence self-objectification. The ratings are on a scale of 0 (least important) to 9 (most important). Scores are calculated by subtracting the competence items from the appearance items. The score
range is from -25 to 25, with lower scores indicating less self-objectification. For the purpose of this study, a Likert scale from 0 to 10 was used instead of a rating, with 0 being not important and 10 being extremely important, thus the score range is from -55 to 55, with higher scores indicating higher levels of appearance self-objectification. This questionnaire was asked in two contexts in the study, the first being applied to the participant relating to their own body and the second being applied to the participant’s avatar.

Male Body Attitudes Scale (MBAS). The MBAS (Appendix 19; Tylka, Bergeron & Schwartz, 2005) is a validated scale for measuring dissatisfaction body attributes in males. It consists of 24 items asking questions relating to height, weight, muscle and overall body satisfaction. Participants respond on a 6 point Likert scale, with 1 meaning “never” and 6 meaning “always”. Tylka et al., (2005) demonstrated the alpha for the questionnaire to be 0.91, with the alpha for the 8 item body fat scale being 0.93, the 10 item musculosity scale being 0.90 and the 2 item height scale being 0.88 and was shown to be valid and reliable.

Qualitative Questions. Participants were asked what program or applications they used avatars in and which of their avatars were most important to them. Three qualitative questions were also asked. These were:

1. What does your avatar mean to you? Is it just a tool in a game? Is it more than that?
2. Is the appearance of your avatar important to you? How so?
3. Is there something you would like to add about your avatar that we haven’t thought to ask you?

Participants were provided with a text box to type their responses. As it was an online survey, follow-up questions were not able to be asked.
Results

*Participant’s Avatar Use*

In Study 2, participants \( n=133 \) were initially asked which programs or applications they used avatars in. Table 14 shows the applications and games most used by the participants. Participants used multiple programs which incorporated avatars and only one participant did not respond to the question. The majority of users, 53.38\%, had avatars in World of Warcraft, a massive multiple online role-playing game. The second most popular program was Second Life, in which 24.06\% of participants had an avatar. Second Life is an online social program with the primary purpose of interaction with others and unlike World of Warcraft it is not role driven or goal based but rather led by the desires of the user. 45.86\% of participants had recorded that they had avatars in one or two of 61 other games and application, due to the large list they were not included individually. Interestingly 3.01\% of users indicated Facebook as an application that they use avatars in. While an avatar is a digital representation of oneself and can be a photo such as in a Facebook profile, many other users did not appear to view this as an avatar. 6.02\% of users wrote that they played and used many more games and applications and did not list them. The majority of the programs listed in which participants used avatars were online role-playing type games, with the second most being socialisation applications.
Table 14

*Participants' avatar application Use*

<table>
<thead>
<tr>
<th>Application</th>
<th>Number of Participants</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>World of Warcraft</td>
<td>71</td>
<td>53.38</td>
</tr>
<tr>
<td>Second Life</td>
<td>32</td>
<td>24.06</td>
</tr>
<tr>
<td>Rift</td>
<td>19</td>
<td>14.29</td>
</tr>
<tr>
<td>Lord of the Rings Online</td>
<td>15</td>
<td>11.28</td>
</tr>
<tr>
<td>EVE Online</td>
<td>15</td>
<td>11.28</td>
</tr>
<tr>
<td>xbox live</td>
<td>11</td>
<td>8.27</td>
</tr>
<tr>
<td>Everquest 2</td>
<td>8</td>
<td>6.02</td>
</tr>
<tr>
<td>OpenSim / opensim grids</td>
<td>8</td>
<td>6.02</td>
</tr>
<tr>
<td>guild wars</td>
<td>6</td>
<td>4.51</td>
</tr>
<tr>
<td>Star Trek Online</td>
<td>6</td>
<td>4.51</td>
</tr>
<tr>
<td>forums/websites</td>
<td>5</td>
<td>3.76</td>
</tr>
<tr>
<td>Warhammer Online</td>
<td>5</td>
<td>3.76</td>
</tr>
<tr>
<td>IM Programs</td>
<td>5</td>
<td>3.76</td>
</tr>
<tr>
<td>Dungeons and Dragons Online</td>
<td>4</td>
<td>3.01</td>
</tr>
<tr>
<td>Age of Conan</td>
<td>4</td>
<td>3.01</td>
</tr>
<tr>
<td>Everquest</td>
<td>4</td>
<td>3.01</td>
</tr>
<tr>
<td>Avination grid</td>
<td>4</td>
<td>3.01</td>
</tr>
<tr>
<td>InWorldz grid</td>
<td>4</td>
<td>3.01</td>
</tr>
<tr>
<td>Facebook</td>
<td>4</td>
<td>3.01</td>
</tr>
<tr>
<td>Ultima Online</td>
<td>3</td>
<td>2.26</td>
</tr>
<tr>
<td>Rangnarok Online</td>
<td>3</td>
<td>2.26</td>
</tr>
<tr>
<td>Champions Online</td>
<td>3</td>
<td>2.26</td>
</tr>
<tr>
<td>Runescape</td>
<td>3</td>
<td>2.26</td>
</tr>
<tr>
<td>League of Legends</td>
<td>3</td>
<td>2.26</td>
</tr>
<tr>
<td>DC Universe Online</td>
<td>3</td>
<td>2.26</td>
</tr>
<tr>
<td>Minecraft</td>
<td>3</td>
<td>2.26</td>
</tr>
<tr>
<td>Blogs</td>
<td>2</td>
<td>1.50</td>
</tr>
<tr>
<td>e-Mail</td>
<td>2</td>
<td>1.50</td>
</tr>
<tr>
<td>More games unlisted</td>
<td>8</td>
<td>6.02</td>
</tr>
<tr>
<td>Did Not Respond</td>
<td>1</td>
<td>0.75</td>
</tr>
<tr>
<td>Other</td>
<td>61</td>
<td>45.86</td>
</tr>
</tbody>
</table>
Most Important Avatar

Participants were also asked of all their avatars which did they identify as being the most important to them. 13 participants did not provide a response to this question. Remaining participants \((n=120)\) identified various applications and games, some identifying the role, gender and even the names of their avatars character. Other participants did not identify a single most important avatar. Table 15 displays the applications in which 109 of the participants identified their most important avatar to exist in. The majority of participants, 45.79%, have identified that their most important avatar is from World of Warcraft, with the second most stating that Second Life is the home to their most important avatar, 17.76%. Once more the majority of applications listed are online games. One participant identified their most important avatar as being the one they have in Facebook, stating “facebook, because I am on there often, and change it every few days randomly” which suggests that frequency of use to this participant is an aspect of avatar importance. Another participant identified the art displaying website of Deviant Art being the home of their most important avatar, stating “Deviant art for my artist profile” suggesting that the functionality of the website in portraying his art may contribute to the importance placed on his avatar.

There were other comments of interest from participants \((n=8)\) who were not included in Table 15 above as no specific application was described. One participant commented “No single avatar has primary importance” suggesting that all avatars that he operates are equally important or unimportant to him. This statement also suggests that the functionality of the avatar may be more important and there is no emotional investment, “Which ever one I’m currently playing” and “no sentimental attachment to the character itself”. This suggests that the avatar is only important in
terms of its use and function, a necessity in the game. This reinforces that some individuals use the avatar as a tool in a game and do not see the avatar as a unique entity or representation of self.

Furthermore some participants also feel that while the avatar has no importance on its own, its importance is in the fact that it presents how the individual wishes to be perceived by others in his role. "The avatars are not important in levels, they are all just placeholders to me. Each one says 'This is the guy who likes rough and tough things and is not sympathetic to pansies'. When people see my avatars they know what they're going to get from me. I take no prisoners".

Table 15

Participants' (n=109) identified applications in which they have their most important avatar.

<table>
<thead>
<tr>
<th>Application</th>
<th>n</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>World of Warcraft</td>
<td>49</td>
<td>45.79</td>
</tr>
<tr>
<td>Second Life</td>
<td>19</td>
<td>17.76</td>
</tr>
<tr>
<td>Rift</td>
<td>5</td>
<td>4.67</td>
</tr>
<tr>
<td>Open sim</td>
<td>3</td>
<td>2.80</td>
</tr>
<tr>
<td>Guild Wars</td>
<td>3</td>
<td>2.80</td>
</tr>
<tr>
<td>Everquest Series</td>
<td>3</td>
<td>2.80</td>
</tr>
<tr>
<td>LOTRO</td>
<td>2</td>
<td>1.87</td>
</tr>
<tr>
<td>Warhammer Online</td>
<td>2</td>
<td>1.87</td>
</tr>
<tr>
<td>D&amp;D Online</td>
<td>2</td>
<td>1.87</td>
</tr>
<tr>
<td>Minecraft</td>
<td>2</td>
<td>1.87</td>
</tr>
<tr>
<td>Xbox live</td>
<td>3</td>
<td>2.80</td>
</tr>
<tr>
<td>Ragnarok Online</td>
<td>1</td>
<td>0.93</td>
</tr>
<tr>
<td>Silkroad</td>
<td>1</td>
<td>0.93</td>
</tr>
<tr>
<td>Neverwinter Nights</td>
<td>1</td>
<td>0.93</td>
</tr>
<tr>
<td>Starwars Galaxies</td>
<td>1</td>
<td>0.93</td>
</tr>
<tr>
<td>EVE Online</td>
<td>1</td>
<td>0.93</td>
</tr>
<tr>
<td>Meridian 59</td>
<td>1</td>
<td>0.93</td>
</tr>
<tr>
<td>Facebook</td>
<td>1</td>
<td>0.93</td>
</tr>
<tr>
<td>Rockband</td>
<td>1</td>
<td>0.93</td>
</tr>
<tr>
<td>Monster Hunter</td>
<td>1</td>
<td>0.93</td>
</tr>
<tr>
<td>Puzzle Pirates</td>
<td>1</td>
<td>0.93</td>
</tr>
<tr>
<td>Allods Online</td>
<td>1</td>
<td>0.93</td>
</tr>
<tr>
<td>IMVU</td>
<td>1</td>
<td>0.93</td>
</tr>
<tr>
<td>Final Fantasy XI</td>
<td>1</td>
<td>0.93</td>
</tr>
<tr>
<td>Deviant Art</td>
<td>1</td>
<td>0.93</td>
</tr>
<tr>
<td>Forums</td>
<td>1</td>
<td>0.93</td>
</tr>
<tr>
<td>StarTrek Online</td>
<td>1</td>
<td>0.93</td>
</tr>
</tbody>
</table>
Body Image – Real, Ideal and Virtual

As in study 1, participants selected their actual body shape on the somatoform matrix grid of muscle mass and body fat. This was repeated in terms of their ideal and their avatar. Participants displayed higher levels of body fat and lower levels of muscle than their ideal body images. Furthermore, their avatar had even less body fat and more muscle than their ideal, once more suggesting that the avatar is a separate construct to the ideal. The mean scores of participants’ selections are displayed in Figure 2.
Figure 2. Graph of mean participant real, ideal and avatar body fat and muscle with standard error bars.
To explore if muscle and weight are significantly different across the actual, ideal and avatar, a two way (3x2) repeated measure ANOVA was conducted. Mauchly’s test of sphericity was significant for the main effects of world (real, ideal and virtual) which suggests there are significant differences between the variances of differences and sphericity is violated, $\chi^2(2)=8.08$, $p<0.05$. The second polynomial of weight*muscle did not violate sphericity as it is only two levels. The interaction effect violated sphericity, $\chi^2(2)=34.57$, $p<0.01$. As for both values $\varepsilon>0.75$, the Huynh-Feldt correction was used.

Both of the main effects were significant, with world being $F(2, 253) = 60.11$, $p<0.01$ and weight*muscle was $F(1, 132)= 57.99$, $p<0.01$. The within subject interaction effect was not significant was the Huynh-Feldt correction was applied $F(2, 217)=3.10$, $p>0.05$, however, the between subjects interaction effects was significant, $F(1,132)=3514.49$, $p<0.01$. This indicates that muscle mass and body fat in terms of real, ideal and avatar are significantly different to each other.

These results support hypothesis 1, showing that participants’ ideal body image will be of lower adiposity and greater muscularity than their self-reported actual body. The results also provide support for hypothesis 2, whereby participants’ avatar body image is of lower adiposity and greater muscularity than their self-reported ideal bodies.

The relationship of real world body drives with body dissatisfaction and competency and appearance objectification.
To examine the relationship between participants’ drive for muscularity and drive for thinness with body image dissatisfaction in terms of weight, height, muscle and general body dissatisfaction as well as real world appearance objectification and valuing competency, Pearson’s correlations were conducted. The results confirm hypothesis 3, that participants’ drive for thinness will be significantly correlated with participants’ dissatisfaction with weight and appearance objectification. Hypothesis 4 is also confirmed, with participants’ drive for muscularity significantly correlating with participants’ dissatisfaction with muscle and participants’ objectification of appearance. The results are presented in table 16.
Table 16

*Pearson’s correlations of drive for thinness and muscle with body dissatisfaction, and appearance and competency and self-objectification.*

<table>
<thead>
<tr>
<th></th>
<th>Drive for thinness</th>
<th>Drive for masculinity</th>
<th>Muscle dissatisfaction</th>
<th>Weight dissatisfaction</th>
<th>Height dissatisfaction</th>
<th>General body dissatisfaction</th>
<th>Appearance Objectification</th>
<th>Competency</th>
<th>Self-Objectification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive for thinness</td>
<td>-</td>
<td>0.38**</td>
<td>0.41**</td>
<td>0.69**</td>
<td>0.14</td>
<td>0.55**</td>
<td>0.33**</td>
<td>0.18*</td>
<td>0.23**</td>
</tr>
<tr>
<td>Drive for masculinity</td>
<td>-</td>
<td>-</td>
<td>0.79**</td>
<td>0.32**</td>
<td>0.32**</td>
<td>0.33**</td>
<td>0.41**</td>
<td>0.34**</td>
<td>0.15</td>
</tr>
<tr>
<td>Muscle dissatisfaction</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.47**</td>
<td>0.35**</td>
<td>0.56**</td>
<td>0.33**</td>
<td>0.25**</td>
<td>0.142</td>
</tr>
<tr>
<td>Weight dissatisfaction</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.24**</td>
<td>0.84**</td>
<td>0.22*</td>
<td>0.44</td>
<td>0.44</td>
<td>0.24**</td>
</tr>
<tr>
<td>Height dissatisfaction</td>
<td>-</td>
<td>-</td>
<td>0.26**</td>
<td>0.26**</td>
<td>0.08</td>
<td>0.08</td>
<td>0.06</td>
<td>0.06</td>
<td>0.04</td>
</tr>
<tr>
<td>General body dissatisfaction</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.11</td>
<td>-</td>
<td>-0.03</td>
<td>0.19*</td>
<td></td>
</tr>
<tr>
<td>Appearance Objectification</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.71**</td>
<td>0.50**</td>
<td>-0.26**</td>
<td></td>
</tr>
<tr>
<td>Competency</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-0.26**</td>
<td></td>
</tr>
<tr>
<td>Self-Objectification</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-0.26**</td>
<td></td>
</tr>
<tr>
<td><em>M</em></td>
<td>2.73</td>
<td>2.20</td>
<td>15.78</td>
<td>18.13</td>
<td>3.23</td>
<td>9.03</td>
<td>30.54</td>
<td>31.87</td>
<td>-1.43</td>
</tr>
<tr>
<td><em>SD</em></td>
<td>0.90</td>
<td>0.89</td>
<td>10.13</td>
<td>9.79</td>
<td>2.87</td>
<td>5.10</td>
<td>11.21</td>
<td>10.05</td>
<td>8.23</td>
</tr>
<tr>
<td><em>a</em></td>
<td>0.80</td>
<td>0.92</td>
<td>0.89</td>
<td>0.86</td>
<td>-3.60</td>
<td>0.44</td>
<td>0.91</td>
<td>0.87</td>
<td>0.92</td>
</tr>
</tbody>
</table>

** = p<0.01 (2-tailed)  *=p<0.05 (2-tailed)
The relationship of drive for thinness and drive for muscularity with participants’ real, ideal and avatar bodies.

To explore if the real world drives for thinness and muscle were related to participants’ actual, ideal and avatar bodies, Pearson’s correlations were conducted. The results are shown in Table 17.

Table 17

*Pearson’s correlations of participants’ drive for thinness and muscle with their real, ideal and avatar weight and muscle.*

<table>
<thead>
<tr>
<th></th>
<th>Drive for Thinness</th>
<th>Drive for Muscularity</th>
<th>Real Weight</th>
<th>Real Muscle</th>
<th>Ideal Weight</th>
<th>Ideal Muscle</th>
<th>Avatar Weight</th>
<th>Avatar Muscle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive for Thinness</td>
<td>-</td>
<td>0.38**</td>
<td>0.29**</td>
<td>-0.08</td>
<td>-0.03</td>
<td>-0.09</td>
<td>-0.16</td>
<td>0.04</td>
</tr>
<tr>
<td>Drive for Muscularity</td>
<td>-</td>
<td></td>
<td>0.02</td>
<td>-0.25**</td>
<td>-0.09</td>
<td>-0.35**</td>
<td>-0.11</td>
<td>-0.13</td>
</tr>
<tr>
<td>Real Weight</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td>-0.15</td>
<td>0.15</td>
<td>-0.11</td>
<td></td>
</tr>
<tr>
<td>Real Muscle</td>
<td>-</td>
<td></td>
<td></td>
<td>-0.04</td>
<td>0.52**</td>
<td>-0.10</td>
<td>0.20*</td>
<td></td>
</tr>
<tr>
<td>Ideal Weight</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td>0.07</td>
<td>0.43**</td>
<td>-0.13</td>
<td></td>
</tr>
<tr>
<td>Ideal Muscle</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td>-0.07</td>
<td></td>
<td>0.31**</td>
<td></td>
</tr>
<tr>
<td>Avatar Weight</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-0.22*</td>
<td></td>
</tr>
<tr>
<td>Avatar Muscle</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( M )</td>
<td>2.73</td>
<td>2.20</td>
<td>434.68</td>
<td>551.05</td>
<td>343.11</td>
<td>441.31</td>
<td>284.56</td>
<td>439.89</td>
</tr>
<tr>
<td>( SD )</td>
<td>0.90</td>
<td>0.89</td>
<td>137.84</td>
<td>184.40</td>
<td>113.87</td>
<td>179.78</td>
<td>122.41</td>
<td>237.33</td>
</tr>
<tr>
<td>( \alpha )</td>
<td>0.80</td>
<td>0.92</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

** = \( p<0.01 \) (2-tailed)  * = \( p<0.05 \) (2-tailed)
The relationship of the real, ideal and avatar body with participants’ body dissatisfaction.

Pearson’s correlations were conducted to examine the relationship between real body weight and muscle with participants’ muscle, weight, height and general body dissatisfaction. The results of the correlation are presented in Table 18.

Table 18
Pearson’s correlations of real body weight and muscle with muscle, weight, height and general body dissatisfaction.

<table>
<thead>
<tr>
<th></th>
<th>Real Weight</th>
<th>Real Muscle</th>
<th>Muscle Dissatisfaction</th>
<th>Weight Dissatisfaction</th>
<th>Height Dissatisfaction</th>
<th>General Body Dissatisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real Weight</td>
<td>-</td>
<td>0.03</td>
<td>0.15</td>
<td>0.52**</td>
<td>0.10</td>
<td>0.48**</td>
</tr>
<tr>
<td>Real Muscle</td>
<td>-</td>
<td>-0.14</td>
<td>-0.07</td>
<td>-0.10</td>
<td>0.02</td>
<td></td>
</tr>
<tr>
<td>Muscle Dissatisfaction</td>
<td>-</td>
<td>-</td>
<td>0.47**</td>
<td>0.35**</td>
<td>0.56**</td>
<td></td>
</tr>
<tr>
<td>Weight Dissatisfaction</td>
<td>-</td>
<td>-</td>
<td>0.24**</td>
<td>0.84**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Height Dissatisfaction</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td>0.26**</td>
<td></td>
</tr>
<tr>
<td>General Body Dissatisfaction</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

M 434.68    551.05    15.78    18.13    3.23    9.03
SD 137.84    184.40    10.13    9.79    2.87    5.10
α 0.89    0.86    -3.60    0.44

** = p<0.01 (2-tailed)  * = p<0.05 (2-tailed)
Real weight correlated strongly with weight dissatisfaction and general body dissatisfaction, however, real muscle did not correlate with muscle dissatisfaction. A further correlation was conducted to examine if body dissatisfaction had any relationship with participants’ ideal and avatar weight and muscle. The results are presented in Table 19 below.

Table 19

*Pearson’s correlations of ideal and avatar body weight and muscle with muscle, weight, height and general body dissatisfaction.*

<table>
<thead>
<tr>
<th></th>
<th>Muscle Dissatisfaction</th>
<th>Weight Dissatisfaction</th>
<th>Height Dissatisfaction</th>
<th>General Body Dissatisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ideal Weight</td>
<td>0.06</td>
<td>0.17</td>
<td>0.10</td>
<td>0.24**</td>
</tr>
<tr>
<td>Ideal Muscle</td>
<td>-0.22*</td>
<td>-0.08</td>
<td>-0.01</td>
<td>-0.01</td>
</tr>
<tr>
<td>Avatar Weight</td>
<td>-0.02</td>
<td>-0.05</td>
<td>-0.04</td>
<td>0.03</td>
</tr>
<tr>
<td>Avatar Muscle</td>
<td>-0.11</td>
<td>0.02</td>
<td>-0.07</td>
<td>0.04</td>
</tr>
</tbody>
</table>

** = p<0.01 (2-tailed)  *=p<0.05 (2-tailed)

Ideal weight correlated with general body dissatisfaction by not weight dissatisfaction and ideal muscle negatively correlated with muscle dissatisfaction. Avatar weight and muscle showed no correlation with participants’ body dissatisfaction.
Participants' self-objectification of appearance and competency in the real and virtual world.

Pearson’s correlations were conducted to examine the relationship between real world and virtual world appearance and competency objectification. All variables were found to significantly correlate with the exception of self-objectification in the virtual world with real world competency objectification and virtual world competency objectification with self-objectification in the real world. The results are presented in Table 20.

Table 20
Pearson’s correlations of participants’ self-objectification of appearance and competency in the real and virtual world.

<table>
<thead>
<tr>
<th></th>
<th>Appearance Real World</th>
<th>Competency Real World</th>
<th>Self–Objectification Real World</th>
<th>Appearance Virtual World</th>
<th>Competency Virtual World</th>
<th>Self–Objectification Virtual World</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance Real World</td>
<td>-</td>
<td>0.71**</td>
<td>0.50**</td>
<td>0.53**</td>
<td>0.27**</td>
<td>0.28**</td>
</tr>
<tr>
<td>Competency Real World</td>
<td>-</td>
<td>-0.26**</td>
<td>0.27**</td>
<td>0.42**</td>
<td>-0.13</td>
<td></td>
</tr>
<tr>
<td>Self–Objectification Real World</td>
<td>-</td>
<td>-</td>
<td>0.40**</td>
<td>-0.14</td>
<td>0.54**</td>
<td></td>
</tr>
<tr>
<td>Appearance Virtual World</td>
<td>-</td>
<td>-</td>
<td>0.49**</td>
<td>-</td>
<td>0.55**</td>
<td></td>
</tr>
<tr>
<td>Competency Virtual World</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-0.46**</td>
</tr>
<tr>
<td>Self–Objectification Virtual World</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>30.54</td>
<td>31.87</td>
<td>-1.43</td>
<td>23.20</td>
<td>27.95</td>
<td>-4.76</td>
</tr>
<tr>
<td>SD</td>
<td>11.21</td>
<td>10.05</td>
<td>8.23</td>
<td>15.57</td>
<td>14.66</td>
<td>15.30</td>
</tr>
<tr>
<td>α</td>
<td>0.91</td>
<td>0.87</td>
<td>0.92</td>
<td>0.91</td>
<td>0.92</td>
<td>0.91</td>
</tr>
</tbody>
</table>

** = p<0.01 (2-tailed)  *=p<0.05 (2-tailed)
To examine if the difference between real and virtual world self-objectification was significant, a repeated measures ANOVA was conducted. The main effect of world (real and virtual) was significant $F(1,132) = 29.54, p<0.01$ as well as type (self-objectification of appearance and competency) $F(1, 132) = 11.62, p<0.01$. The interaction effect was also significant, $F(1,132)=8.90, p<0.01$. This indicated that competence and appearance objectification across the real and virtual world are significantly different to each other. Figure 3 demonstrates participant mean scores in this ANOVA for participants’ appearance objectification and competency in both the real world and virtual world.

![Participant Mean Scores](image)

*Figure 3.* Participants’ mean scores and error bars for appearance objectification and competency in both the real world and virtual world. Higher scores indicate higher levels of participants’ endorsement of appearance objectification or competency.
The influence of competency and appearance objectification on the ideal and avatar body

In order to explore the individual, combined and relative contributions of importance of appearance and competency of participants in the real world to their ideal weight a regression was conducted with ideal weight as the dependent variable. No significant contributions were found by participants’ appearance objectification or participants’ valuing of competency. The results of this regression do not support hypothesis 5, that participants’ self-reported ideal weight will be explained by participants’ real world appearance objectification and participants’ competency. The results are presented in Table 21.

Table 21
Regression of participants’ real world appearance objectification and competency with ideal weight as the dependent variable.

<table>
<thead>
<tr>
<th>Variable</th>
<th>$R^2$</th>
<th>$B$</th>
<th>$SE(B)$</th>
<th>$t$</th>
<th>$r$</th>
<th>$sr^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>0.01</td>
<td>-0.23</td>
<td>1.25</td>
<td>-0.02</td>
<td>-0.18</td>
<td>-0.07</td>
</tr>
<tr>
<td>Competency</td>
<td>-0.68</td>
<td>1.40</td>
<td>-0.06</td>
<td>-0.49</td>
<td>-0.08</td>
<td>0.00</td>
</tr>
</tbody>
</table>

** = $p<0.01$ (2-tailed)  *=p<0.05 (2-tailed)

A further regression was conducted to explore if the importance of appearance and competency of participants in the real world had any effects on their ideal muscle.
Hypothesis 6 was not supported, which proposed that participants’ self-reported ideal muscle will have some of the variance explained by participants’ real world appearance objectification and participants’ competency as neither objectification of appearance nor competency were found to be significant predictors. The result of this regression is presented in Table 22.

Table 22

Regression of participants’ real world appearance objectification and competency with ideal muscle as the dependent variable.

<table>
<thead>
<tr>
<th>Variable</th>
<th>$R^2$</th>
<th>$B$</th>
<th>$SE(B)$</th>
<th>$\beta$</th>
<th>$t$</th>
<th>$r$</th>
<th>$sr^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>0.02</td>
<td>-0.90</td>
<td>2.0</td>
<td>-0.06</td>
<td>-0.46</td>
<td>-0.13</td>
<td>0.00</td>
</tr>
<tr>
<td>Competency</td>
<td>-1.99</td>
<td>2.19</td>
<td>-0.11</td>
<td>-0.91</td>
<td>-0.15</td>
<td>0.01</td>
<td></td>
</tr>
</tbody>
</table>

**= p<0.01 (2-tailed)  *=p<0.05 (2-tailed)

A regression was conducted to explore if the importance of appearance and competency of participants in the real world had any effect on real world drive for thinness. Only appearance objectification was found to be significant. The results of this regression are presented in Table 23.
Table 23

Regression of participants’ real world appearance objectification and competency with drive for thinness as the dependent variable.

<table>
<thead>
<tr>
<th>Variable</th>
<th>$R^2$</th>
<th>$B$</th>
<th>SE(B)</th>
<th>$\beta$</th>
<th>$t$</th>
<th>$R$</th>
<th>sr2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>0.12</td>
<td>0.03</td>
<td>0.01</td>
<td>0.41**</td>
<td>3.48</td>
<td>0.33</td>
<td>0.08</td>
</tr>
<tr>
<td>Competency</td>
<td>-0.01</td>
<td>0.01</td>
<td>0.01</td>
<td>-0.11</td>
<td>-0.92</td>
<td>0.18</td>
<td>0.01</td>
</tr>
</tbody>
</table>

** = p<0.01 (2-tailed)  *=p<0.05 (2-tailed)

Another regression was conducted to explore if the importance of appearance and competency of participants in the real world had any effect on real world drive for muscularity. Appearance was found to be significant. The result of this regression is presented in Table 24.

Table 24

Regression of participants’ real world appearance objectification and competency with drive for muscularity as the dependent variable.

<table>
<thead>
<tr>
<th>Variable</th>
<th>$R^2$</th>
<th>$B$</th>
<th>SE(B)</th>
<th>$\beta$</th>
<th>$t$</th>
<th>$R$</th>
<th>sr2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>0.17</td>
<td>0.03</td>
<td>0.01</td>
<td>0.35**</td>
<td>3.08</td>
<td>0.41</td>
<td>0.06</td>
</tr>
<tr>
<td>Competency</td>
<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
<td>0.09</td>
<td>0.81</td>
<td>0.34</td>
<td>0.00</td>
</tr>
</tbody>
</table>

** = p<0.01 (2-tailed)  *=p<0.05 (2-tailed)
Effects of Objectification and body dissatisfaction the ideal and avatar body.

In order to explore the effects of objectification and body dissatisfaction on participants' ideal and avatar bodies, participants' muscle and weight dissatisfaction were centred as well as participants' real world and virtual work appearance objectification. Interaction variables were then created for participants' dissatisfaction with weight and appearance objectification in real life, participants' dissatisfaction with weight and appearance objectification in the virtual world, participants' dissatisfaction with muscle and appearance objectification in real life and participants' dissatisfaction with muscle and appearance objectification in the virtual world.

A series of two-step hierarchical regressions, shown in Table 25, were conducted. In step one participants' ideal body weight was regressed on participants' dissatisfaction with weight and with appearance objectification with the second step adding the interaction variable of participants' dissatisfaction with weight and appearance objectification. This explored the idea that participants' ideal weight may be explained by dissatisfied with their weight and appearance objectification. There was no significant explanation of variance, failing to support hypothesis 5, which stated that participants' self-reported ideal weight will have some of the variance explained by participants' real world appearance objectification and participants' competency.

Ideal body muscle was then regressed on participants' dissatisfaction with muscle and participants' appearance objectification. At this stage the model was able to explain 5% of the variance, supporting hypothesis 6, as participants' self-reported ideal muscle was predicted by participants' real world appearance objectification and participants' valuing of competency. However, when the interaction variable of
muscle dissatisfaction and appearance objectification was added in step 2, no additional variance was explained.

To explore if avatar weight was influenced by participants’ weight dissatisfaction, objectification of appearance in the virtual world and the interaction of those two variables, a two-step hierarchical regression was conducted. The regression did not significantly explain any variance. The results of this regression do not support hypothesis 7, as participants’ self-reported avatar weight was not predicted by participants’ real world appearance objectification and participants’ valuing of competency.

To test hypothesis 8, avatar muscle was regressed on participants’ muscle dissatisfaction and participants’ objectification of appearance in the virtual world in step one. In step two the interaction variable of participants’ muscle dissatisfaction and participants’ objectification of appearance in the virtual world was added and significantly explain 9% of the variance. This provides support for hypothesis 8, suggesting that participants who value appearance in the virtual world and are dissatisfied with their muscle in real life, create avatars with higher levels of muscle mass.
Table 25

*A series of two-step Hierarchical Regressions in which participants’ ideal and avatar body dimensions in terms of weight and muscle are regressed on participants’ dissatisfaction with that dimension and their objectification of appearance ideals in the real world for ideal and the virtual world for avatar in the first step. The second step includes and interaction variable of this dissatisfaction and appearance objectification.*

<table>
<thead>
<tr>
<th>Ideal Body Weight</th>
<th>Step 1</th>
<th>R</th>
<th>R²</th>
<th>Δ R²</th>
<th>B</th>
<th>SE(B)</th>
<th>β</th>
<th>t</th>
<th>r</th>
<th>sr²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dissatisfaction with Weight</td>
<td>0.20</td>
<td>0.04</td>
<td>0.04</td>
<td>2.24</td>
<td>1.03</td>
<td>0.19*</td>
<td>2.18</td>
<td>0.17</td>
<td>0.04</td>
<td></td>
</tr>
<tr>
<td>Appearance Objectification (Real)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td>0.09</td>
<td>-0.11</td>
<td>-1.21</td>
<td>-0.07</td>
<td>0.01</td>
</tr>
<tr>
<td>Step 2</td>
<td>Dissatisfaction with Weight</td>
<td>0.20</td>
<td>0.04</td>
<td>0.00</td>
<td>2.30</td>
<td>1.03</td>
<td>0.20*</td>
<td>2.22</td>
<td>0.17</td>
<td>0.04</td>
</tr>
<tr>
<td>Appearance Objectification (Real)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td>0.09</td>
<td>-0.10</td>
<td>-1.18</td>
<td>-0.07</td>
<td>0.01</td>
</tr>
<tr>
<td>Dissatisfaction Weight X Appearance</td>
<td>0.05</td>
<td>0.09</td>
<td>0.04</td>
<td>0.50</td>
<td>0.03</td>
<td>0.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ideal Body Muscle</th>
<th>Step 1</th>
<th>R</th>
<th>R²</th>
<th>Δ R²</th>
<th>B</th>
<th>SE(B)</th>
<th>β</th>
<th>t</th>
<th>r</th>
<th>sr²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dissatisfaction with Muscle</td>
<td>0.23</td>
<td>0.05</td>
<td>0.05*</td>
<td>-3.47</td>
<td>1.60</td>
<td>0.20*</td>
<td>-2.16</td>
<td>-0.22</td>
<td>0.02</td>
<td></td>
</tr>
<tr>
<td>Appearance Objectification (Real)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td>1.45</td>
<td>-0.07</td>
<td>-0.78</td>
<td>-0.13</td>
<td>0.01</td>
</tr>
<tr>
<td>Step 2</td>
<td>Dissatisfaction with Muscle</td>
<td>0.26</td>
<td>0.07</td>
<td>0.01</td>
<td>-3.94</td>
<td>1.63</td>
<td>-0.22*</td>
<td>-2.41</td>
<td>-0.22</td>
<td>0.04</td>
</tr>
<tr>
<td>Appearance Objectification (Real)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td>1.46</td>
<td>-0.05</td>
<td>-0.52</td>
<td>-0.13</td>
<td>0.00</td>
</tr>
<tr>
<td>Dissatisfaction Muscle X Appearance</td>
<td>0.18</td>
<td>0.13</td>
<td>0.12</td>
<td>1.39</td>
<td>0.09</td>
<td>0.01</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Avatar Weight

**Step 1**

<table>
<thead>
<tr>
<th>Dissatisfaction with Weight</th>
<th>0.21</th>
<th>0.04</th>
<th>0.04</th>
<th>0.04</th>
<th>1.11</th>
<th>0.00</th>
<th>0.04</th>
<th>-0.05</th>
<th>0.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance Objectification (Virtual)</td>
<td>-1.64</td>
<td>0.70</td>
<td>-0.21*</td>
<td>-2.34</td>
<td>-0.21</td>
<td>0.04</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Step 2**

<table>
<thead>
<tr>
<th>Dissatisfaction with Weight</th>
<th>0.22</th>
<th>0.05</th>
<th>0.01</th>
<th>-0.01</th>
<th>1.11</th>
<th>0.00</th>
<th>-0.01</th>
<th>-0.05</th>
<th>0.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance Objectification (Virtual)</td>
<td>-1.71</td>
<td>0.71</td>
<td>-0.22*</td>
<td>-2.43</td>
<td>-0.21</td>
<td>0.04</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Dissatisfaction Weight X Appearance Objectification (Virtual) | 0.07 | 0.08 | 0.08 | 0.87 | 0.04 | 0.01 |

### Avatar Muscle

**Step 1**

<table>
<thead>
<tr>
<th>Dissatisfaction with Muscle</th>
<th>0.21</th>
<th>0.04</th>
<th>0.04</th>
<th>-1.18</th>
<th>2.11</th>
<th>-0.05</th>
<th>-0.56</th>
<th>-0.11</th>
<th>0.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance Objectification (Virtual)</td>
<td>-2.82</td>
<td>1.38</td>
<td>-0.19*</td>
<td>-2.05</td>
<td>-0.20</td>
<td>0.03</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Step 2**

<table>
<thead>
<tr>
<th>Dissatisfaction with Muscle</th>
<th>0.30</th>
<th>0.09</th>
<th>0.05**</th>
<th>-0.48</th>
<th>2.01</th>
<th>-0.02</th>
<th>-0.23</th>
<th>-0.11</th>
<th>0.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance Objectification (Virtual)</td>
<td>-2.51</td>
<td>1.35</td>
<td>-0.17</td>
<td>-1.86</td>
<td>-0.20</td>
<td>0.02</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Dissatisfaction Muscle X Appearance Objectification (Virtual) | -0.33 | 0.13 | -0.22** | -2.57 | -0.25 | 0.05 |

**= p<0.01 (2-tailed) *=p<0.05 (2-tailed)**
Qualitative Analysis

Study 2 included qualitative questions to better explore the meaning of the avatar to participants and identify the reasons behind their creation and use. Previous research has indicated that individuals create avatars that are similar to themselves for the purpose of game enjoyment (Hsu et al., 2005) as well as to represent their own qualities (Axelsson, 2002). It has also been shown that people create avatars that are dissimilar to their selves for the purpose of role play or identity play Hussain & Griffiths, 2008; Kafai et al., 2007; Taylor, 2002; Trepte & Reinecke, 2010). A final category of players appear to create avatars that will assist them in achieving game goals and manipulating other players (Riegelsberger et al., 2006).

It was therefore hypothesised the qualitative analysis will demonstrate:

_Hypothesis 1: Participants will create avatars for either the purpose of role-play, to reflect their actual self or as a tool to achieve game objectives._

It was also hypothesised that in all cases of avatar creation appearance is an important aspect therefore:

_Hypothesis 2: Appearance will be an important aspect of their participants’ avatars in terms of reflecting self or their ideals and for game enjoyment._

Therefore an exploratory qualitative analysis of the data was conducted to identify the themes common to avatar creation and appearance.

What does the avatar mean?

Participants were asked “What does your avatar mean to you? Is it just a tool in a game? Is it more than that?” Out of 133 participants only 2 did not respond. A thematic analysis was conducted on the collected data and it was found that the data
could be organised into three major categories, those being the avatar as a tool, the avatar as a reflection of an ideal and the avatar as a reflection of self. A fourth category was also created for responses that did not come under the aforementioned categories. It was found that 76 participants identified their avatar as a tool, 28 as a reflection of self and 17 as a reflection of the ideal. Nine participants did not fit into these 3 classifications. The themes that emerge from each category are described below. This provides support for hypothesis 1 which suggested that participants will create avatars for either the purpose of role-play, to reflect their actual self or as a tool to achieve game objectives. However, additionally it appears that people can role-play ideals.

*The avatar as a tool.*

While some participants chose not to elaborate beyond describing their avatar as a tool, many others did. It was found that as a tool the avatar can be used for socialisation with others, or role-playing characters and ideals that participants desire these tools to represent. Furthermore despite being a tool, individuals invest large quantities of time and effort into the development of this tool and do feel that the avatar reflects this investment, "*It's something I've developed over a long period of time that I'm proud of.*" There is also a large element of aesthetic importance with participants desiring their avatars to be attractive or unique. Furthermore this uniqueness allows participants to be more readily identified online by others, suggesting an importance of recognition and community.

Some participants identify that as well as being a tool, the avatar can be used to manipulate the responses of other players, such as players reacting more positively to female characters. One participant stated that he has "*Found that the better looking*
(i.e. non-aggressive/intimidating looking) it is (the avatar), the more likely to obtain better quality conversations” from other individuals. Some participants identify the avatar as a separate entity to them, one with its own goals and desires, suggesting a strong element of role-play and importance place on the avatar as well as distance from oneself; “The avatar is a separate person, which I 'direct' from time to time” and “They are all individual entities with their own lives, wishes, desires, goals. They have autonomy. I do not control them. They aren't me, neither do they represent me”.

The avatar as a representation of self

The second category explored was the avatar as a reflection of participants’ self, with 28 participant responses in this category. A major theme that ran throughout the representation of self through the avatar, was that the avatar allowed participants to have an online presence of themselves that was physical similar “I identify with my avatar in any game. I try to make him look as similar to myself as possible to immerse myself in the game”. Avatars were also created to be similar in terms of personality “A representation of my personality” and identity and self-concept “it is my digital self.”

Other themes which emerged were that the avatar allows individuals to represent themselves to others online “He represents me to other people in the game, so I like him to be as close to me as possible”. While individuals have the opportunity to role play, the expression of self-identity appears to be an important aspect to some, even to an extent where it appears the avatar helps facilitate this more so than real life “Lot more than that, it lets me be myself”.
The avatar as the ideal.

The next category explored was participants’ identification of the avatar as a representation of their ideal. Participant responses in this area were interesting and several themes developed. Some participants described the avatar as the ‘real’ them, “My avatar is the ‘me’ I see in the mirror of my mind’s eye” and “It’s like putting on clothes... It reflects who you are in your mind.” Furthermore, the avatar can be viewed as an embodiment of ideals, or true identity “It is a visual representation of how I feel about myself on the inside, strong, capable, and appealing to others.”

Other participants also reflected that the avatar is the ideal that they wish others to perceive them as, placing emphasis on the fact that interaction with others is important and by presenting an ideal this is easier to achieve “An avatar is a virtual representation of how I’d like to be seen” and “My SL avatar is an idealised form of myself, and so it’s an important way of representing myself online. As I am more often in contact with people online than in person, my avatar is crucial to my interactions with others”.

Another theme discovered was the separation of a physical ideal and a personality ideal. Some participants appeared to view the avatar as a physical ideal “he what i wish i could look like and all” while others commented on it as more of a personality ideal “I know it’s just a game, but it’s also an extension of my own personality when I play the game. So it’s important that I project an ideal image to others”. It appears regardless of the context of the ideal, it is of importance to most participants.

The avatar in other contexts
Some participant responses were not easily placed in the categories of the avatar as a tool, as the self or as the ideal. These responses are presented in Table 26.

It appears that the avatar sometimes represents companionship to the participant. It also can be a representation of something or someone that is important or personally connected to the participant, beyond any aspect of the actual and ideal self.

Table 26

Uncategorised participant responses (n=9) to what the avatar means.

<table>
<thead>
<tr>
<th>ID</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>my avi is like a best friend that I am happy to be with.</td>
</tr>
<tr>
<td>28</td>
<td>Being modeled after a particular person, yes there is something very personal about my avatar.</td>
</tr>
<tr>
<td>33</td>
<td>Avatars in a game are never seen as a tool for myself, just characters I can immerse into and feel the world as though I am the avatar. Aspects of the avatar that does not correspond close enough to my actual body reduce my immersion into the game and thus reducing my enjoyment of playing the game. I'm no bodybuilder or a majestically handsome prince, and nor should my avatar be so either. My avatar exists as a transparent vessel to place myself into and immerse myself into the game world. Events in a videogame have much more power and impact if they can effect me, the player, and to be able to feel the impact as much as possible is to place myself in the avatar's shoes.</td>
</tr>
<tr>
<td>42</td>
<td>It's an online identity; branding across platforms. More commercial than anything.</td>
</tr>
<tr>
<td>46</td>
<td>Definitely more. It's like an old friend, or the main character of your favorite TV show. We've been through so much together and I've become quite fond of him. That said, this is mostly possible because there is little difference between the in-game capabilities of different avatars in WoW. I don't think I would have kept this avatar if it meant incurring a large performance hit.</td>
</tr>
<tr>
<td>84</td>
<td>It is more than that, a lot more. Its my character i've had for years, a lot of people know me as that alias in game.</td>
</tr>
<tr>
<td>41</td>
<td>My primary attachment to the character came via a dream I once had, where I had a daughter. I named the character after the name of my fictitious offspring, and she has carried an importance to me ever since. Beyond that, I've spent over 1 year of actual in-game time on this character over the past 6 years, and have developed her extensively. She has been the guild master of a highly successful and well established guild for several years and I also excel at playing her role within the game. As such, she's come to be a very powerful and matriarchal entity within the game, both for me and the others who interact with her.</td>
</tr>
<tr>
<td>114</td>
<td>it is a representation of the type of people i like</td>
</tr>
<tr>
<td>122</td>
<td>Personal representation of something meaningful to me.</td>
</tr>
</tbody>
</table>
Is the Appearance of the Avatar Important?

Participants were asked if the appearance of the avatar was important to them. Three participants did not answer. The remaining 130 participant responses were examined in the context of their previous answer to what the avatar meant to them.

*Importance of Appearance for participants who viewed their Avatar as a Tool*

It was found that 76 participants endorsed that their avatar was a tool to them and of these participants only 24 participants who viewed their avatar as a tool did not think that the appearance of their avatar was important "I don’t care about my avatar’s appearance". Many participants simply stated that appearance was not important to them while some did want some element of uniqueness about their avatar “I want it to be generally realistic and ‘defined’ heroesc” but it was not a primary concern for them.

Of the participants who did state that appearance was important, 4 major groups emerged, being that appearance was important in an aesthetic sense, as well as appearance being important in terms of being a representation of the participants’ ideal self, their actual self and their avatar’s role. Nineteen participants who viewed their avatar as a tool felt that appearance was important in an aesthetic sense. The main reason participants provided for the avatar to be aesthetically pleasing was that they will have to view this character for the duration they choose to engage in the application, “It is the character we’ll see for thousands of hours so it needs to be appealing” and “I don’t want to look ugly or lame for as long as I will be playing the avatar”. Some participants also suggested that this is why they choose female avatars
“It’s nice to see the opposite gender on screen” and “as long as she is Hot sexy cute and just fun to play with and stare at”.

Two participants endorsed that the avatar’s appearance represented their ideal “It’s seen by others so I want it to look like an idealised version of me” and “a bit of vain fantasy to be it”. While 12 participants made statements that supported the concept that the avatar reflected their actual selves, either in terms of others identifying them through their avatar “it is how other see you online” or how they, as in real life, wish to be perceived “it’s the same as in real life - wanting to look good for others and myself”. Furthermore within the category of self, the avatar does not necessarily reflect physical aspects, but can also reflect personality and character of the participant “It's a digital representation of the player, regardless of how physically similar it is. How other players perceive you (me) depends largely on the avatar appearance.” and “It contains elements of my character”. Interestingly others also endorsed that the avatar must feel comfortable to them and in a realistic sense, not wanting to create “something completely alien to me”. This is likely related to wanting to reflect true user characteristics as well as aid in immersion of the game or application.

The final category, appearance important as it reflects role had 18 participants who made statements that endorsed this. May participants felt that their avatar “has to look ‘the part’ to fulfil it’s role.” and wished to be viewed as “competent” and “dangerous”. Furthermore, participants stated that the avatar should match the role that they wished to represent. Participants also wanted their avatars to reflect their own level of skill in these roles “appearance based on it's clothes/items is important, as it reflects my skill” and the effort they have put into their character. There were also participants who commented that the game mechanics also affected their
appearance choices which they used to their advantage depending on the character they wished to play.

Importance of Appearance for participants who viewed their Avatar as a reflection of self.

Twenty-eight participants were placed in the category of the avatar as a reflection of self. In this category, only 4 participants did not feel that avatar appearance was important, however, it is important to comment that one participant stated that “It was once, when the worlds were more persistant and heavily community based. The importance of an avatar have diminished in my opinion”. This suggest appearance to this participant was only important in terms of community. Another participant stated that appearance was not important as he changes his avatar based on his roles. An interesting comment made by this participant was “my personality is shattered, so i can play pretty much any avatar for what he really could be.” This participant originally endorsed that the avatar was a representation of his personality. Perhaps the avatar allows him to explore all aspects of his “shattered” personality.

Five participants made statements that suggested that their avatar is only important in terms of aesthetics, but also in the sense that it is important in “virtual worlds” as they “are visually oriented constructions. Therefore, maintaining a quality appearance is very important.” Only 4 participants identified that the avatar was a reflection of their ideal “She is like i would like to be in RL” and “it's a (slightly) idealised picture of myself 20 years go (when I was a bit slimmer than I am now!).” One participant commented that “I want it to be accepted, but am willing to do some crazy things. My WoW toon has this purple pimp suit I've built over the years with
pets, mounts and carried objects that match. Its a useless thing in terms of the purpose of the game, questing and combat. But socially in the game, it is fun to be ostentatious.”

Some participants (n=13) made statements which suggested that the avatar’s appearance was important as it was a reflection of themselves “it’s how people see and relate to me” and that they wished their avatar to be “as close to me (the participant) as possible”. There were also aspects of their avatar’s appearance allowing them to differentiate themselves from others and reflect their personality while interacting with others. One participant commented that they “find this much easier online than in person, where I am usually at odds with trying to fit in and also trying to be different.”

Four participants made statements regarding avatar appearance being important in terms of their avatar’s role to create a “unique” hero “even when we are all doing the same activities”. Participants felt that it was “important that the avatar’s appearance conforms to the archetype” they wanted to represent “in gaming or social virtual world interaction”. One participant commented “I like to be smart for business purposes, and sexy for non-business social interactions and romance.” suggesting a parallel with real life.

Importance of Appearance for participants who viewed their Avatar as a reflection of their ideal.

Seventeen participants were placed in the category of viewing their avatar as a reflection of their ideal. In this group only 1 participant did not think that their avatar’s appearance was important “not really, He looks like what he is”. Looking
back at this participant’s past comments, it suggests he places greater emphasis on personality of his avatar, which explains the lack of importance attributed to appearance. Three participants endorsed that avatar appearance was important only in terms of aesthetics, wanting their avatars to “look visually appealing.”

Five participants commented on how their avatar’s appearance represented their ideal “it presents the way I want to be” and “I want to be thin”. There was also an element of wanting others to “see it and respect me” suggesting that as in real life, participants desire similar social responses from others. It also provides participants with higher levels of self-confidence.

Four participants commented that their avatar’s appearance reflected themselves “it is important to choose an appearance that I feel reflects some aspect of myself” and there appears to be an expectation that others will judge who they are based on their avatar. One participant commented that “it’s a chance to interact with people free of body-image insecurities”. This suggest that while the avatar can reflect self in terms of appearance, it can also reflect self in other senses and allows for overcoming any barriers regarding appearance concerns. Two participants made statements that reflected that the avatar’s appearance was important in terms of role or purpose.

Hypothesis 2 was partially confirmed by the qualitative analysis. For many participants, appearance was an important aspect of their avatars, however there was a large minority who did not feel that appearance was important at any level, while others felt that personality or game mechanics were more important.
Other Statements from participants about their Avatars.

Participants were asked "Is there something you would like to add about your avatar that we haven’t thought to ask you?" to provide them with an opportunity to explain or elaborate on any aspects of their avatar that had not been examined. 35 participants chose not to respond. Of the remaining 98 participants, 42 responded that they did not have anything additional to add. The responses of the remaining 56 participants varied but one major theme was that of gender. Table 27 below shows participant responses that related to the gender of their avatars. Many participants, who are all male, choose avatars of the opposite sex. Some participants felt that the study should have included questions regarding avatar gender as it ignores this aspect of avatars.
Table 2726

*Participants’ comments (n=10) regarding avatar gender.*

<table>
<thead>
<tr>
<th>ID</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Gender difference! This survey assumes that real gender = avatar gender, which isn’t always the case.</td>
</tr>
<tr>
<td>17</td>
<td>She is fearless</td>
</tr>
<tr>
<td>21</td>
<td>She’s female, so it’s hard to draw any direct correlation. However, slim and attractive is something I’d love to attain and never will.</td>
</tr>
<tr>
<td>39</td>
<td>The survey doesn’t ask about gender and the implications of choosing a cross-gender avatar.</td>
</tr>
<tr>
<td>40</td>
<td>Did you ask if I gender-bend ingame? Well, yes. I have multiple male characters as well as female, but it just so happens that my ‘main’ is female. One other thing I should add, whilst I wrote above that my characters physical appearance was important to me, I don’t like many of her animations. For example, I find her clapping animation to be really ugly, but I just avoid doing that. It’s really quite hideous for such a graceful figure to start flailing around like an idiot!</td>
</tr>
<tr>
<td>54</td>
<td>My avatar is female I am male</td>
</tr>
<tr>
<td>84</td>
<td>the question of whether you have male and/or female avatars didn’t arise.</td>
</tr>
<tr>
<td>96</td>
<td>Here are some i can think of: Do you use both gender (male/female) avatars, and why? - They will both create different conversation situations and I find extremely funny and see how people react to them. If so, which of the two types do you feel more comfortable using - Male avatars for sure</td>
</tr>
<tr>
<td>113</td>
<td>skin colour, gender</td>
</tr>
<tr>
<td>103</td>
<td>My avatar is a naked girl, skinned poorly onto a blocky character.</td>
</tr>
<tr>
<td>133</td>
<td>My avatar is male. Many other people I know who play Blood Elves choose female avatars even if they are male players.</td>
</tr>
</tbody>
</table>

Other responses were around various aspects of their avatar’s appearance.

These comments are shown in Table 28.
Table 278

Participants’ responses (n=22) regarding avatar appearance

<table>
<thead>
<tr>
<th>ID</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I find him attractive :)</td>
</tr>
<tr>
<td>5</td>
<td>Nothing in particular. One thing I’ve noticed is that, particularly in roleplaying situations in Second Life, people make fun of my avatar's girth. Remarks like 'Move along, tubby!' are commonplace. In normal exploration sims, however, such remarks are rarely, if ever, made.</td>
</tr>
<tr>
<td>11</td>
<td>I prefer my avatar to look similar to most other avatars. I don't care for animal or cartoon character avatars for myself.</td>
</tr>
<tr>
<td>18</td>
<td>It wears glasses as I do in RL. It feels weird without them in SL as I can't see in RL without them. Very strange. Perhaps I should be an optometrist in SL!</td>
</tr>
<tr>
<td>20</td>
<td>My avatar is designed so that a real life or Second Life friend would recognize me and my avatar in each other. Thus the similarities. But since my avatar and my real life self are not 100 percent the same, there are deliberate and subtle differences. This is not the same as making my avatar an idealized version of myself.</td>
</tr>
<tr>
<td>37</td>
<td>Sometimes I will dress my avatar in clothes I wouldn't usually wear in real life, because I think they look cool on 'him' where as they wouldn't on me.</td>
</tr>
<tr>
<td>12</td>
<td>height, skin color</td>
</tr>
<tr>
<td>13</td>
<td>Height, eye colour, movements</td>
</tr>
<tr>
<td>45</td>
<td>I just realized how weird this survey would have been if I answered it for my second, female, avatar =) I had a little trouble with some of the questions. For example, it is important to me that my character is NOT very muscular, so I wasn't sure whether to answer positively or negatively on the importance of his muscles. For some of the questions it also wasn't very clear whether they dealt with appearance of the avatar or in-game behaviour. For example, the appearance of speed isn't that important for my mage avatar, but I wouldn't want that to affect his in-game running speed, as that would hurt my performance in raids.</td>
</tr>
<tr>
<td>49</td>
<td>I find things like skin color, hair color etc. much more important than bodily appearance! So, I would have liked questions related to that.</td>
</tr>
<tr>
<td>52</td>
<td>Clothing. It's a huge part of avatar-related activities, particularly in games/environments where there are 'appearance slots'.</td>
</tr>
<tr>
<td>53</td>
<td>Ok, seriously? How about 'describe what your avatar looks like' (maybe with the possibility to attach one or multiple pictures of it and maybe the person itself)? How about a very simple binary question about the avatar's gender? Maybe some reasoning as to why someone creates the avatar the way he does?</td>
</tr>
<tr>
<td>73</td>
<td>These questions seem to assume a humanoid avatar. This is not the case for me.</td>
</tr>
<tr>
<td>80</td>
<td>He's wearing a WW1 cavalry outfit yet is playing with a model Camel Sopwith aeroplane!</td>
</tr>
<tr>
<td>105</td>
<td>I think that like the images in advertising, avatars most often present an unrealistic ideal. I would like to be able to have more and easier to implement customization to make them more like reality.</td>
</tr>
<tr>
<td>129</td>
<td>I base my avatar on myself and hence feel it should look the most like me</td>
</tr>
<tr>
<td>134</td>
<td>I've gotten a bit of eye candy value out of other, more height proportionate avatars.</td>
</tr>
<tr>
<td>47</td>
<td>Many avatar in a lot of mmo has very few options when it comes to beards and how big they can be (fat). I would like to have those options to make the avatar looks more like the real me.</td>
</tr>
<tr>
<td>10</td>
<td>My avatar's gestures are too far out of my control and are the least realistic aspect. For example, my avatar does not walk like me whatsoever, nor do the available alternative walks reflect me realistically or idealistically.</td>
</tr>
<tr>
<td>12</td>
<td>The questions seem to neglect the fact that many avatars will change appearance through progression (e.g. improved equipment in World of Warcraft) or through user choice (e.g. different outfits or forms in Second Life). For myself, using different outfits and forms in SL reflects different aspects of my personality and serve various purposes.</td>
</tr>
<tr>
<td>22</td>
<td>I feel emotionally connected to my avatar more so that my actual body. My avatar represents how I feel I should look.</td>
</tr>
<tr>
<td>56</td>
<td>I like the way my avatar move or dance.</td>
</tr>
</tbody>
</table>
It was interesting to note that one participant mentioned experiencing negative comments regarding his avatar’s weight in Second Life “in Second Life, people make fun of my avatar’s girth. Remarks like ‘Move along, tubby!’ are commonplace. In normal exploration sims, however, such remarks are rarely, if ever, made.” As Second Life is more socially orientated, it is likely that more common social ideals from real life permeate into Second Life. And perhaps in the virtual world, like in real life, there is a pressure to conform “I prefer my avatar to look similar to most other avatars” and “I think that like the images in advertising, avatars most often present an unrealistic ideal”. Some participants also identify that physical attributes in real life are intentionally carried over into the virtual world “It wears glasses as I do in RL. It feels weird without them in SL as I can’t see in RL without them. Very strange” and “I base my avatar on myself and hence feel it should look the most like me”. And as mentioned before, the avatar as the ideal is also present “I feel emotionally connected to my avatar more so that my actual body. My avatar represents how I feel I should look”. But the avatar also is a roleplaying tool, “These questions seem to assume a humanoid avatar. This is not the case for me”. One participant attached a link to his avatar, this is presented in Figure 4.

*Figure 4. Participant Avatar*
Other comments made by participants, shown in Table 29, include factors that may need to be considered in future studies. One such area is that of immersion factors affecting avatar appearance and future exploring role-play aspects. Another element is exploring the difference between personality attributes and physical attributes. It appears many people wish their avatar to embody certain personality traits which may not relate to their physical appearance.
<table>
<thead>
<tr>
<th>ID</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>my avatar and my organic identities are blended in ways that are sometimes difficult to explain</td>
</tr>
<tr>
<td>14</td>
<td>I identify with the gnome archetype as shown in various settings, though less with the one in folklore and more with the one in modern-day narratives (e.g. Rock gnomes from Dungeons and Dragons).</td>
</tr>
<tr>
<td>32</td>
<td>Perhaps an additional question about what perspectives or reasons a person will play a videogame or avatar-related activity. Many like to immerse themselves into a character in a role-player game, or to let off steam in an action game with highly exaggerated characteristics that won't remind them of the real world.</td>
</tr>
<tr>
<td>42</td>
<td>skin color. Pale. The gender I play as, I never gender bend but I used to a bit when I was a kid, but never online. How I perceive my character, my role. He's smart, talented, gifted, hard working. All the things I wish I was. Body doesn't mean much to me but I look through his eyes with a subtle know.</td>
</tr>
<tr>
<td>48</td>
<td>It is probably outside of the scope of this study, but there are no questions regarding the mental/intellectual side of my avatar. To me, this is more important in how I feel that my avatar links to my real world self.</td>
</tr>
<tr>
<td>50</td>
<td>My character is a paladin the ultimate embodiment of chivalry, however I decided to step away from the perfection making him an ugly, harsh character with a kind heart.</td>
</tr>
<tr>
<td>55</td>
<td>Why do you choose your avatar could be a question to be asked more directly. In my case, I usually select an avatar and play it for the role i want him to have in a game. (I'd never go with an orc mage or with a gnome warrior)</td>
</tr>
<tr>
<td>63</td>
<td>I identify more with my avatar's non-physical aspects of his character, rather than his physical aspects. Obviously they are out with the scope of this survey, but there my avatar's character represents more of an ideal.</td>
</tr>
<tr>
<td>65</td>
<td>You haven't asked me what my avatar(s) do when I'm not online :)</td>
</tr>
<tr>
<td>69</td>
<td>I often play from first-person view and that means looking up to characters of average height, similar when being out with colleagues or friends who often are a bit taller. Feels like 'usual'.</td>
</tr>
<tr>
<td>74</td>
<td>About the questionnaire - most of the questions read like they are asking if you have <em>ever</em> felt certain ways, making them harder to answer. It may be more clear if worded something like 'in the past year have you felt...'. I am currently a marathon runner, but have lost 50 pounds in the last 5 years. This makes answering some questions harder, as I clearly remember feeling that way, but may not feel that way currently.</td>
</tr>
<tr>
<td>75</td>
<td>No. I'm just rather afraid that my entry for this survey will be dismissed as a prank, especially considering the fact that I revealed my true age instead of lying. Perhaps stark honesty is not appreciated in the world of surveys and data-collection, but all the answers here have been answered truly, and as a result, should be counted.</td>
</tr>
<tr>
<td>76</td>
<td>My perception of my characters is not as important to me as the environmental effect they can have on the world around them. In most cases they are there to solicit a reaction in others.</td>
</tr>
<tr>
<td>77</td>
<td>sometimes in real life for a fleeting moment i might feel like i am in my avatar body and feel disoriented</td>
</tr>
<tr>
<td>82</td>
<td>I pick my avatars based on my perception of in-game optimization (different races gain minor advantages at different tasks) and my game play preferences, not on looks. One basically spends the entire game looking 'Down from slightly behind' so you never really see the avatar anyway -- you see the helmet and the cloak</td>
</tr>
<tr>
<td>85</td>
<td>Another you may find interesting about Second Life - is my avatars tend to be unique to the accounts I use. I have lost several accounts in the past, and each one of those accounts has had a very different looking avatar. Both of them are distinctively 'me' though, and I don't pretend to be different people.</td>
</tr>
<tr>
<td>88</td>
<td>Yes. your question are driven by the assumption that avatar design is lead by frustrations or compensation needs. It might be so. It is often out of that scope because of the Roles to play. RolePlay is an activity with several levels of quality, quality being related to mastering the langage, the feelings, social maturity, and the context. Fitness of the avatar is consequently very important like in any theatre performance.</td>
</tr>
<tr>
<td>89</td>
<td>Possibly for future reference, look into the class that characters play...I generally like to play thief/assassin style class, where the body shape should be thin/lithe over short and broad.</td>
</tr>
<tr>
<td>92</td>
<td>It doesn't matter what game I am playing, as long as the tools are available to me I will always have a blast attempting to create myself in the game</td>
</tr>
<tr>
<td>95</td>
<td>My avatar represents me. If I am talking to someone, I turn to face them, etc. in the same way as I would face someone I'm talking to IRL. Some people don't have that same attachment, it's more of a tool.</td>
</tr>
<tr>
<td>114</td>
<td>I am fully aware that it isn't me, but is an avatar in the true sense of the word - a vessel through which I project my personality.</td>
</tr>
</tbody>
</table>
Summary

Hypothesis 1 was confirmed by the qualitative analysis, suggesting participants create avatars for varied reasons, such as self-representation, role-playing and as a tool to assist in gameplay, which appears to support the theory that avatar creation is dependent on contextual factors as suggested by Taylor (2003). However, in saying this, the context depends on the individual, not just the application, whereby, two people in the same game world or application may have very different reasons as to what they want to achieve through the creation of their avatar. Some individuals appear to be extremely attached to their avatars which may be indicative of high levels of personal investment, or alternatively the avatar may reflect their personality and values (Axelsson, 2002) and thus is not a wholly separate entity from their selves.

It is also apparent that individuals do create their avatars for the purpose of role play, allowing individuals to explore alternative identities and personalities. This has been supported in past research (Hussain & Griffiths, 2008; Kafai et al., 2007; Taylor, 2002; Trepte & Reinecke, 2010), however, these alternative identities can be totally separate to the individual or, in fact, embody their ideals. One interesting aspect to emerge from the qualitative study was the concept that the avatar is a separate, yet important, entity from the user. Many users commented that their avatar has its own goals, wishes and desires and that they simply direct the avatar along its path. It may be important to understand if there is less attachment for these individuals towards their avatar, or that there are such high levels of attachment that the avatar no longer becomes an extension of themselves but an entity that exists in its own right and carries importance beyond the individuals own goals and desires.

Hypothesis 2 was only partially confirmed. Avatar appearance was important to many participants regardless of how they viewed their avatar, however, some
participants across all categories felt that appearance was not important, except perhaps as an indicator of achievement, in terms of items and clothing. One major reasons that appearance was important appeared to be for aesthetic purposes as participants wished their avatar to look ‘cool’ or attractive, especially since they would be viewing their avatar in the third person throughout the game. Others felt that appearance was important as it allowed for them to identify with their avatar and for game immersions. Thus they made the avatar reflect their actual appearance as closely as the application would allow. Interestingly many participants stated that the avatar is a “virtual representation of how I'd like to be seen”, thus implying that appearance is important as a means of reflecting their ideal body image.

Gender was a main point raised by many participants though the qualitative interview. This was not taken into account during the design of the study and thus not explored. However, it appears many male participants do create female avatars but not for the purpose of identity play. Female avatars were mainly created as male participants felt that they were more attractive to view during game play than a male avatar. One points raised by participants was that their avatars change through progression of their lifespan, either to reflect game achievements or due to gaining new items and clothing. This is important to note as regardless of the way participants’ avatars were initially created they may have evolved being the original influences that shaped their body dimensions. The qualitative analysis revealed a wealth of information that needs to be taken into consideration in designing future studies for this population. It also highlights the complexity of avatar creation and the many individual differences that contribute.
Study 2 Discussion

Study 2 was conducted as replication and extensions on study 1 and the results of study 2 further supports the data collected in study 1 with a new participant group. It was hypothesised that participants’ ideal body weight and muscle will be significantly different to participants’ actual body weight and muscle, with the ideal body having higher levels of muscle mass and less body fat. This result was expected due to previous research indicating that males tend to internalise the ideals of higher muscle mass and less body fat (Demarest & Allen, 2000; Fallon & Rozin, 1985; Tiggemann et al., 2007). It was also hypothesised that the participants’ avatar body image would be significantly different from both their ideal and actual body image, with the avatar possessing more muscle and less body fat. This was supported by the results in study 1 and study 2 replicated this, confirming hypothesis 1 and 2.

The difference between real body image and avatar body image was expected as avatars have to potential to provide users with the ability to create an online physical identity to represent their desired ideals. This hypothesis was also based on the initial rationale of this study that individuals would use the Internet as a means to compensate for, or hide, physical master status conditions and concerns. Trepte and Reinecke’s (2010) study suggested that individuals create avatars unlike themselves to possibly compensate for what they view as failings. As shown in previous research by Lawson (2000) and McKenna and Bargh (2000), users will create avatars that are closer to their ideal selves than their actual selves. This research only viewed avatar creation in terms of personalities displayed, however, it was likely that this would also apply to physical characteristics.

Study 2 also replicated the results of study 1 in terms of the difference between ideal body image and avatar body image, supporting the hypothesis that the
avatar will possess higher levels of muscle, and less levels of body fat than participants' ideals. Biocca and Nowak (2002) reason that in an online context, avatars have more extreme levels of muscle and lower levels of body mass due to the online environment allowing for the exaggeration of masculine qualities in men. Despite the difference between the avatar and the ideal in study 1, there was very little evidence to support the view that the avatar can predict additional psychopathology in users more so than the ideal.

In study 2 real world body change mechanisms were found to have a significant relationship with aspects of body image dissatisfaction, appearance objectification and competency. It was found that participants' drive for thinness correlated significantly with participants' drive for masculinity and general body, muscle and weight dissatisfaction, supporting hypothesis 3. It also had a significant relationship with objectification of appearance and a weak but significant relationship with competency. Hypothesis 4 was also confirmed with drive for masculinity being found to significantly correlate with drive for thinness, muscle dissatisfaction, weight dissatisfaction, general body dissatisfaction and appearance objectification and competency. This supports previous research which showed that male body image dissatisfaction is linked to drives for muscle and thinness (Tylka et al., 2005). It also supports the theory that males often feel a pressure to become more muscular (Cafri & Thompson, 2004). Objectification of appearance ideals, from sources such as the media, peers and family, even in terms of social based gender roles, often has been found to lead to increased desire for body change and can lead to body image concerns (Olivardia et al., 2004; Schwartz & Tylka, 2008; Tylka et al., 2005).

Following on from this, it was also found that participants' drive for thinness correlated with their real weight and their drive for masculinity correlated negatively
with their real muscle mass, indicating the less muscle they have, the more they
desired. This reflects the view that males may desire to change their muscle and
weight based upon their current actual body dimensions in order to reach an ideal
(Hobza et al., 2007; Rydgeway & Tylka, 2005). Drive for thinness did not correlate
with ideal weight, however, drive for muscularity did. This suggests that participants’
ideals in terms of muscle can be reflected by their drive to achieve muscle. The fact
that drive for thinness did not correlate with ideal weight could be due to the fact that
muscle mass confounds weight loss, as gaining muscle usually means gaining weight.
Previous research has shown that both drive for muscularity and drive for thinness can
exist in men (Hildebrandt et al., 2006; Kelley, Neufeld & Musher-Eizenman, 2010).
However, this has been associated with higher levels of negative body change
behaviour, body image disturbances and psychopathology. Interestingly, there was no
correlation between avatar weight and muscle and drive for muscularity or drive for
thinness.

This suggests that the avatar may have either no relationship to participants’
body change drives, or the relationship is more complex than a simple direct
correlation. Previous research into avatar creation has indicated that individuals who
play online games usually show high motivation to meet interpersonal needs over the
Internet (Lo et al., 2005a; 2005b). This could potentially mean that dimensions
weight and muscle in participants’ avatars are not linked to their own body image
desires but are selected as a tool to interact with others. In real life, individuals who
are perceived as being more physically attractive often show higher levels of
interaction with others and also tend to develop better quality personal interactions
(Townsend & Levy, 1990a; Lo, 2008). Research has shown that attractive avatars tend
to develop higher levels of engagement with others and better quality interactions (Lo).

Another factor which needs to be taken into account is that the majority of participants in this study used avatars in online games, with the minority being those who used them in non-game type situations, such as Second Life. Some research has shown that in game situations, male online gamers will use their presentation to manipulate and influence other players to gain a competitive edge, such as creating a female avatar to receive higher levels of assistance from other players (Bruckman, 1993). Riegelsberger et al., (2006) also suggest based on their research that players use the avatar as a tool in this sense. The qualitative data collected in study 2 helps to shed some light on this subject. Participant responses to the question “What does your avatar mean to you? Is it just a tool in a game? Is it more than that?” indicates that participants can be divided into three main groups. These groups were; those who view their avatar as a tool, those who view their avatar as a reflection of self and those who view their avatar as a reflection of their ideal.

The vast majority of participants (n=76) identified their avatar as a tool. Some participants further elaborated and described the avatar as a tool for socialising with others or for role playing characters. Interestingly some participants made comments which reflect previous research regarding avatar appearance affecting the reactions of others (Townsend & Levy, 1990a; Lo, 2008). These participants felt that others reacted more positively to more attractive avatars. Other participants also indicated that the avatar was a tool and existed as a completely separate entity to themselves, not reflecting their own physical self or personality in any way. This could explain why the avatar has no relationship with body change drives in the current study.
Study 2 also explored participants' appearance objectification and competency in both the real and virtual world. It was found that real world appearance objectification and competency were related to virtual world appearance objectification and competency. There was a significant difference between the real and virtual world domains. It appeared that in both the real world and the virtual world, participants valued competency over objectification of appearance. This suggests that while users do objectify appearance and value competency in both domains, the real world still holds a higher level of importance. Furthermore, appearance objectification in the virtual world was very low, while competency still appeared to be more important. This suggests that in terms of avatars, competency is more important to participants than appearance. Trepte and Reinecke (2010) suggest game competitiveness is a major influence on avatar creation. Their study supported the theory that avatar users who had high trait competitiveness or played competitive games would create avatars that would assist in achieving game goals (Trepte & Reinecke). The qualitative data from study 2 also shows some support for the importance of competency over appearance in avatar creation, with many participants commenting that the avatar is a tool made to fulfill a role and some stating that avatar function is more important than appearance.

Further analysis was conducted to see if appearance objectification or competency had any effect on participants' ideal and/or avatar bodies. The results of the regression suggested that appearance objectification or competency did not contribute significantly to participants' ideal weight or muscle. As a result there was no support for hypothesis 5 or hypothesis 6. Appearance objectification was found to contribute to participants' drive for thinness and drive for muscul arity. Interaction variables were created to explore if body dissatisfaction and appearance
objectification had any effect on the avatar or ideal body. It was found that
participants who were dissatisfied with their muscle in the real world and objectified
appearance in the virtual world created avatars with more muscle. This is a significant
finding as it supports the concept that the avatar can potentially be compensatory to
individuals who are dissatisfied with an aspect of their physical appearance in the real
world and feel that the virtual world is a valid domain in which appearance has
importance. Furthermore it provides confirmation for hypothesis 8. It is possible that a
small subset of individuals, who have appearance concerns, or physical master status
conditions, use avatars in this way to conceal and reduce the impact of their
appearance concerns (Frable et al., 1990). Grodal (2000) suggests that online games
allow individuals to have high levels of control over their environment and according
to Klimmt and Hartmann (2006) they are also granted with instantaneous feedback
and reward.

Based on the qualitative data collected it appears that there is a wide range of
importance placed on avatars and the appearance of avatars. Most users had multiple
avatars which they used in applications that ranged from games to socialisation
simulations to social networking. These avatars are either created to reflect the
individual’s self or ideal in terms of appearance or personality or as a role playing
tool. Much like in real life, how others perceive individuals online is also an important
aspect of their avatar’s appearance, with many participants referring to how their
avatar’s appearance can influence online social interactions.

The qualitative data in study 2 also appeared to confirm many of the theories
regarding avatar creation that have been presented in previous studies, such as that
individuals create avatars which are similar to themselves to increase game enjoyment
(Hsu et al., 2005). Axelsson (2002) reported that avatars often represent their user’s
qualities. This was also supported in the qualitative data. Another major theme that has been supported by previous research is that people can create alternate identities to role play (Hussain & Griffiths, 2008; Kafai et al., 2007; Taylor, 2002; Trepte & Reinecke, 2010).

It also appears that many males create female avatars. This was not taken into account in the creation of the study and the effects may influence the results. While these female avatars are likely to be thinner and possibly possess more muscle than the participants’ actual bodies, they may not be viewed as an ideal body they wish to possess. Some participants commented that the reason they create female avatars is because they mostly view their avatar in the third person and would prefer to look at a female than a male. Gender bending online is a common occurrence with past research indicating that in Second Life, 14% of men choose to create a female avatar (Rymaszewski et al., 2007). However, the majority of men do prefer to create avatars that are their own gender (Trepte, Reinecke & Behr, 2009) and this is possibly due to sex role stereotype that better reflect the competitive nature and task of online game environments (Trepte & Reinecke, 2010). Bruckman (1993) reported male gamers will also create female characters to receive more attention and assistance from other online players.

**Summary and Conclusions**

As in study 1, the avatar is a unique entity in terms of body weight and muscle mass in comparison to participants’ real and ideal body image, supporting the hypothesis that the avatar would have more muscle and less body weight. Body dissatisfaction amongst the participants was related to body change drives but no
relationship was found between body change drives and the avatar. Furthermore appearance objectification and competency did not appear to influence to creation of the avatar as well.

While this may suggest no link between avatar body image and body dissatisfaction, further analysis did reveal that it was relevant to participants who objectified appearance in the online domain. It was found that avatar muscle was a significant predictor of participants who objectified online appearance, or how they are physically represented online, and were dissatisfied with real world muscle. This suggests that the contextual environment of the Internet is important in assessing body change behaviours and body image in participants. Only participants who feel that appearance is important on the Internet will potentially use the Internet as a source of compensation for real world muscle dissatisfaction. This lends support to the idea that the Internet can be a place where individuals can conceal their physical master status conditions, perhaps as a coping device.

The qualitative data also suggested a wide range of factors that need to be considered in order to better understand why people create avatars and their potential psychosocial effects. Firstly, the context of the avatar creation must be understood. Some individuals create avatars as means of game enjoyment or immersion, while others create their avatars to help them in achieving game goals and manipulating help from others. Participants who had created avatars in the same applications were not motivated by the same reasons in deciding what their avatar should look like. It also appeared that various levels of attachment between participants and their avatars form, with some people viewing their avatar as nothing more than a tool, while others viewing their avatar as an important tool that they have invested lots of time and energy in. Furthermore, some individuals viewed their avatar as a representation of
their actual selves or their ideal selves. The context and meaning of the avatar to the individual is an important differentiating factor that needs further research and controlled for when exploring the effects and relationship of the avatar to real world body image and psychopathology.
CHAPTER FIVE

General Discussion and Conclusions

There is substantial research to suggest that body image dissatisfaction is predictive of a range of negative psychosocial outcomes such as low self-esteem, anxiety, social phobia and depression (Coles et al., 2006; Grabhorn et al., 2006; Olivardi et al., 2004; Thompson et al., 1999). It has also been shown to predict unhealthy and risky behaviours in both men (Hobza et al., 2007; Rydgeway & Tylka, 2005) and women (Derenne & Beresin, 2006). Body dissatisfaction has been modelled as being central in leading to eating disorders and drive for muscularity, to the point where individuals may engage in drastic body change behaviours, such as steroid use (Ricciardelli & McCabe, 2004).

In most cases body dissatisfaction is modelled as a psychological mediator of the effects of sociocultural pressures from media (van den Berg et al., 2007) as well as from peers and family, on negative behaviours and attitudes about the body (Thompson et al., 1999). Body dissatisfaction is the manifestation and ‘embodiment’ of all these pressures internalised. The Internet is a media source which can also emphasise physical ideals and lead to body dissatisfaction. The influence of online peers on individuals is also evident in terms of being meaningful relationships with high levels of interpersonal disclosure (Parks & Floyd, 1996; Rosen et al., 2008) and group membership (Burke, Kraut & Joyce, 2010).

To explore this aspect of body dissatisfaction, the concept of internalisation must be examined. In the research it is supposed that internalisation is the concept that the ‘ideal’ or the ‘norm’ is internalised, creating a standard that individuals feel they should possess (Jones, 2004). The intuitive idea is that sociocultural pressures
promote not only disparaging self-comparisons, but also the development and internalisation of an ideal body. This ideal is dangerous because it is typically unrealistic and unattainable through healthy means (McCabe, Ricciardelli & Karantzas, 2010; Labre, 2002; Pope et al., 2000). A mediating factor, however, is the extent that individuals feel that they must conform to these ideals (Knauss, Paxton & Alsaker, 2007). Therefore what is often central to body dissatisfaction is the discrepancy between what individuals think that they look like and what they want to, or feel they should, look like. Self-discrepancy theory (Higgans, 1987) proposed that the larger the discrepancy between this perceived self and the internalised ideal, the greater the negative psychosocial consequences.

The issue at the core of this concept is that it generally receives limited empirical support in the sense that only a small proportion of variance in body image is actually predicted by the discrepancy between measured or self-reported body dimensions and one’s ideal body. Often, studies focused on estimating self-perceived and ideal body image are unable to show that the difference between these two estimates to be strong predictors of body dissatisfaction, or unhealthy body change behaviours. This perplexing problem may be attributed to the imprecision in techniques used to estimate perceive and ideal body image (Mussap, McCabe & Ricciardelly, 2007; Proctor & Morley, 1986). Further adding to this difficulty in estimation is that there appears to be variability in individual’s selection of their body size estimates (Cash & Pruzinsky, 2002; Tiggemann, 2000). Research has indicated that this variability in body size estimates is due to over-investment, perfectionism and dysfunctional cognitions relating to appearance (Rudifer, Cash, Roehrig, & Thompson, 2007) and ‘negative’ body image (Melnyk, Cash, & Janda, 2004).
Furthermore, there is some debate as to what these body image measures are actually measuring, as they have been attributed to the individual’s perceptions and/or cognitions. Studies using brain imaging methods have shown that when individuals view their own, or other peoples’ bodies, areas linked with visual association activate, such as the occipitotemporal cortex and the posterior parietal. Interestingly the areas associated with basic sensory information, do not activate (Downing, Jiang, Shuman, & Kanwisher, 2001; Grunwald et al., 2002; Jeannerod, 2003; Leker, Karni, & River, 1996). In a study exploring the brain activation of individuals with eating disorders, it was found that their primary visual cortex was functioning normally but abnormal function was detected in the visual association areas (Grunwald et al., 2002; Rastam et al., 2001). However, body size overestimations have been shown to be more extreme in individuals with eating disorders when they are presented with distorted body images to their left cerebral hemisphere, but this was not shown in controls (Smeets & Kosslyn, 2001). Given this difference, it appears that cognition may not solely be responsible for body dissatisfaction. However research does suggest that body image distortions are likely to be caused by body concerns and dissatisfaction, and is likely cognitive (Mussap et al., 2007; Brinded, Bushnell, McKenzie, & Wells, 1990) but it appears that these cognitions and affective interpretations are variable and can fluctuate (Mussap et al.).

A practical outcome of the present study is that it may shed light on the nature of the problem and offer some directions for future research aimed at improving body estimates. Moreover, these insights are particularly relevant to males. Body measures, particularly of the self, can be and are usually validated as participant’s selections can be compared with their actual body dimensions. For males, this involves comparing
their self-body selections with their objectively measured level of adiposity and adipose-free muscle mass.

But even using validated methods, some problems exist. The methods used to determine self and ideal body image utilize unnatural tasks using static, two-dimensional, non-descript non-detailed images, drawings and/or silhouettes. Traditionally, perceptual methods of measuring body image relies on an individual’s ability to accurately estimate their body dimensions (Cafri & Thompson, 2004). Males have been found to overestimate but significantly less than women, in non-clinical populations (Keeton et al., 1990; Thompson & Thompson, 1986). It is thought that perceptual assessment is not a valid tool for males, unable to tap into their perceptions of self and ideal (Cafri & Thompson). Males in particular are not as likely as women to have such clear images of self and ideal that are amenable to 2D representations. That is, the images are not ecologically valid even if they are geometrically accurate. Furthermore, as body image is a dynamic value, silhouettes are considered a course method of assessment (Cafri & Thompson). It is also important to consider that participants are almost always unpractised at the task of selecting their body image from predefined silhouettes as it is an unnatural process.

Perhaps more problematically, the images selected or created by participants are likely not to be valued by them as these the images are at best an artificial proxy of their body image. Hence we should not be surprised that body image spatial estimates are not strongly predictive of the sorts of body attitudes and emotions that are implicated in body dissatisfaction. This leads to the concept that the avatar may be a different and more ecologically valid alternative, with the potential to have more clinical significance. The avatar is a three dimensional, dynamic construct which has
the potential to be extremely realistic, with individuals able to control all aspects of their appearance, from body dimensions to eyebrow shape.

Furthermore, the avatar is made voluntarily and naturally by the individual and is used by the individual, providing it with ecological validity. This is an important aspect for males as only recently has there been an increase in the availability of magazines containing idealised male bodies that can be internalised (Ricciardelli, Clow, & White; 2010) but they often play games where male images are functional, manipulated and used (Martins, Williams, Ratan & Harrison, 2011). Interestingly one study has shown that exposure to video game magazines resulted in higher drives for muscul arity in white preadolescent males (Harrison & Bond, 2007). Not only is the avatar likely to be more valued by male individuals, with many showing investment in their avatar, but aspects and extent to how they value their avatar can be explored, including its function and purpose. As these aspects of the avatar can be explored, it can lead to important insights in the psychological motivations of online social interactions. Furthermore, the avatar may also reveal underlying body concerns in the individual's real world lives.

This thesis initially presented master status as an important influence on psychosocial functioning in certain individuals, particularly those with body image concerns. The primary focus being that individuals who have body image concerns and are able to conceal them often have more negative psychosocial outcomes than those who do not conceal their master status conditions (Frable et al., 1990; Frable et al., 1998). It was expected that the Internet would provide an avenue for individuals with body image disturbances to not only conceal their master status conditions, but present an ideal body image through the use of avatar as deception regarding body image is possible in the online environment (Riva, 2002).
Previous research regarding negatively perceived master status conditions has focused on the concealability of some physical master status conditions. Frable et al., (1990) demonstrated that individuals who possessed concealable master status conditions have higher levels of monitoring of others in an attempt to manage interactions that may lead to the revealing of their hidden condition. This requires high levels of cognitive effort which can be quite demanding of the individual (Frable et al., 1990; Goffman, 1963; Lane & Wegner, 1995; Leary, 1995; Smart & Wegner, 1999). Likely the management may lead to high levels of mental and emotional stress (Smart & Wegner) and low self-esteem (Frable et al., 1998). The premise of this research project expected that the Internet would be a platform for people with physical master status conditions to better manage interactions with others and reduce distress.

The results of study 1 demonstrated that the male participants had normal, non-clinical level of body image concerns and did not make physical comparisons to others at a dysfunctional level. This suggests while the initial expectation that the Internet and avatar use is potentially a vehicle for individuals with body image master status concerns to interact with others while easily concealing these concerns, the majority of male users may in fact not be experiencing such concerns. Study 1 also examined self-esteem as well as depression, stress and anxiety in participants which were all in the normal range. Once more this suggests that the majority of individuals who take part in avatar use may not have any clinically relevant body image disturbance.

Study 2 also suggested this, with participants showing normal range scores for body image dissatisfaction as well as objectification of appearance ideals. Once more this suggests that whilst some individuals due use avatars as a possible compensatory
mechanism to conceal physical master status conditions, this is not applicable to the
general male population of avatar users.

One interesting finding that was consistent across study 1 and 2 was that user
ideals were found to be more muscular and with less body fat than their actual selves.
The avatar was found to be a more extreme and significantly different version of the
ideal which was even more muscular and thinner. The more extreme levels of muscle
and lower body mass in the avatars support the work of Biocca and Nowak (2002)
who state that masculine and feminine attributes are exaggerated in online
environments, suggesting that the avatar is more likely to possess more muscle mass
and less body fat than participants’ ideals as these are deemed as masculine qualities.

Previous studies have supported the concept that individuals rarely present
themselves online in a way that resembles their actual appearance (Benford,
Greenhalg, Bowers, Snowdon, & Fahlén, 1995; Damer, 1997; Suler, 1996). These
studies however are in terms of text based interactions, where user appearance is
described by the user. While the lack of resemblance between participants and their
avatars appears to be the case in the current study, there is a strong correlation
between the participants’ actual, ideal and avatar body, suggesting that while the
avatar may not resemble the actual body, it is a more extreme version of it, with
higher levels of muscle and lower levels of body fat. Konijn and Bijvank (2009)
reported in a study that adolescents are more likely to create avatars that represent
attributes that they themselves would like to represent. Which lends support to the
idea that the avatar would be closer matched to the ideal than the individuals real body
attributes, which has been represented in the current study, however, the avatar has
also been shown to be significantly different from the ideal as well as the actual.
Trepte and Reinecke (2010) have suggested that this dissimilarity between the actual
and the avatar, at least in terms of personality, could be due to a compensatory effect, an opportunity to experience what the individual feels that they are lacking. This, however, does not appear to be the case in study 1 and 2 in terms of physical appearance. There were qualitative results from study 2 that suggested that some participants did create avatars to reflect their ideals both in terms of personality and appearance, however, these appeared to be in the minority, with the majority of individuals using avatars simply as a tool to engage in the application or as a reflection of their actual selves.

In real life social interactions individuals tend to rely on visual cues to gauge personal attributes, as these are not able to consciously changed by the presenting individual (Nowak & Rauh, 2006). As avatars are visual representations of individuals on the Internet, and the Internet allows for the expression of personality types not akin to the user’s actual personality type, it is likely that individuals would create avatars to represent a personality that fits the context they are using their avatar in. For example, evil characters are generally represented by pale avatars who wear dark clothing, which leads to the concept that appearance in online environments is an important aspect in the role individuals wish to play (Isbister, 2006). Qualitative data from study 2 appears to support this.

The fact that participants from both study 1 and 2 did not show a strong relationship with appearance concerns and their avatars does not invalidate the avatar having psychological significance. Appearance concealment does not appear to be highly prevalent or relevant across both studies, but there still were some relationships between the avatar and body change drives, such as avatar muscle having a significant negative, but weak, correlation with participants’ drive for muscularity in study 1. This was not replicated in study 2. Study 2 did show that avatar muscle levels were
relevant in explaining variance if individuals were dissatisfied with their real world muscle and valued appearance in the virtual world. This does provide some support for the idea that the avatar can compensate for body image dissatisfaction in the real world.

This lack of ability for the avatars in the current study to predict real world psychosocial factors may be affected by what has been termed as the Proteus effect (Yee et al., 2009). The Proteus effect suggests that avatar users will adopt personality traits that match their avatars appearance in game. This is built upon Bem’s self-perception theory (1972) whereby individuals evaluate themselves as though they were a third party, and thus through observation of their own behaviours explain the causes behind them. For example, in real life situations taller people are often seen as being more confident as well as being perceived to be in positions of greater power than short people (Stogdill, 1948; Young & French, 1996) and attractive individuals have also been shown to be perceived as possessing a range of positive attributes (Dion et al., 1972). As a result, if an individual has an avatar which is tall or attractive or looks aggressive, it is likely the individual will then adopt the features associated with their avatar in game. Yee and Bailenson (2007) showed in two studies the impact of the Proteus effect. It was found that individuals with more attractive avatars disclosed more personal information and would go to closer proximity with other avatars, conforming to the idea that individuals who are attractive possess higher levels of friendliness and extraversion.

In a second study, participants were assigned to three groups, either the 10cm shorter group, the average height group or the 10cm taller group and were required to engage in a money splitting negotiation task. It was found that individuals who were in the taller group would offer unfair money splits, in their favour, significantly more
so than the individuals assigned to the shorter avatars. Taller avatars were also more likely to reject unfair offers made to them than individuals with shorter avatars. This shows participants would conform to the real world expectations associated with height, even in a virtual environment, with a virtual body (Yee et al., 2009). This research is further supported in a study conducted by Pena, Hancock and Merola (2009), whereby participants were divided into two groups of avatars, one wearing black uniforms and the other white. Black uniforms have traditionally been associated with evil and aggression (Pena et al., 2009). The black uniform participants were found to display significantly higher levels of aggressive intentions and attitudes compared to the white uniformed group and also showed less group cohesion.

What is more relevant to the current study is the concept of the Proteus effect having some level of persistence in the real world setting. In other words, the positive effects gained from an individual’s avatar, such as the confidence associated to being taller (Yee & Bailenson, 2007), may actually carry over into the individual’s non digital life. Yee et al. (2007) states that the average user of online role-playing games will spend 22 hours per week on average using their avatar and engaging in online interactions (Yee, 2006; Yee, 2006b; Griffiths, Davies & Chappel, 2003), and as a result there is likely to be carry over in real world settings. Yee et al. (2009) examined this effect in a recent study, whereby they hypothesised that participants with taller avatars would negotiate more aggressively than those with shorter avatars in an online environment and this effect would carry over into an offline setting, whereby participants who had taller avatars would negotiate more aggressively in the real world face to face settings than participants who had been using shorter avatars. The study found that height was significant in the first round of negotiation in both the virtual and real world, but not the second round or the final acceptance, suggesting
that the self-perception effect of the avatar fades. However, the study’s results suggest that there is a carryover affect into the real world context. Yee et al. (2009) suggests that the results from the study are tentative, however, they do lend support to the concept that effects in the virtual environment can impact on the real world, resulting in observable behaviour differences.

Furthermore McKenna and Bargh (2000; 1998) have suggested that the process of being able to act out ideal selves in an online environment may have an impact on reducing the self-discrepancy in individuals between their actual and ideal selves and result in higher levels of self-esteem, self-worth and self-confidence. Avants, Margolin and Singer (1994), conducted a study whereby patients who had drug addictions would participate in therapy where they created ideal representations of themselves through visual imagery techniques. This led to increased ability to reject the qualities they did not desire in their actual selves and reduced the discrepancy between their actual and ideal. The same concept could be applied to users creating avatars (Bessiere et al., 2007).

Given this research, it is possible that if an avatar is created as a compensatory tool, such as suggested by Trepte and Reinecke (2010), it is possible that the higher levels of self-esteem and other factors associated with the participants’ avatars, may have a positive and lasting effect in an individual’s real world self. This may explain the inability of the avatar in the current study to predict psychosocial variables in participants as the psychosocial variables could possibly have been already affected by the qualities of the avatar. It is also a possibility that the avatar is a more pragmatic entity and avatar choice is not related to levels of self-esteem, depression, anxiety or stress and may explain why no relationship was found in study 1. The qualitative data in study 2 did suggest that contextual factors were important to consider. Individuals
did view their avatars as reflections of their ideal, but other viewed them as representations of self, whilst the majority viewed their avatar as a tool. Some individuals who did view their avatar as a tool did place emphasis on appearance, but it seemed to be primarily for aesthetic purposes rather than compensatory purposes. Through controlling for these factors it may be possible to uncover more information regarding the avatar and its relationship with body image and body dissatisfaction.

Limitations and Recommendations for Future Studies

One of the limitations of this study is that avatar users were selected from a range of different applications and games. While this gives a better representation of users as a whole, it fails to take into account the purpose of the games and applications used. For example, World of Warcraft is a game which is task orientated in requires teamwork and fulfilling team roles in order to achieve game goals. Second Life is an application which has no game type goals or purpose and is primarily used as a form of interacting with others online. There is some evidence to suggest that creation of user avatars would likely be heavily affected by why they are engaging in each game or application (Taylor, 2003). However, there is also evidence to suggest that regardless of the context of the avatar creation, participants created avatars that were self-representational (Vasalou & Jinson, 2009). Given a lack of evidence in this area, it may be beneficial to examine if differences exists between contexts.

In future elaboration of the context of avatar creation, it needs to also be noted that different programs and applications have limitations on the amount a user can actually vary or modify their avatar. This in turn can place a limitation on the amount of body fat or muscle that the avatar presents. For example, while uses can select
differently muscled avatars in World of Warcraft, an Orc will have higher muscle mass than a character from another race, such as a Night Elf. Future studies focusing on body image would benefit from analysing avatars created in applications where such limitations do not exist, such as Second Life, where users have complete control over all aspects of their avatar’s appearance.

It is possible focusing on one avatar use application such as Second Life may be a better focus for future avatar studies given the lack of goals and role expectations as well as the higher levels of avatar customisation. Second Life avatar studies may also present higher levels of dysmorphic concerns and psychosocial dysfunction in participants as Second Life is not a game, as many users will tell you, but another way to experience interaction with people.

The current studies were exploring physical aspects of avatars, however, did not take into account personality characteristics that users may wish their avatar to embody, which in turn may affect the avatars appearance. Future studies may benefit from exploring both avatar physical and personality attributes and how they relate to the user to better understand each aspect and their interactions. The study also failed to take into account male participants creating female avatars. While this is a minority (Rymaszewski et al., 2007), it is still an important factor in avatar creation and its possible relation to body image. This will lead to more evidence surrounding the avatar as a tool for predicting psychosocial functioning of users in the real world.

Another limitation of this study was the use of self-report measures. This is problematic for all variables measured in the study, however it can be particularly problematic for the body dimension aspect. While self-report measures are practical, easy to implement and are low cost they are also associated with numerous issues, such as social desirability which has been shown to influence how participants present
themselves regarding issues that they are sensitive towards, such as weight (Gorber, Tremblay, Moher & Gorber; 2007). Research has shown that men are likely to over report their height when compared to women (DelPrete, Caldwell, English, Banspach & Lefebvre (1992). Furthermore, social desirability is a fluctuating entity, which changes as cultural and social norms change in society. Objective measures, such as actual measurement of participants’ body dimensions can overcome this and yield more accurate results, however, this is time consuming and potentially costly especially in the case of large study samples.

The definition of ‘avatar’ was not clearly defined in the surveys provided to the participants. This may account for the varying responses from participants regarding the avatars that they use. The majority of users referred to full three dimensional characters used in online games and interaction. Other users took the meaning of ‘avatar’ to be any representation of themselves online, including two dimensional photos. In both cases, these representations of self are considered to be avatars, with two dimensional images actually predating three dimensional images in terms of the development of the internet. In the case of this study, the avatar was considered to be a three dimensional figure in order to examine body analogues, but this was not explicitly stated and therefore future studies should ensure that users are aware of the study definitions as the ambiguity of the definition was evident in the qualitative aspect of this study.

The studies also employed a cross sectional design, which only examines the study population at a single point in time. Furthermore the presence and direction of causality cannot be determined through the use of the correlation analytic methods employed. However, due to the novel approach of the study in measuring the body image of participants’ avatars, it was suitable to employ a cross sectional design in
order to explore this new area. Longitudinal studies which measure the changes in participants' avatar use as well as their psychosocial functioning may provide more information in how the avatar may be related to participants' psychological states. Furthermore, it appears from the qualitative study, that avatars have the potential in some applications to evolve and their current state may not reflect the mechanisms which led to the creation of their original body dimensions, i.e. increased muscle due to attaining higher levels in an online game.

Participants in this study were self-selected. Adverts for the study were placed on blogs and forums which pertain to avatar use or applications which use avatars, such as Second Life or World of Warcraft. This immediately increases the likelihood of participants who are more invested in their avatar than the general population to take part in the study. Furthermore, participants who were more interested in their avatar were more likely to invest the necessary time in participating in this study over users who were not as concerned with their avatar. The qualitative aspect of the study reinforces this with the high quality of responses provided by participants. Most appeared to take advantage of the opportunity to express their connection to their avatar without the need for prompting from an interviewer, which was no possible due to the online hosting of the study. The study therefore likely experiences sampling bias, due to the population involved not being truly random and therefore the external validity of the study is possibly compromised. Future studies may benefit from a recruitment design which ensures a random sample to improve external validity.

A final limitation was the lack of age based analysis in the study. Previous research has indicated that adolescents often create alternate identities as means of exploring different personality types while they are still developing their own identities (Konijn & Bijvank, 2009). As a result results could potentially vary between
younger participants, who are still potentially in this identity forming stage, and older participants. Future studies would benefit from exploring these potential differences in terms of avatar creation. It may be that the use of avatars to facilitate compensation of real world failings may vary across the age groups. Furthermore, exploration of the concept of identity formation may be prudent in these cases given that many participants in the study had multiple avatars, and may be exploring different aspects of their identity (Suler, 1999), which may vary according to age.

Conclusions

The evidence from the studies has suggested a possible link between body image dissatisfaction and body change behaviours and avatar dimensions. It is possible that through the use of the Internet individuals have the ability to conceal their physical master status conditions with less effort and stress than in real world settings. The studies suggest that avatar use can potential be a means of compensation, with the avatar being thinner and more muscular than the participants’ self-reported actual body dimensions and previous research has shown the differences between individuals’ personality in the real world and online are due to the individual compensating for attributes that they should possess (Trepte & Reineke, 2010). Furthermore, participants were found to have higher levels of self-esteem and lower levels of social phobia and social interaction anxiety in the online context which potentially supports this concept as the better levels of psychosocial functioning online may be due to the ability to conceal unwanted self-perceived flaws more easily than in the real world.
Study 2 in particular provided support to the idea that master status conditions may be concealed over the Internet, with participants who objectified appearance on the internet and were dissatisfied with their real muscle mass creating more muscular avatars. It could be that most male users of avatars in the general population do not experience concerns about physical master status conditions, which may explain a lack of further support for this concept by the studies. Through examining individuals with clinically relevant body image disturbances, and their avatars, more evidence may present itself.

It is important to stress that the context of avatar use needs to be explored (Taylor, 2003). People create avatars for different reasons across different applications. Goal driven games may not suit avatars which reflect participants’ desired body image, especially if it impacts upon the mechanics of the game, for example World of Warcraft has different races, such as trolls and dwarfs. The selection of a dwarf, who is short, provides in game benefits that differ from the selection of a troll, who is tall. This will influence avatar creation. On the other hand in applications such as Second Life, there are no set game goals, however, social interaction is an important aspect. One participant in the qualitative aspect of study two stated that he used his avatar to engage in online sex with females on Second Life. His motivations for creating his avatar may be directly influenced to help him achieve this goal, perhaps through creating an avatar that he feels females will find attractive.

While there were indeed several substantial limitations, the strengths of the research were in its originality and relevance. Originality in the sense that this is a novel approach to body image in an emerging and popular allegory to real world social interactions and self-presentation. Individuals are spending more and more time
on the Internet and are using it as a platform for social engagement and interaction which has had implications on how people perceive themselves and interact with others (Bailenson & Beall, 2006; McKeena & Bargh, 2000). The avatar is a visual dimension in which individuals can express themselves online and not only can it be self-representational, it can affect the way others perceive and interact with the individual (Dunn & Guadagno, 2012). Very little research has been conducted into the meaning of the avatar and in exploring the avatar as a new dimension of body image. The impact on psychosocial functioning of the avatar is gaining more relevance and its diagnostic properties are not yet understood. It is possible that the avatar could be used as a potential tool to screen for body image concerns and unhealthy body change behaviours. The studies presented in this thesis have supported this possibility but further examination is needed. The avatar as a screening tool for body image concerns would be advantageous to males, in particular those who engage in high levels of online activity, due to their advantage over static two dimensional measures in the sense that the avatar is dynamic, three dimensional, potentially very realistic and is made voluntarily by the individual, enhancing its ecological validity.

Another implication of avatar body image research is its potential links to cyber bullying. Currently cyber bullying occurs through most avenues of the Internet where communication between individuals is possible, such as chat rooms, social media sites and instant messaging (Kowalski & Fedina, 2011). According to Patchin and Hinduja (2010) research has estimated that 10 to 40% of school children experience cyber bullying. The consequences of cyber bullying are serious and can be detrimental to victims and even fatal. Individuals who are bullied often experience depression and anxiety and low levels of self-esteem (Greene, 2003; Juvonen, Graham, & Shuster, 2003). There is also an increase of suicides due to cyber bullying (Klomek,
Sourander & Gould, 2011). It is possible that individuals’ avatars may become another target for bullying. In emphasis of this concept, one participant in the qualitative aspect of study 2 commented “in Second Life, people make fun of my avatar's girth. Remarks like 'Move along, tubby!' are commonplace”. High investment in the avatar may cause the individual to feel personally insulted and violated, such as the case of documented cyber rape which caused real world increases in anxiety (Dibbel 1993). It appears the Internet is becoming subject to similar body image ideals that affect individuals in the real world.

On the other hand, the use of avatars may have potentially beneficial consequences to users, with participants showing higher levels of self-esteem in the online context over their real world self-esteem. Social interaction anxiety and social phobia were lower online when compared to the real world. The potentially beneficial aspects of avatar use requires further exploration as it could be a means of increasing the psychosocial functioning of individuals, especially if the positive online effects are persistent in the real world as suggest by the Proteus effect (Yee & Bailenson, 2007).

As the online world becomes more relevant to people’s work and social lives, the same issues that impact negatively in the real world may also begin to impact on individuals in the virtual world and with it comes a range of psychological consequences. It may be necessary to monitor the activities of youth on the Internet to ensure that the protection we place upon them in real life is not being detrimentally undone in the online domain. The Internet offers vast potential for the recreation of identity and self-expression, and avatars reflect this. The link between concealability of physical master status conditions and the use of avatars still requires future investigation and only future studies will help researchers to better understand the
importance of the avatar and its link to the psychosocial functioning of a growing cohort of people who use, invest in and make avatars a part of their lives.
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Appendix 1

Study 1 Plain Language Statement and Consent Form

DEAKIN UNIVERSITY
PLAIN LANGUAGE STATEMENT AND CONSENT FORM

Plain Language Statement

Date: 3/9/09

Full Project Title: Body Image in Real and Virtual Environments

Principal Researcher: Dr. Alexander Mussap

Student Researcher: Mr Jon-Paul Cacioli

This Plain Language Statement and Consent Form is 5 pages long. Please make sure you have all the pages.

1. Your Consent

You are invited to take part in this research project. This Plain Language Statement contains detailed information about the research project. Its purpose is to explain to you as openly and clearly as possible all the procedures involved in this project so that you can make a fully informed decision whether you are going to participate.

Please read this Plain Language Statement carefully. Feel free to ask questions about any information in the document by emailing Jon-Paul Cacioli at jcai@deakin.edu.au. You may also wish to discuss the project with a relative or friend or your local health worker. Feel free to do this.

Once you understand what the project is about and if you agree to take part in it, by completing the questionnaire you have consented to be part of the study. Please do not initiate the questionnaire unless you understand the information provided regarding the study and that you give your consent to participate in the research project.

A PDF file of this form is available for download to keep for your records.

In order to take part in this study you must:

- Be over 18 years of age
- Be Male
- Be a regular user of the Internet
- Be able to read English fluently
2. **Purpose and Background**

This is a student research project which is a requirement of the Doctorate of Clinical Psychology at Deakin University. The results of the study will be collated into an academic research thesis and will be possibly published in a peer reviewed psychology journal.

A total of 300 people, all males over 18 years of age, will participate in this project. Previous research has shown that the way people feel and interact with each other can be influenced by the individual’s perception of themselves. A discrepancy between how an individual perceives their own physical appearance compared to how they wish to look can lead to depression, higher levels of stress and anxiety and a poorer overall quality of life. The Internet has recently reached a level of sophistication whereby an individual can create a digital representation of themselves, such as an avatar, controlling each physical dimension. The purpose of this project is to investigate the differences between individuals and their avatars and examine their experience of how appearance affects them in real life and on the Internet, such as in programs as Second Life and World of Warcraft.

You are invited to participate in this research project because understanding the psychological effects regarding appearance over the Internet is an area which has not been explored.

The results of this research may be used to help researcher Jon-Paul Cacioli to obtain a Doctorate of Clinical Psychology.

3. **Funding**

This research is totally funded by Deakin University.

4. **Procedures**

Participation in this project will involve completing a questionnaire on a secure web based server. The questionnaire will take 30 to 60 minutes to complete, depending on your reading speed. The questionnaire is in English and will require you to select answers based on a provided scale. Please answer each question. The questionnaire will measure aspects of your psychological and physical dimensions, such as:

- Levels of depression, stress and anxiety.
- Internet use.
- Body image and the body dimension of your Internet avatar.
- Your views on body image.
- Quality of life.
- Self-esteem, social anxiety and social interaction styles.

5. **Possible Benefits**

The insights gained from this project will not be of direct benefit to you as a participant, however, it will further the understanding of the psychological effects of body image on the Internet.
6. **Possible Risks**

Some of the questions asked may cause you some discomfort, particularly if you have concerns with your appearance or have high levels of depression and anxiety. Examples of the questions and statements used include:

- *Have you felt ashamed of your body size or shape?*
- *Have you ever consulted or felt you needed to consult a plastic surgeon/dermatologist/physician about your appearance concerns?*
- *Have you ever been very concerned about some aspect of your physical appearance?*

You will also be asked how strongly you agree with statements like:

- *I felt that life wasn’t worthwhile.*
- *I felt sad and depressed.*

If you find that the questions cause you discomfort please do not continue with this study. If you experience an adverse reaction from participating in this project we encourage you to see your local General Practitioner or a qualified counsellor for support. If you are a Deakin University student, we encourage you to seek assistance from a qualified university counsellor on campus available free of charge. Lifeline (13 11 14) is available Australia wide for 24 hour confidential counselling and referrals for the cost of a local call. Alternatively, if you are currently receiving psychological treatment we strongly recommend that you seek assistance from your regular clinic or agency.

There may be additional unforeseen or unknown risks.

7. **Privacy, Confidentiality and Disclosure of Information**

Any information obtained in connection with this project and that can identify you will remain confidential. The questionnaire you complete will remain entirely anonymous – you will not be asked for any possibly identifying information. Upon completion of the questionnaire a separate page will ask for your email address so that you can go into a random draw for a $100 AUD Amazon.com gift voucher. Your email address will be kept separate from your answers to ensure anonymity. Your collected information will only be disclosed with your permission, subject to legal requirements. If you give us your permission by completing the questionnaire, we plan to collate and discuss the results within a doctoral thesis and to publish the data in an international peer reviewed psychology journal. In any publication participants will not be identifiable as only aggregated data will be reported.

The information obtained from this study will be kept in secure storage in digital hardcopy for 6 years after the final publication, after which it will be destroyed.

8. **Results of Project**

The project will be completed and results written up by August 2010. It is not possible to contact you regarding your individual results or regarding publications due to the anonymity of the study. If you would like further information please email lcaci@deakin.edu.au.

9. **Participation is Voluntary**

Participation in any research project is voluntary. If you do not wish to take part you are not obliged to. If you decide to take part and later change your mind, you are free to withdraw from the project at any stage and the data will not be used and will be destroyed.
Please note that due to the anonymity of the project it will be impossible to remove your data once the questionnaire is submitted.

Your decision whether to take part or not to take part, or to take part and then withdraw, will not affect your relationship with Deakin University.

Before you make your decision, a member of the research team will be available to answer any questions you have about the research project via email jcaci@deakin.edu.au. You can ask for any information you want. Only initiate the questionnaire, signifying your consent, after you have received satisfactory answers to your questions.

There are no foreseeable risks to you in regards to withdrawing.

10. Ethical Guidelines

This project will be carried out according to the National Statement on Ethical Conduct in Human Research (2007) produced by the National Health and Medical Research Council of Australia. This statement has been developed to protect the interests of people who agree to participate in human research studies.

The ethics aspects of this research project have been approved by the Human Research Ethics Committee of Deakin University.

11. Complaints

If you have any complaints about any aspect of the project, the way it is being conducted or any questions about your rights as a research participant, then you may contact:

Should you have any concern about the conduct of this research project, please contact the Secretary HEAG-H, Dean's Office, Faculty of Health, Medicine, Nursing and Behavioural Sciences, 221 Burwood Hwy, Burwood, VIC, 3125. Telephone: (03) 9251 7174, Email: hmnbs-research[at]deakin.edu.au

Please quote project number HEAG-H 152/09.

12. Reimbursement for your costs

As reimbursement for your time, you will be placed in a random draw for an Amazon.com voucher valued at $100 AUD. The draw will take place after data collection has been completed. To be entered into the draw your email address will be collected after the questionnaire, however this will be stored separate to your answers to ensure that your anonymity is maintained.

13. Further Information, Queries or Any Problems

If you require further information, wish to withdraw your participation or if you have any problems concerning this project (for example, any side effects), you can contact the researcher via email at jcaci@deakin.edu.au.

The researchers responsible for this project are:

Mr Jon-Paul Cacioli

Dr Alexander Mussap (principle researcher)

Faculty of Health, Medicine, Nursing & Behavioural Science,
School of Psychology,
Deakin University,
221 Burwood Highway,
Ph: 03-9251 7777 (BH)
03-9251 7777 (AH)
DEAKIN UNIVERSITY
PLAIN LANGUAGE STATEMENT AND CONSENT FORM

TO: Participant

Consent Form

Date:

Full Project Title: Body Image in Real and Virtual Environments

I have read and I understand the attached Plain Language Statement.

I freely agree to participate in this project according to the conditions in the Plain Language Statement.

A copy of the Plain Language Statement was made available to me for download.

The researcher has agreed not to reveal my identity and personal details, including where information about this project is published, or presented in any public form.

By initiating this questionnaire I understand that I have given full and informed consent to taking part in this study.

DEAKIN UNIVERSITY
Appendix 2

Internet Use Questionnaire (Campbell et al., 2006) Modified and Demographics.

Internet Use

This part of the questionnaire asks you about the main aspects of your Internet use.

1. **Age**: (in years) _____________

2. **Gender**:  
   - [ ] Male  
   - [ ] Female

3. **Please indicate your country of residence.**

4. **Do you have an avatar?**  
   - [ ] Yes  
   - [ ] No

5. **Please indicate which of the following Internet applications you use or have used.** (You may select more than one option).
   - [ ] Email
   - [ ] Online chat (This include Virtual Reality and Chat places that use Avatars)
   - [ ] Online Browsing (This can be either specific or general browsing)
   - [ ] E-trade (This includes online stock or bond trading)
   - [ ] Online Gambling
   - [ ] Online Games
   - [ ] Other (*Please indicate your other Internet use in the space provided*)

6. **Indicate the Internet function you use most frequently** (choose only one function).
   - [ ] Email
   - [ ] Online chat (This include Virtual Reality and Chat places that use Avatars)
   - [ ] Online Browsing (This can be either specific or general browsing)
   - [ ] E-trade (This includes online stock or bond trading)
7. **Indicate the Internet function you use second most often.** (choose only one function).

- Email
- Online chat (This include Virtual Reality and Chat places that use Avatars)
- Online Browsing (This can be either specific or general browsing)
- E-trade (This includes online stock or bond trading)
- Online Gambling
- Online Games
- Other *(Please indicate your other Internet use in the space provided)*

8. **Indicate the Internet function you use third most often.** (choose only one function).

- Email
- Online chat (This include Virtual Reality and Chat places that use Avatars)
- Online Browsing (This can be either specific or general browsing)
- E-trade (This includes online stock or bond trading)
- Online Gambling
- Online Games
- Other *(Please indicate your other Internet use in the space provided)*

9. **How long do you use the Internet for in an average day?**

- Less than 1 hour
- Between 1-2 hours
- Between 2-4 hours
- Between 6-8 hours
10. In your opinion how much time per day should you spend using the Internet?

- Less than 1 hour
- Between 1-2 hours
- Between 2-4 hours
- Between 6-8 hours
- More than 8 hours

Please answer each of the following questions on the basis of your DAILY Internet use. Only select percentage of use for those categories that you use daily. Leave any category that you do not regularly use blank.

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<th>Question</th>
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<th>40-50%</th>
<th>Greater than 50%</th>
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<tr>
<td>11. How much of your time online is spent using Email?</td>
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<td>12. How much of your time online is spent using Chat functions,</td>
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<td>Including virtual Reality environments and avatar chat environments?</td>
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<td>13. How much of your time online is spent browsing?</td>
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<td>14. How much of your time online is spent playing online games?</td>
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<td>15. How much of your time online is spent using E-trade?</td>
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<td>16. How much of your time online is spent gambling?</td>
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<td>17. How much of your time online is spent using applications or services</td>
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Appendix 3
Internet Effects Questionnaire (Campbell et al., 2006)

1. Do you believe that the Internet is just a modern means of communication, not unlike using the telephone, or writing a letter using paper and pen?  

2. In an ordinary day would you send and receive more E-mails than you would phone calls?  

3. Do you find that the Internet has helped to benefit your environment?  

4. Do you believe that the Internet has helped to improve your personal life?  

5. Have you ever formed a relationship online, be it platonic or romantic in nature?  

6. Do you find that talking or writing to strangers online has helped you cope with everyday stresses?  

7. Have you ever found that talking or writing to people online helps you cope with your personal problems?  

8. Do you think that the Internet can be addictive?  

9. Do you think that people, who use the Internet too often, have poor social skills?  

10. Do you believe that the Internet could be used to help increase someone’s self-esteem?  

11. Do you think that people who use the Internet too often are lonely?  

12. When you use the Internet for a long period of time, do you start to forget about problems that you may have?  

13. Has using the Internet helped you to be more confident in everyday social settings?  

14. Do you feel less anxious talking to people online than you do when talking to people face-to-face?  

15. Do you look forward to going online each day?  

16. Has using the Internet caused social problems between you and your family or friends?  

17. Do you believe the Internet has helped to break down barriers and stereotypes between people of different countries?  

18. Overall, do you think the Internet is a positive addition in your life?  

Appendix 4
The Social Interaction Anxiety Scale (SIAS, Mattick and Clarke, 1998).

Your Social Interactions

Instructions: For each item, please circle the number to indicate the degree to which you feel the statement is characteristic or true for you. The rating scale is as follows:

0 = Not at all characteristic or true of me.
1 = Slightly characteristic or true of me.
2 = Moderately characteristic or true of me.
3 = Very characteristic or true of me.
4 = Extremely characteristic or true of me.

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<tr>
<td>1. I get nervous if I have to speak with someone in authority (teacher, boss, etc.)</td>
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<td>2. I have difficulty making eye contact with others</td>
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<td>3. I become tense if I have to talk about myself or my feelings</td>
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<td>4. I find it difficult to mix comfortably with the people I work with.</td>
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<td>5. I find it easy to make friends my own age</td>
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<td>6. I tense up if I meet an acquaintance in the street</td>
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<td>7. When mixing socially, I am uncomfortable</td>
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<td>8. I feel tense if I am alone with just one other person</td>
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<td>9. I am at ease meeting people at parties, etc.</td>
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<td>10. I have difficulty talking with other people.</td>
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<td>11. I find it easy to think of things to talk about</td>
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<td>12. I worry about expressing myself in case I appear awkward</td>
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<td>13. I find it difficult to disagree with another’s point of view.</td>
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<td>14. I have difficulty talking to attractive persons of</td>
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<td>15. I find myself worrying that I won’t know what to say in social situations.</td>
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<td>16. I am nervous mixing with people I don’t know well.</td>
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<td>17. I feel I’ll say something embarrassing when talking.</td>
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<td>18. When mixing in a group, I find myself worrying I will be ignored.</td>
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<td>19. I am tense mixing in a group</td>
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<td>20. I am unsure whether to greet someone I know only slightly.</td>
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This questionnaire is repeated in with participants asked to respond in the context of the virtual world.
The Social Phobia Scale (Mattick & Clarke, 1998).

**Your Social Interactions**

Instructions: For each item, please circle the number to indicate the degree to which you feel the statement is characteristic or true for you. The rating scale is as follows:

- 0 = Not at all characteristic or true of me.
- 1 = Slightly characteristic or true of me.
- 2 = Moderately characteristic or true of me.
- 3 = Very characteristic or true of me.
- 4 = Extremely characteristic or true of me.

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<tr>
<td>1. I become anxious if I have to write in front of other people.</td>
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<td>2. I become self conscious when using public toilets.</td>
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<td>3. I can suddenly become aware of my own voice and other people listening to me.</td>
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<td>4. I get nervous that people are staring at me as I walk down the street.</td>
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<td>5. I fear I may blush when I am with others.</td>
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<td>6. I feel self-conscious if I have to enter a room where others are already seated.</td>
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<td>7. I worry about shaking or trembling when I’m watched by other people.</td>
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<tr>
<td>8. I would get tense if I had to sit facing other people on a bus or a train.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. I get panicky that others might see me faint, or be sick or ill.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. I would find it difficult to drink something if in a group of people.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. It would make me feel self-conscious to eat in front of a stranger at a restaurant.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. I am worried people will think my behaviour is odd.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
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</tr>
<tr>
<td>13. I would get tense if I had to carry a tray across a crowded cafeteria.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. I worry I’ll lose control of myself in front of other people.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. I worry I might do something to attract the attention of other people.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. When in an elevator, I am tense if people look at me.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. I can feel conspicuous standing in a line.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. I get tense when I speak in front of other people.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. I worry my head will shake or nod in front of others.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. I feel awkward and tense if I know people are watching me.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This questionnaire is repeated in with participants asked to respond in the context of avatar use in the virtual world.
Appendix 6

*Sociocultural Attitudes Towards Appearance Scale – 3 (SATAQ-3; Thompson et al., 2004) modified.*

Please read each of the following items carefully and indicate the number that best reflects your agreement with the statement.

Definitely Disagree = 1  
Mostly Disagree = 2  
Neither Agree Nor Disagree = 3  
Mostly Agree = 4  
Definitely Agree = 5

1. TV programs are an important source of information about fashion and "being attractive." ______

2. I've felt pressure from TV or magazines to lose weight. ______

3. I do not care if my body looks like the body of people who are on TV. ______

4. I compare my body to the bodies of people who are on TV. ______

5. TV commercials are an important source of information about fashion and "being attractive." ______

6. I do not feel pressure from TV or magazines to look pretty. ______

7. I would like my body to look like the models who appear in magazines. ______

8. I compare my appearance to the appearance of TV and movie stars. ______

9. Music videos on TV are not an important source of information about fashion and "being attractive." ______

10. I've felt pressure from TV and magazines to be thin. ______

11. I would like my body to look like the people who are in movies. ______
12. I do not compare my body to the bodies of people who appear in magazines.

13. Magazine articles are not an important source of information about fashion and "being attractive.”

14. I’ve felt pressure from TV or magazines to have a perfect body.

15. I wish I looked like the models in music videos.

16. I compare my appearance to the appearance of people in magazines.

17. Magazine advertisements are an important source of information about fashion and "being attractive.”

18. I’ve felt pressure from TV or magazines to diet.

19. I do not wish to look as athletic as the people in magazines.

20. I compare my body to that of people in "good shape.”

21. Pictures in magazines are an important source of information about fashion and "being attractive.”

22. I’ve felt pressure from TV or magazines to exercise.

23. I wish I looked as athletic as sports stars.

24. I compare my body to that of people who are athletic.

25. Movies are an important source of information about fashion and "being attractive.”

26. I’ve felt pressure from TV or magazines to change my appearance.

27. I do not try to look like the people on TV.
28. Movie stars are not an important source of information about fashion and "being attractive." 

29. Famous people are an important source of information about fashion and "being attractive." 

30. I try to look like sports athletes. 

31. I do not care that I do not look like the avatars and images I see on the Internet. 

32. I compare my body to the bodies of game characters and avatars who appear on the Internet. 

33. I do not wish to look as athletic as game characters and avatars who appear on the Internet. 

34. I compare myself to game characters and avatars on the Internet who look athletic. 

35. I feel pressure from the Internet to have a perfect body. 

36. I feel pressure from characters and avatars I see on the Internet to exercise. 

37. The Internet is not an important source of information about fashion and what is attractive. 

38. Game characters and avatars who appear on the Internet are an important source of information about fashion and attractiveness.
Appendix 7

The Depression Anxiety and Stress Scale 21 Item (DASS-21, Lovibond & Lovibond, 1995).

<table>
<thead>
<tr>
<th>Item</th>
<th>Rating Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>I found it hard to wind down</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>I was aware of dryness of my mouth</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>I couldn't seem to experience any positive feeling at all</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>I experienced breathing difficulty (e.g., excessively rapid breathing, breathlessness in the absence of physical exertion)</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>I found it difficult to work up the initiative to do things</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>I tended to over-react to situations</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>I experienced trembling (e.g., in the hands)</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>I felt that I was using a lot of nervous energy</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>I was worried about situations in which I might panic and make a fool of myself</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>I felt that I had nothing to look forward to</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>I found myself getting agitated</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>I found it difficult to relax</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>I felt down-hearted and blue</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>I was intolerant of anything that kept me from getting on with what I was doing</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>I felt I was close to panic</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>I was unable to become enthusiastic about anything</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>I felt I wasn't worth much as a person</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>I felt that I was rather touchy</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>I was aware of the action of my heart in the absence of physical exertion (e.g., sense of heart rate increase, heart missing a beat)</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>I felt scared without any good reason</td>
<td>0 1 2 3</td>
</tr>
<tr>
<td>I felt that life was meaningless</td>
<td>0 1 2 3</td>
</tr>
</tbody>
</table>
Appendix 8

*Physical Appearance Comparison Scale (Thompson et al., 1991).*

Using the following scale please select a number that comes closest to how you feel:

<table>
<thead>
<tr>
<th>Never</th>
<th>Seldom</th>
<th>Sometimes</th>
<th>Often</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

1. At parties or other social events, I compare my physical appearance to the physical appearance of others.

   1  2  3  4  5

2. The best way for a person to know if they are overweight or underweight is to compare their figure to the figure of others.

   1  2  3  4  5

3. At parties or other social events, I compare how I am dressed to how other people are dressed.

   1  2  3  4  5

4. Comparing your "looks" to the "looks" of others is a bad way to determine if you are attractive or unattractive.

   1  2  3  4  5

5. In social situations, I sometimes compare my figure to the figures of other people.

   1  2  3  4  5
Using the following scale please select a number that comes closest to how you feel regarding your avatar.

<table>
<thead>
<tr>
<th>Never</th>
<th>Seldom</th>
<th>Sometimes</th>
<th>Often</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

6. At parties or other social events, I compare the physical appearance of my Avatar to the physical appearance of other people's Avatars.

1 2 3 4 5

7. The best way for a person to know if their avatar is overweight or underweight is to compare their figure to the figure of others people's avatars.

1 2 3 4 5

8. At parties or other social events, I compare how my avatar is dressed to how other avatars are dressed.

1 2 3 4 5

9. Comparing your avatar's "looks" to the "looks" of other avatars is a bad way to determine if your avatar is attractive or unattractive.

1 2 3 4 5

10. In social situations, I sometimes compare my avatar's figure to the figures of other people's avatars.

1 2 3 4 5
Appendix 9

The Personal Wellbeing Index (International Wellbeing Group, 2006) modified.

The Quality of Your Life

The following questions ask how satisfied you feel, on a scale from 0 to 10. 0 means you feel completely dissatisfied. 10 means you feel completely satisfied. And the middle of the scale is 5, which means you feel neutral, neither satisfied nor dissatisfied.

1. Thinking about your own life and personal circumstances, how satisfied are you with your life as a whole?

2. How satisfied are you with your standard of living?

3. How satisfied are you with your health?

4. How satisfied are you with what you are achieving in life?

5. How satisfied are you with your personal relationships?
6. How satisfied are you with how safe you feel?

7. How satisfied are you with feeling part of your community?

8. How satisfied are you with your future security?

9. How satisfied are you with your spirituality or religion?

10. How satisfied are you with your friendships over the Internet?

11. How satisfied are you with your activities over the Internet?

12. How satisfied are you with feeling part of the Internet community?
13. How satisfied are you with your life on the Internet?

14. How satisfied are you with how safe you feel on the Internet?
Appendix 10

Dysmorphic Concerns Questionnaire (Oosthuize et al., 1998).

The following questionnaire asks about concerns you may have with your body or aspects of your body.

<table>
<thead>
<tr>
<th>Have you ever:</th>
<th>Not at all</th>
<th>Same as most people</th>
<th>More than most people</th>
<th>Much more than most people</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Been very concerned about some aspect of your physical appearance</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Considered yourself misformed or misshapen in some way (e.g. nose/hair/skin/sexual organs/overall body build)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Considered your body to be malfunctioning in some way (e.g. excessive body odour, flatulence, sweating)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Consulted or felt you needed to consult a plastic surgeon/dermatologist/physician about these concerns</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Been told by others/doctor that you are normal in spite of you strongly believing that something is wrong with your appearance or bodily functioning</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Spent a lot of time worrying about a defect in your appearance/bodily functioning</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Spent a lot of time covering up defects in your appearance/bodily functioning</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix 11

The Coopersmith Self-Esteem Inventory Adult Short Form (Coopersmith, 1989).

Your Self-Esteem in Real Life

This section asks you questions about how you feel about yourself and your relationships with other people.

If the statement describes how you usually feel, select “Like Me”.

If the statement does not describe how you usually feel, select “Unlike Me”.

19. Things usually don’t bother me.  
20. I find it very hard to talk in front of a group.  
21. There are lots of things about myself I’d change if I could.  
22. I can make up my mind without too much trouble.  
23. I’m a lot of fun to be with.  
24. I get upset easily at home.  
25. It takes me a long time to get used to anything new.  
26. I’m popular with persons my own age.  
27. My family usually considers my feelings.  
28. I give in very easily.  
29. My co-workers expect too much of me.  
30. It’s pretty tough to be me.  
31. Things are all mixed up in my life.  
32. People usually follow my ideas.  
33. I have a low opinion of myself.  
34. There are many times when I would like to get away from
my family.

35. I often feel upset with my work.  
36. I’m not as nice looking as most people.  
37. If I have something to say, I usually say it.  
38. My family understands me.  
39. Most people are better liked than I am.  
40. I usually feel as if my family is pushing me.  
41. I often get discouraged with what I am doing.  
42. I often wish I were someone else.  
43. I can’t be depended on.

Your Self-Esteem in the Virtual World

This section asks you questions about how you feel about yourself and your relationships with other people in the virtual world.

If the statement describes how you usually feel, select “Like Me”.

If the statement does not describe how you usually feel, select “Unlike Me”.

1. Things usually don’t bother me.  
2. I find it very hard to talk in front of a group.  
3. There are lots of things about myself I’d change if I could.  
4. I can make up my mind without too much trouble.  
5. I’m a lot of fun to be with.  
6. I get upset easily at home.  
7. It takes me a long time to get used to anything new.  
8. I’m popular with persons my own age.
9. My family usually considers my feelings.
10. I give in very easily.
11. My co-workers expect too much of me.
12. It's pretty tough to be me.
13. Things are all mixed up in my life.
14. People usually follow my ideas.
15. I have a low opinion of myself.
16. There are many times when I would like to get away from my family.
17. I often feel upset with my work.
18. I'm not as nice looking as most people.
19. If I have something to say, I usually say it.
20. My family understands me.
21. Most people are better liked than I am.
22. I usually feel as if my family is pushing me.
23. I often get discouraged with what I am doing.
24. I often wish I were someone else.
25. I can't be depended on.
Appendix 12

The Somatoform Matrix (Cafri & Thompson, 2004).

This part of the questionnaire asks you to match your physical body dimensions in terms of musculature and body fat to a silhouette chart. It also asks for you to identify your ideal and the body dimensions of your Internet avatar.

How tall are you: _____ cm or _____ Feet and _____ inches

How much do you weigh: _____ kgs or _____ pounds

Please select your actual, ideal and avatar body dimensions from below:
Appendix 13

Drive for Thinness Scale (Garner et al., 1982).

These questions relate to how you feel about eating, thinness and weight gain. Please read each question carefully and select the circle which corresponds to your answer.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Always</th>
<th>Very often</th>
<th>Often</th>
<th>Sometimes</th>
<th>Rarely</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>I eat sweets and carbohydrates without feeling nervous.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>2.</td>
<td>I think about dieting.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>3.</td>
<td>I feel extremely guilty after overeating.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>4.</td>
<td>I am terrified of gaining weight.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>5.</td>
<td>I exaggerate or magnify the importance of weight.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>6.</td>
<td>I am preoccupied with the desire to be thinner.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>7.</td>
<td>If I gain a kilogram, I worry that I will keep gaining.</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>
Appendix 14

*Drive for Muscularity Scale (McCreary & Sasse, 2000).*

These questions relate to how you feel your physical fitness and your physique.

Please read each question carefully and select the circle which corresponds to your answer.

<table>
<thead>
<tr>
<th></th>
<th>Always</th>
<th>Very often</th>
<th>Often</th>
<th>Sometimes</th>
<th>Rarely</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I wish that I were more muscular.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>2. I lift weights to build up muscle.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>3. I use protein or energy supplements.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>4. I drink weight-gain or protein shakes.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>5. I try to consume as many calories as I can in a day.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>6. I feel guilty if I miss a weight training session.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>7. I think I would feel more confident if I had more muscle mass.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>8. Other people think I work out with weights too often.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>9. I think that I would look better if I gained 10 pounds in bulk.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>10. I think about taking anabolic steroids.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>11. I think that I would feel stronger if I gained a little more muscle mass.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>12. I think that my weight training schedule interferes with other aspects of my life.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>13. I think that my arms are not muscular enough.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>14. I think that my chest is not muscular enough.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>15. I think that my legs are not muscular enough.</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
</tr>
</tbody>
</table>
Appendix 15

Study 2 Plain Language Statement and Consent Form

DEAKIN UNIVERSITY
PLAIN LANGUAGE STATEMENT AND CONSENT FORM

Plain Language Statement

Date: 9/5/11

Full Project Title: Body Image in Real and Virtual Environments

Principal Researcher: Dr. Alexander Mussap

Student Researcher: Mr Jon-Paul Cacioli

This Plain Language Statement and Consent Form is 5 pages long. Please make sure you have all the pages.

1. Your Consent

You are invited to take part in this research project. This Plain Language Statement contains detailed information about the research project. Its purpose is to explain to you as openly and clearly as possible all the procedures involved in this project so that you can make a fully informed decision whether you are going to participate.

Please read this Plain Language Statement carefully. Feel free to ask questions about any information in the document by emailing Jon-Paul Cacioli at jCACI@deakin.edu.au. You may also wish to discuss the project with a relative or friend or your local health worker. Feel free to do this.

Once you understand what the project is about and if you agree to take part in it, by completing the questionnaire you have consented to be part of the study. Please do not initiate the questionnaire unless you understand the information provided regarding the study and that you give your consent to participate in the research project.

A PDF file of this form is available for download to keep for your records.

In order to take part in this study you must:

- Be over 18 years of age
- Be Male
- Be a regular user of the Internet
- Be able to read English fluently

2. Purpose and Background
This is a student research project which is a requirement of the Doctorate of Clinical Psychology at Deakin University. The results of the study will be collated into an academic research thesis and will be possibly published in a peer reviewed psychology journal.

A total of 300 people, all males over 18 years of age, will participate in this project.

Previous research has shown that the way people feel and interact with each other can be influenced by the individual’s perception of themselves. A discrepancy between how an individual perceives their own physical appearance compared to how they wish to look can lead to depression, higher levels of stress and anxiety and a poorer overall quality of life. The Internet has recently reached a level of sophistication whereby an individual can create a digital representation of themselves, such as an avatar, controlling each physical dimension. The purpose of this project is to investigate the differences between individuals and their avatars and examine their experience of how appearance affects them in real life and on the Internet, such as in programs as Second Life and World of Warcraft.

You are invited to participate in this research project because understanding the psychological effects regarding appearance over the Internet is an area which has not been explored.

The results of this research may be used to help researcher Jon-Paul Cacioli to obtain a Doctorate of Clinical Psychology.

3. Funding
This research is totally funded by Deakin University.

4. Procedures
Participation in this project will involve completing a questionnaire on a secure web based server. The questionnaire will take approximately 20 to 30 minutes to complete, depending on your reading speed. The questionnaire is in English and will require you to select answers based on a provided scale. Please answer each question. The questionnaire will measure aspects of your psychological and physical dimensions, such as:

- Body image and the body dimension of your Internet avatar.
- Body Satisfaction.
- Your views on body image.
- Some questions regarding the importance of your avatar.

5. Possible Benefits
The insights gained from this project will not be of direct benefit to you as a participant, however, it will further the understanding of the psychological effects of body image on the Internet.

6. Possible Risks
Some of the questions asked may cause you some discomfort, particularly if you have concerns with your appearance or have high levels of depression and anxiety. Examples of the questions and statements used include:

*Have you felt ashamed of your body size or shape?*

*I feel extremely guilty after overeating.*
If you find that the questions cause you discomfort please do not continue with this study. If you experience an adverse reaction from participating in this project we encourage you to see your local General Practitioner or a qualified counsellor for support. If you are a Deakin University student, we encourage you to seek assistance from a qualified university counsellor on campus available free of charge. Lifeline (13 11 14) is available Australia wide for 24 hour confidential counselling and referrals for the cost of a local call. Alternatively, if you are currently receiving psychological treatment we strongly recommend that you seek assistance from your regular clinic or agency.

There may be additional unforseen or unknown risks.

7. **Privacy, Confidentiality and Disclosure of Information**

Any information obtained in connection with this project and that can identify you will remain confidential. The questionnaire you complete will remain entirely anonymous – you will not be asked for any possibly identifying information. Upon completion of the questionnaire a separate page will ask for your email address so that you can go into a random draw for a $100 AUD Amazon.com gift voucher. Your email address will be kept separate from your answers to ensure anonymity. Your collected information will only be disclosed with your permission, subject to legal requirements. If you give us your permission by completing the questionnaire, we plan to collate and discuss the results within a doctoral thesis and to publish the data in an international peer reviewed psychology journal. In any publication participants will not be identifiable as only aggregated data will be reported.

The information obtained from this study will be kept in secure storage in digital hardcopy for 6 years after the final publication, after which it will be destroyed.

8. **Results of Project**

The project will be completed and results written up by September 2011. It is not possible to contact you regarding your individual results or regarding publications due to the anonymity of the study. If you would like further information please email icaci@deakin.edu.au.

9. **Participation is Voluntary**

Participation in any research project is voluntary. **If you do not wish to take part you are not obliged to.** If you decide to take part and later change your mind, you are free to withdraw from the project at any stage and the data will not be used and will be destroyed.

**Please note that due to the anonymity of the project it will be impossible to remove your data once the questionnaire is submitted.**

Your decision whether to take part or not to take part, or to take part and then withdraw, will not affect your relationship with Deakin University.

Before you make your decision, a member of the research team will be available to answer any questions you have about the research project via email icaci@deakin.edu.au. You can ask for any information you want. Only initiate the questionnaire, signifying your consent, after you have received satisfactory answers to your questions.

There are no foreseeable risks to you in regards to withdrawing.

10. **Ethical Guidelines**

This project will be carried out according to the *National Statement on Ethical Conduct in Human Research (2007)* produced by the National Health and Medical Research Council of
Australia. This statement has been developed to protect the interests of people who agree to participate in human research studies.

The ethics aspects of this research project have been approved by the Human Research Ethics Committee of Deakin University.

11. Complaints

If you have any complaints about any aspect of the project, the way it is being conducted or any questions about your rights as a research participant, then you may contact:

Should you have any concern about the conduct of this research project, please contact the Secretary HEAG-H, Dean's Office, Faculty of Health, Medicine, Nursing and Behavioural Sciences, 221 Burwood Hwy, Burwood, VIC, 3125. Telephone: (03) 9251 7174, Email: hmnbs-research [at] deakin.edu.au

Please quote project number HEAG-H 152/09.

12. Reimbursement for your costs

As reimbursement for your time, you will be placed in a random draw for an Amazon.com voucher valued at $100 AUD. The draw will take place after data collection has been completed. To be entered into the draw your email address will be collected after the questionnaire, however this will be stored separate to your answers to ensure that your anonymity is maintained.14. Further Information, Queries or Any Problems

If you require further information, wish to withdraw your participation or if you have any problems concerning this project (for example, any side effects), you can contact the researcher via email at jcai@deakin.edu.au.

The researchers responsible for this project are:

Mr Jon-Paul Cacioli

Dr Alexander Mussap (principle researcher)

Faculty of Health, Medicine, Nursing & Behavioural Science,
School of Psychology,
Deakin University,
221 Burwood Highway.
Ph: 03-9251 7777 (BH),
03-9251 7777 (AH)
DEAKIN UNIVERSITY
PLAIN LANGUAGE STATEMENT AND CONSENT FORM

TO: Participant

Date:

Full Project Title: Body Image in Real and Virtual Environments

I have read and I understand the attached Plain Language Statement.

I freely agree to participate in this project according to the conditions in the Plain Language Statement.

A copy of the Plain Language Statement was made available to me for download.

The researcher has agreed not to reveal my identity and personal details, including where information about this project is published, or presented in any public form.

By initiating this questionnaire I understand that I have given full and informed consent to taking part in this study.

DEAKIN UNIVERSITY
Appendix 16

Demographic Information Questionnaire

About You

This part of the questionnaire asks you about the main aspects of your Internet use.

1. Please indicate your age and gender:

   Age [ ]
   Sex ☐ Male ☐ Female

2. Please indicate your country of residence:

   ________________________________

3. Do you have an Avatar?

   ☐ Yes ☐ No

4. How many different avatars do you currently have and use on the Internet?

   ________________________________

5. Please write below what applications or programs you use your avatars in on the Internet. For example: Second Life, World of Warcraft, etc...

   ________________________________

6. If you have multiple avatars, which avatar is the one that is most important to you personally? (e.g., “my Orc Shaman in World of Warcraft”, “my avatar in Second Life”, etc).

   ________________________________
Appendix 17

Reasons for going online and avatar relevance.

Below are some questions about your reasons for going online and the relevance of your avatar to you. When answering these questions, if you have multiple avatars, please focus on the ONE avatar that means the most to you personally.

1. How important is it that you feel socially connected with other people who are also online?

2. How socially connected do you feel with other people who are online?

3. How important to you is making friends online?

4. Do you feel your avatar is an accurate physical representation of you?

5. To what extent is your avatar’s appearance determined by your online role? (e.g., “my avatar looks like an Orc because my game character is an Orc”)
6. To what extent is your avatar’s appearance determined by your personal preferences? (e.g., “my avatar looks like an Orc because I like the way Orcs look”)

<table>
<thead>
<tr>
<th>Not at all</th>
<th>Completely determined by personal preference</th>
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<tbody>
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<td>0</td>
<td>10</td>
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<td>9</td>
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7. To what extent do you identify with your avatar?

<table>
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<tr>
<th>I don’t identify with my avatar</th>
<th>I identify completely with my avatar</th>
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<tbody>
<tr>
<td>0</td>
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8. How strongly attached are you to your avatar?

<table>
<thead>
<tr>
<th>Not attached at all</th>
<th>Extremely attached</th>
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Appendix 18

The Self-Objectification Questionnaire (Noll & Fredrickson, 1998)

This questionnaire asks you to rate the importance of different aspects of your appearance, fitness and ability. The questionnaire then asks the same questions regarding your avatar.

1. How important to you is your physical skill and competence in your role?

2. How important to you is your health and physical resilience?

3. How important to you is your weight?

4. How important to you is your physical strength?

5. How important to you is your sex appeal?

6. How important to you is your physical attractiveness?
7. How important to you is your speed and agility

8. How important to you is your muscles

9. How important to you is your physical fitness level (e.g., endurance)?

10. How important to you is your physical dimensions (e.g., size of chest, waist, height)

11. How important to you is your avatar’s physical skill and competence in its role?

12. How important to you is your avatar’s health and physical resilience?

13. How important to you is the appearance of your avatar’s weight?
14. How important to you is your avatar’s physical strength?

15. How important to you is your avatar’s sex appeal?

16. How important to you is your avatar’s physical attractiveness?

17. How important to you is your avatar’s speed and agility

18. How important to you is your avatar’s muscles

19. How important to you is your avatar’s physical fitness level (e.g., endurance)?

20. How important to you is your avatar’s physical dimensions (e.g., size of chest, waist, height)
Appendix 19

Male Body Attitudes Scale (Tylka et al., 2005)

These questions relate to how satisfied you are with different aspects of your body, weight and height.

Please read each question carefully and select the circle which corresponds to your answer.

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<thead>
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<th>Always</th>
<th>Very often</th>
<th>Often</th>
<th>Sometimes</th>
<th>Rarely</th>
<th>Never</th>
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<tbody>
<tr>
<td>1. I think I have too little muscle on my body.</td>
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<td>2. I think my body should be leaner.</td>
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<td>3. I wish my arms were stronger.</td>
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<td>4. I feel satisfied with the definition in my abs (i.e., stomach muscles).</td>
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<td>5. I think my legs are not muscular enough.</td>
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<td>6. I think my chest should be broader.</td>
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<td>7. I think my shoulders are too narrow.</td>
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<td>8. I am concerned that my stomach is too flabby.</td>
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<tr>
<td>9. I think my arms should be larger (i.e., more muscular).</td>
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<td>10. I feel dissatisfied with my overall body build.</td>
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<td>11. I think my calves should be larger (i.e., more muscular).</td>
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<td>12. I wish I were taller.</td>
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<td>13. I think I have too much fat on my body.</td>
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<td>14. I think my abs are not thin enough.</td>
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<td>15. I think my back should be larger and more defined.</td>
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<td>16. I think my chest should be larger and more defined.</td>
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<td>17. I feel satisfied with the definition in my arms.</td>
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<td>18. I feel satisfied with the size and shape of my body.</td>
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<td>19. I am satisfied with my height.</td>
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<td>20. Have you felt that your own body size or shape compared unfavourably to other men?</td>
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<td>21. Has eating sweets, cakes, or other high calorie food made you feel fat or weak?</td>
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<td>22. Have you felt like your muscle tone was too low?</td>
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<td>23. Have you felt excessively large and rounded (i.e., fat)?</td>
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<td>24. Have you felt ashamed of your body size or</td>
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<td>25. Has seeing your reflection (e.g., in a mirror or window) made you</td>
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<td>26. Has seeing muscular men made you feel badly about your own body</td>
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<td>27. Have you been so worried about your body size or shape that you</td>
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<td>have been feeling that you ought to diet?</td>
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<td>28. Have you ever felt that you were way too focused on your body size</td>
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<td>29. Have you been particularly self-conscious about your body size or</td>
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<td>shape when in the company of other people?</td>
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