

**EXPLORING THE FACTORS INFLUENCING THE BELIEFS ABOUT AND  
ATTITUDES TOWARD MENSTRUATION OF A GROUP OF SOUTH AFRICAN  
FEMALE UNIVERSITY STUDENTS**

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## **DECLARATION**

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## ABSTRACT

Menstruation is a natural phenomenon that most women experience. Despite being a sign of sexual development and maturation, in many contexts menstruation is socially constructed and stigmatised as a taboo. Although some cultures celebrate menstruation as a rite of passage, many cultures tend to hold negative attitudes towards and stigmatise menstruation. Consequently, menstrual stigma often compels women to conceal their menstrual status and women tend to internalise the outsider's perspective about their bodies. This self-objectification, characterised by body surveillance and body shame, could have adverse physiological and psychological consequences for young women, such as appearance and safety anxiety, reduced concentration on mental and physical tasks, lowered self-esteem, and negative attitudes towards menstruation.

The primary aim of this study was to explore whether female university students' attitudes towards menstruation differed in terms of age and religion. The secondary aim was to explore whether female university students' evaluation of self and their bodies differed in terms of age. Further, this study also explored a number of possible biological, psychological and social factors, as predictors of attitudes towards menstruation.

This study was guided by the biopsychosocial model, feminist and objectification theory to understand the complexity of women's attitudes towards menstruation and the contextual factors influencing these attitudes. In this quantitative study, I used convenience sampling to recruit the 1517 female participants, aged 18 to 36 years. I employed a cross-sectional, on-line survey, using The Beliefs about and Attitudes toward Menstruation questionnaire, two subscales from the Objectified Body Consciousness Scale (Body Surveillance and Body Shame) and the Rosenberg Self-Esteem Scale, to collect the data.

Analysis of the data revealed that (1) compared to early adult women (24 to 36 years), emerging adult women (18 to 23 years) were more likely to believe that menstruation should be kept a secret and had proscriptions and prescriptions regarding menstruation, (2) emerging adult women were more likely than early adult women to engage in body surveillance and body shame; (3) there were significant religious differences regarding secrecy and, proscriptions and prescriptions about menstruation between these groups; and (4) various biological, psychological and social factors predicted the women's attitudes towards menstruation. However, age differences were not significant for self-esteem between these groups.

The findings suggest that emerging and early adult women differ in their attitudes towards menstruation and tend to engage in self-objectification. Multi-sectoral, psycho-education interventions should be implemented to address the taboos, secrecy and shame surrounding menstruation and women's bodies.

**Keywords:** attitudes towards menstruation, biopsychosocial model, body shame, body surveillance, emerging adult women, early adult women, female university students, objectification theory; self-esteem, self-objectification, religion

## OPSOMMING

Menstruasie is 'n natuurlike verskynsel wat deur die meeste vroue ervaar word. Ten spyte daarvan dat dit 'n teken van ontwikkeling en rypwording is, word menstruasie in baie gevalle as taboe sosiaal voorgestel en gestigmatiseer. Alhoewel menstruasie binne sommige kulture as 'n oorgangsfase na volwassenheid gevier word, het baie kulture 'n negatiewe houding teenoor menstruasie en word dit gestigmatiseer. Gevolglik noop die stigmatisering van menstruasie dikwels vroue om hul maandstonde geheim te hou. Verder neig vroue om buitestaanders se siening oor hul liggame te internaliseer. Hierdie selfverobjektivering, wat deur selfbewaking en skaamte van die liggaam gekenmerk word, kan nadelige fisiologiese en sielkundige gevolge vir jong vroue inhou. Voorbeelde hiervan sluit onder andere angstigheid oor hul voorkoms en veiligheid, verminderde konsentrasie vir denkvermoë en fisiese take, verlaagde selfagting, en negatiewe houdings teenoor menstruasie, in.

Die primêre doel van hierdie studie was om te ondersoek hoe die houdings van vroulike universiteitstudente teenoor menstruasie in terme van ouderdom en godsdiens verskil. Die sekondêre doel was om by vroulike universiteitstudente hul evaluering van die self en hul liggame in terme van ouderdom vas te stel. 'n Verskeidenheid van moontlike biologiese, sielkundige en sosiale faktore as voorspellers van houdings teenoor menstruasie word verder in hierdie studie ondersoek.

Die bio-psigo-sosiale model, die feministiese- en objektiveringsteorie vorm die grondslag van hierdie studie om sodoende die kompleksiteit van vroue se houdings teenoor menstruasie en die faktore binne 'n spesifieke verband wat hierdie gesindhede beïnvloed, te verstaan. In hierdie kwantitatiewe studie maak ek gebruik van 'n gerieflikheidssteekproef om 1517 vroulike deelnemers, tussen die ouderdomme 18 tot 36, te werf. Ek het 'n kruissnit, aanlyn opname en het "The Beliefs about and Attitudes toward Menstruation Questionnaire", twee

subskale van die “Objectified Body Consciousness Scale (Body Surveillance and Body Shame)” en die “Rosenberg Self-Esteem Scale” gebruik, om die data in te samel.

’n Analise van die data toon dat (1) ontluikende volwasse vroue meer geneig is om te glo dat menstruasie geheim gehou moet word en het ook bepaalde voorskrywings en voorskrifte aangaande menstruasie; (2) ontluikende volwasse vroue is geneig tot selfbewaking en skaamte van die liggaam; (3) daar was beduidende godsdienstige verskille aangaande geheimhouding en, voorskrywings en voorskrifte oor menstruasie tussen hierdie groepe; en (4) verskeie biologiese, sielkundige en sosiale faktore voorspel die vroue se houdings ten opsigte van menstruasie. Ouderdom verskille was egter nie beduidend vir selfagting tussen hierdie groepe nie.

Die bevindinge veronderstel dat ontluikende en vroeë volwasse vroue verskil in hulle houdings ten opsigte van menstruasie en neig tot selfobjektivering. Multi-sektorale, psigo-opvoedingsintervensies behoort geïmplementeer te word om die taboe, geheimhouding en skaamte rondom menstruasie en die liggame van vroue aan te spreek.

**Trefwoorde:** bio-psigo-sosiale model, godsdien, houdings teenoor menstruasie, objektiveringsteorie, ontluikende volwasse vroue, selfagting, selfbewaking, selfverobjektivering, skaamte van die liggaam, vroeë volwasse vroue, vroulike universiteitstudente

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## **DEDICATION**

*To my mother, Brenda, sister, Melanie and the lineage of women who came before us.*

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*I carry a bit of all of you in me.*

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## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background of the Study

Menstruation is a natural, physiological, and reproductive process encountered by most women (Wong et al., 2013). The term “menstruation” – derived from the Greek term “menstruus” meaning “monthly” – refers to the monthly excretion of blood from the uterus wall in females, usually at 28-day intervals, lasting between two to eight days (Reiter, 1975 as cited in Simpson, 2005). Generally, the age of menarche, namely the first menstrual flow, is approximately between 9 to 16 years of age, with an average age of 12 to 13 years (Hillard, 2014; Jones, Griffiths, Norris, Pettifor, & Cameron, 2009). Menarche is a pivotal, life-changing event that signifies adolescent girls’ entering womanhood, and could have important implications for girls’ perception of self (Chrisler, 2008; Lee, 2008; Marván, Morales, & Cortes-Iniestra, 2006; Ruble & Brooks-Gunn, 1982).

Although menstruation signifies sexual development and maturation, in many contexts it is socially constructed and considered taboo (Merskin, 1999; Rempel & Baumgartner, 2003). The term “taboo” is derived from the Tengan term “tabu” which means “to forbid” or “forbidden” (Allan & Burrige, 2006). Allan and Burrige (2006) state that taboos refer to the prohibition of certain behaviours for a specific community, at a specific time and place. Taboos result from social constraints placed on individuals’ behaviour, which cause discomfort to themselves or others, or threaten a group’s position in society (Allan & Burrige, 2006; Merskin, 1999). In this study, I will use the terms “proscriptions and prescriptions” interchangeably with taboos. Proscriptions describe actions that women should avoid, while prescriptions are activities or instructions that women need to follow (Marván, Ramírez-Esparza, Cortés-Iniestra, & Chrisler, 2006).

Although some cultures celebrate menstruation as a rite of passage, many cultures still tend to stigmatise menstruation as a taboo and hold negative attitudes towards menstruation (Cheng, Yang, & Liou, 2007; Simpson, 2005; Stubbs & Costos, 2004; Wong et al., 2013). Each culture has its own myths, rituals, and laws regarding menstruation, which are transmitted to girls and boys by different socialisation agents, such as parents, peer group, religious institutions, schools, and advertisements (Chrisler, 2011). These cultural and religious taboos usually serve to restrict and exclude girls from certain activities and spaces. For example, in some cultures cooking is forbidden by menstruating women because of fears that they could contaminate the food. During her menses, a woman may not share containers used by men, as it is believed it will bring bad luck to men. Furthermore, religions restrict women from visiting holy places and engaging in sexual intercourse while menstruating (Guterman, Mehta, & Gibbs, 2007). These beliefs are still present in various countries in Europe, Asia, Africa, Australia, and the Americas. Contemporary myths also caution women not to swim, do heavy housework, play sports, and eat or drink certain foodstuff because menstrual blood is viewed as dangerous and dirty (Chrisler, 2011). In some countries, women are also warned that a curse will befall them and their families if they fail to obey these rules. These restrictions often seclude women from society and some are even placed in menstrual huts for the duration of their menstruation (Kotoh, 2008; Padmanabhanunni, Jaffer, & Steenkamp, 2017).

In Western contexts, menstruation tends to be medicalised and women's bodies objectified (Lahiri-Dutt, 2015; McKinley & Hyde, 1996). According to Fredrickson and Roberts (1997), objectification refers to a phenomenon where girls and women's bodies are viewed as objects of desire, primarily for men's consumption. In addition, socialising agents also perpetuate the idea of menstruation as a hygienic crisis (Merskin, 1999; Roberts & Waters, 2004). Consequently, menstruation is laden with social stigma. Goffman (2009)

defines stigma as a characteristic that marginalises individuals with a perceived defect, in a specific social context. Menstrual stigma often compels women to conceal their menstrual status (Roberts, 2004). In a society that objectifies women's bodies and their bodily processes, young women tend to internalise these negative social narratives about menstruation and engage in self-objectification (Roberts, 2004; Roberts, Goldenberg, Power, & Pyszczynski, 2002). According to Fredrickson and Roberts (1997), self-objectification refers to women internalising the outsider's perspective of their appearance. Menstrual stigma and self-objectification could influence women's beliefs and attitudes towards menstruation.

Although Marván, Ramírez-Esparza et al. (2006) do not distinguish between "beliefs" and "attitudes", beliefs and attitudes are fairly stable, and our beliefs tend to influence our attitudes towards people, objects, issues or phenomena; the two constructs are different. A belief refers to a conviction that something is real or exists, even though it cannot be proven. However, an attitude refers to a feeling, preference or evaluation in favour of or against an object, issue or phenomenon, generally ranging from extremely negative to extremely positive (Cambridge Dictionary, 2018). The primary focus of my study was to explore the participants' attitudes towards menstruation.

Previous research shows that although girls and women report positive and negative attitudes towards menstruation, they mostly hold negative attitudes (Aflaq & Jami, 2012; Marván & Molina-Abolnik, 2012; Rembeck, Möller, & Gunnarsson, 2006). These negative attitudes could be attributed to a variety of biological, psychological and social factors (Chrisler, 2008). Researchers found that girls and women's experiences of and attitudes towards menstruation are associated with how they are prepared for menarche and menstruation (Marván & Molina-Abolnik, 2012; Rierdan & Koff, 1990). Young women consistently report their mothers as a main source of information and preparation for menarche. Various studies found that adequate information and preparation for menarche,

preferably from the mother, tends to be associated with positive attitudes about menstruation (Aflaq & Jami, 2012; Marván & Molina-Abolnik, 2012; Van Gesselteen, 2013). However, some girls seem to receive no or very little information about menstruation, from their mothers, prior to menarche (Costos, Ackerman, & Paradis, 2002; Gillooly, 2004). Further, when girls receive information prior to menarche, this information is often inadequate and, as a result, young women frequently report that they felt unprepared for menarche (Costos et al., 2002).

Menstrual shame and stigma often lead women to engage in self-objectification, which could result in women viewing their menstruation as a negative event. Previous research found that there tends to be an association between attitudes towards menstruation and women's tendency to engage in self-objectification, body surveillance and body shame (Johnston-Robledo, Sheffield, Voigt, & Wilcox-Constantine, 2007). According to McKinley and Hyde (1996), body surveillance refers to the tendency of young women to frequently monitor their bodies and their appearance, while body shame encompasses a range of negative feelings women hold towards their bodies because of a discrepancy between their actual body and ideal body. More specifically, women who engage in self-objectification, increased body surveillance and body shame, also tend to hold more negative attitudes about menstruation (Johnston-Robledo et al., 2007; Roberts, 2004; Sveinsdóttir, 2016). Furthermore, age tends to influence women's attitudes towards menstruation and their likelihood to engage in self-objectification (Crawford et al., 2008; Marván, Cortés-Iniestra, & González, 2005). For example, although most women hold negative attitudes towards menstruation, Thurén (1994) and Marván et al. (2005) found that younger women tend to view menstruation more positively than older women. Also, as women age they tend to be more comfortable with their bodies and show a greater likelihood to reject the outsider's

perspective about their appearance, thus engaging in less body surveillance and feeling less body shame (Augustus-Horvath & Tylka, 2009; McKinley, 1999).

Furthermore, body surveillance and body shame are associated with self-esteem; hence women with a high self-esteem tend to engage in less body surveillance and less shame about their bodies (Tylka & Sabik, 2010). Self-esteem is a complex construct and refers to positive or negative attitudes toward the self (Rosenberg, 1965). In a society where menstruation is stigmatised, menstrual shame could lead to increased body surveillance and body shame, and negative attitudes towards menstruation, menstrual stigma and fear about menstrual leaks can lead to women feeling less confident with a consequent lower self-esteem (Roberts & Waters, 2004).

Although previous studies suggest a possible relationship between menstruation and self-esteem, these studies predominantly explore menarcheal timing and self-esteem with adolescent girls (Rembeck et al., 2006; Rierdan & Koff, 1990; Tang, Yeung, & Lee, 2003). Seemingly, there are no studies exploring the relationship between menstrual attitudes and self-esteem among emerging adult and early adult women. Furthermore, despite menstruation being fundamental to women's reproductive health, previous studies have seemed to focus primarily on the experiences, beliefs, and attitudes of adolescents (Cheng et al., 2007; Rembeck et al., 2006; Rempel & Baumgartner, 2003). Thus, it appears that emerging adult and early adult women's attitudes towards menstruation is a seldom explored topic.

According to Arnett (2000), emerging adulthood denotes the "in-between" phase, between adolescence and early adulthood. Arnett further contends that emerging adulthood starts at 18 years, a significant age marker of the end of adolescence, because most young people finish secondary school and gain greater independence from their parents. Furthermore, emerging adulthood seems to better describe individuals at the age of 18 years, because it tends to be a time when individuals further explore and define their identity

regarding their future occupation, intimate relationships and worldviews. Although all three of these areas are explored during adolescence, they become more prominent and serious during emerging adulthood. Moreover, emerging adulthood is marked by greater identity exploration and more serious intimate relationships than during adolescence (Arnett, 2000).

By emerging adulthood, women have undergone bodily changes characteristic of early adolescence, such as menarche, and have learnt to cope with these changes (Zarrett & Eccles, 2006). Emerging adulthood also marks the transition to higher education, where women experience greater independence, challenges and opportunities to explore and adopt ideologies, which pave the way for young adulthood (Arnett, 2000). In addition to the physical and social transitions, emerging adulthood also becomes a time when young women become more critical about their body's appearance and their sexuality (McKinley & Hyde, 1996). In societies where an objectifying and appearance culture prevails, young women may feel the need to keep their menstruation a secret. In addition, young women in such societies tend to engage in self-objectification in order to uphold such culturally acceptable standards of appearance (Roberts, 2004; Robert & Waters, 2004).

While there seems to be a clear age marker distinguishing late adolescence from emerging adulthood, the age marker to distinguish emerging adulthood from young adulthood is less definite (Arnett, 2000). For the purpose of this study, I adopt the terminology, "emerging adulthood" and "early adulthood" rather than "young adulthood" used by Arnett (2000) to distinguish between the age groups. Although Arnett (2000) suggests that emerging adulthood ends at 25 years, this age marker is approximate and may be earlier or later. For the purposes of this study, I define emerging adulthood as ages 18 to 23 years, because generally individuals in this age range are usually enrolled in institutions of higher learning, working towards their first qualification for their future occupations; while I define early

adulthood as 24 to 36 years, when most individuals are usually employed or working towards specialisation in their field of interest.

## 1.2 Rationale and Aims

In my search of the academic databases EBSCOHost, Google Scholar, JSTOR, ProQUEST, PsycArticles, Sabinet, SAGE Journals Online and Scopus, using the keywords “menstruation”, “menstrual attitudes”, “menstrual beliefs”, “attitudes towards menstruation”, “religion” “sexuality”, “self-esteem”, “adolescent health”, “gender”, “puberty”, “objectification”, “silencing”, “disgust”, “values”, and “South Africa”, it seems that menstrual beliefs and attitudes are still under researched topics in South Africa. My searches of the academic databases, using the above-mentioned key terms, yielded a limited number of studies conducted in South Africa amongst university students (e.g., Cronjé & Kritzinger, 1991; Du Toit, 1988; Ismail, Pedro, & Andipatin, 2016; Jaffer, 2015; Padmanabhanunni & Fennie, 2017; Padmanabhanunni et al., 2017; Van Gesselleen, 2013). Considering that most of the recent studies in South Africa were qualitative studies, it is evident that there is need for quantitative studies to assess university students’ attitudes towards menstruation.

Apart from menstruation being fundamental to women’s reproductive development, it is important to study the beliefs and attitudes of women regarding menstruation because restrictions placed on women inhibit their freedom and promote gender-based discrimination, thus marginalising women in their communities. Despite South Africa’s constitution and Bill of Rights promoting gender equity, violence and discrimination are still inflicted against women and other marginalised identities (Bower, 2014). Menstrual taboos, and negative attitudes towards menstruation and women’s bodies may increase women’s vulnerability to gender based violence and discrimination. This violence and discrimination may be intensified for girls and women who challenge the status quo and resist socio-cultural narratives about menstruation and their bodies. Thus, conducting research on menstrual

beliefs and attitudes helps us to understand the myths, superstitions, and rules that young women are taught about menstruation. Understanding the myths young women are taught could in turn inform psycho-educational and stigma-reduction programmes for girls, boys, women and men, aimed at reducing the shame, secrecy and myths about menstruation. In addition, it could also highlight how cultural beliefs regarding menstruation exert power on women's natural bodily process (Chrisler, 1988). Cultural myths, in conjunction with peer influence, may affect young women's self-esteem and how they feel about their bodies. These negative perceptions regarding menstruation may prevent young women from seeking sexual and reproductive advice, thus increasing their vulnerability to illnesses. Considering that South Africa is largely a patriarchal context (Albertyn, 2009; Bower, 2014; Coetzee, 2001), it is likely that young women, who internalise cultural messages about their bodies and bodily processes, could engage in body surveillance, experience body shame and a low self-esteem, and have negative attitudes toward menstruation. The degrees to which women internalise these messages have important implications for their experiences of menstruation (Chrisler, 2013). Information gathered from studies such as these could inform psycho-education programmes for young women, as well as adolescent girls and boys.

Furthermore, considering that menstrual attitudes, self-esteem and self-objectification tend to be constructed by a culture which objectifies women and their bodies, there may be a relationship between self-objectification, self-esteem and attitudes towards menstruation. If self-objectification and self-esteem significantly predict menstrual beliefs and attitudes, addressing self-objectification and self-esteem may help address young women's attitudes towards menstruation and improve their well-being.

Thus, the primary aim of this study was to explore female university students' attitudes towards menstruation in terms of their age and religious differences. The secondary aim was to explore age differences of female university students' evaluation of self and their

bodies. A further aim was to explore a number of biological, psychological and social factors, as possible predictors of attitudes towards menstruation. Hence, I sought to answer the following research questions:

1. How does this sample of female university students' attitudes towards menstruation differ in terms of age and religion?
2. How does this sample of female university students' evaluation of self and their bodies differ in terms of age?
3. Are the biopsychosocial factors; age, age at menarche, level of preparedness, maternal figure's highest level of education, importance of sources of information, self-esteem, body surveillance and body shame; significant predictors of this sample of female university students' attitudes towards menstruation?

The above constructs were operationalised as follows:

Table 1.1

*Summary of Constructs and Operationalised Constructs*

Construct	Operationalised Construct	Reference
Emerging Adulthood	18–23 years	Arnett (2000)
Early Adulthood	24–36 years	
Attitudes towards Menstruation	Beliefs about and Attitudes toward Menstruation questionnaire (BATM)	Marván, Ramírez-Esparza, et al. (2006)
<u>Evaluation of the self and body:</u>		
Self-Objectification	Body Surveillance and Body Shame subscales of Objectified Body Consciousness Scale (OBCS)	McKinley & Hyde (1996)
Self-Esteem	Rosenberg Self-Esteem Scale (RSES)	Rosenberg (1965)

### **1.3 Organisation of the Thesis**

This thesis is divided into five chapters. In this chapter, I presented the background of the study, rationale, aims and research questions. Chapter Two provides an overview of the existing literature and the theoretical framework used to conceptualise the findings, namely the biopsychosocial model and objectification theory.

In Chapter Three, I outline the hypotheses and methodology utilised in this study. In this chapter, I also describe the research design, sample, procedure for data collection and ethical considerations, measuring instruments and data analysis. I report the results of this study in Chapter Four. The results are grouped together by the statistical tests used for analysis. For each of the statistical tests, I present the descriptive statistics for the sample, namely the mean, standard deviation, skewness and kurtosis, and the results of the analyses.

I contextualise the results of this study in relation to previous studies and the theoretical framework in Chapter Five. Chapter Five also provides limitations and strengths of the study, implications for practice, recommendations for future research and conclusion.

## CHAPTER TWO

### LITERATURE REVIEW

#### 2.1 Introduction

Menstruation is a pivotal event, marking the transition from girlhood to womanhood (Crawford, Menger, & Kaufman, 2014; Marván & Alcalá-Herrera, 2014). Studies have suggested that the interaction between girls' and women's biological, psychological and social factors could influence their attitudes toward menstruation (Chrisler, 2008; Chrisler & Johnston-Robledo, 2012; Stubbs & Mansfield, 2006). Across cultures and nationalities, most women tend to have negative reactions towards menarche, and hold negative attitudes towards menstruation (Aflaq & Jami, 2012; Çevirme, Çevirme, Karaoğlu, Uğurlu, & Korkmaz, 2010; Marván, Morales et al., 2006; Uskul, 2004; Wong et al., 2013). For example, Uskul (2004) found that most women expressed negative emotions toward menarche, while a few reported positive or mixed emotions. Examples of negative emotions included feeling ashamed, despondent, surprised, scared and depressed. Similarly, Marván, Morales et al. (2006), as well as Aflaq and Jami (2012), found that young women mostly held negative experiences and beliefs about menstruation. Furthermore, according to Çevirme et al. (2010), almost half of the women believed that menstruation should be concealed from others, and some mentioned it should specifically be hidden from men.

However, girls and young women often refer to positive and negative aspects of menstruation (Cronjé & Kritzinger, 1991; Marván & Molina-Abolnik, 2012; Marván, Morales et al., 2006; Ruble & Brookes-Gunn, 1982; Uskul, 2004). Positive attitudes towards menstruation are often related to viewing menstruation as a normal event, an integral part in the transition to womanhood, being able to reproduce, and the anticipation of becoming an adult. Negative attitudes towards menstruation are often related to feeling a loss of freedom

and control, irritation, and viewing menstruation as dirty (Cronjé & Kritzinger, 1991; Marván & Molina-Abolnik, 2012; Padmanabhanunni et al., 2017). Young women seemingly tend to view menstruation as an annoyance, but do not agree that menstruation should be kept a secret (Sveinsdóttir, 2016; Wong et al., 2013). Moreover, Padmanabhanunni and Fennie (2017) found that in their study with female university students from a historically disadvantaged university in South Africa, most women viewed menstruation as natural, yet debilitating and bothersome. Thus, Marván, Morales et al. (2006) argue that although menstruation is treated with less secrecy, negative attitudes towards menstruation persist in developed and developing countries.

Previous studies have suggested that there could be an association between girls menarcheal timing, preparation for menarche, self-esteem, their attitudes towards their bodies and reactions to menarche (Allison & Hyde, 2013; Gatti, Ionio, Traficante, & Confalonieri, 2014; Tang et al., 2003). For example, Allison and Hyde (2013) contend that inadequate preparation for menarche and reaching menarche earlier than one's peers tends to be associated with a lower self-esteem, increased body shame and negative reactions towards menarche. Furthermore, in a study with early adolescent, Chinese girls, Tang et al. (2003) found that low self-esteem might be a predictor of negative emotional reactions to menarche.

This chapter presents an overview of the literature, specifically focussing on the cultural narratives about menstruation, stigma attached to menstruation, preparation for menarche and menstruation, women's self and body evaluation, self-esteem and attitudes towards menstruation, as well as body surveillance and body shame, and attitudes towards menstruation. Thereafter, I present the theoretical framework and conclude with a brief summary of the chapter.

## **2.2 Cultural Narratives about Menstruation**

Menstruation is socially constructed, and girls and women across the world experience it in different ways (Stubbs & Costos, 2004). In some contexts, menstruation is celebrated as a rite of passage and developmental milestone for pubescent girls (Gillooly, 2004; Padmanabhanunni et al., 2017). However, in many contexts, menstruation and menstrual attitudes are embedded in longstanding myths, superstitions, rituals and laws that are transmitted from one generation to the next (Cheng et al., 2007; Chrisler, 2011; Cronjé & Kritzinger, 1991; Simpson, 2005; Wong et al., 2013). Furthermore, menstruation is also experienced as a private, taboo topic and a “hygienic crisis” that must be contained to prevent shame (Merskin, 1999; Stubbs & Costos, 2004; Wong et al., 2013).

### **2.2.1 Menstrual taboos**

Chrisler (2011) and Lahiri-Dutt (2015) contend that menstrual taboos, myths, and superstitions are used in patriarchal societies to portray women as impure and dangerous, and incite fear towards women and their bodies. These taboos and cultural beliefs structure society, prohibiting certain behaviour and prescribing others, and are used as reasons to continue to restrict girls and women’s mobility, and control their bodies and sexuality (Merskin, 1999). The extremity or laxity of taboos differ between cultures and are influenced by the historical and social context girls find themselves in, as well as girls’ reaction to such taboos. For example, in various cultures, countries and communities, menstrual taboos prohibit women from participating in sport or exercise; doing heavy chores and physical activity, washing their hair, and attending to crops and plants; consuming, preparing and serving certain foodstuff; engaging in sexual intercourse or interacting with men (Crawford et al., 2014; Kotoh, 2008; Marván, Morales et al., 2006; Pedersen, 2002; Simpson, 2005; Uskul, 2004; Van Wyk, 2015; Wong et al., 2013).

In addition, some cultures prescribe that girls and women should wash more or less frequently, clean any items they touch, and eat out of specific plates (Crawford et al., 2014; Pedersen, 2002). For example, in Bali women need to perform certain rituals after menstruating, such as washing their hair and being “cleansed” with holy water to be regarded pure and acceptable again (Pedersen, 2002). In the northern part of Nigeria, menstrual taboos are very strict and pubescent girls are required to leave school and get married after menarche (Simpson, 2005). In some societies, girls are prescribed rest during menstruation (Kotoh, 2008; Van Wyk, 2015; Wong et al., 2013). While some girls welcome the time to rest and embrace tradition, others tend to resist these taboos which they deem outdated, restrictive, and bothersome (Kotoh, 2008; Padmanabhanunni et al., 2017; Van Wyk, 2015). Although restrictions from household chores may give girls and women a chance to rest and restore their energy, it is unlikely, in a patriarchal society, that these taboos are intended for that purpose. It could rather be interpreted as restrictions placed on women by men, to control and oppress women and their bodies (Kotoh, 2008; Wong et al., 2013).

Religion also plays a significant role in culture and most religions place restrictions on women regarding menstruation (Bhartiya, 2013). These restrictions largely portray menstrual blood as dirty and the menstruating women as impure. Bhartiya (2013) states that the most common restriction amongst religions relates to no sexual or physical contact between men and women.

### **2.2.2 Religious taboos and attitudes towards menstruation**

The five main religions, namely Judaism, Islam, Hinduism, Buddhism and Christianity, all place restrictions on menstruating women regarding intimacy, sexual intercourse, preparing food, entering places of worship, and in extreme cases secluding women in menstrual huts (Bhartiya, 2013; Guterman et al., 2007). The extremity of the

taboos depends on the historical time and context of the communities to which girls and women belong (Çevirme et al., 2010; Du Toit, 1988; Guterman et al., 2007).

For example, in Judaism, anyone who touches, or is intimate with, a menstruating woman is considered “tamei” or ritually unclean. Similarly, in Islam, people are cautioned against interacting with a menstruating woman. Therefore, the main proscription for menstruating women in Islam is that they should abstain from sexual intercourse. Both religions require women to perform a ritual bath to cleanse herself (Bhartiya, 2013; Guterman et al., 2007). Furthermore, Muslim women are prohibited from reading the Arabic version of the Qur’an, entering the mosque, praying or fasting during Ramadaan (Bhartiya, 2013; Jaffer, 2015). For example, Çevirme et al. (2010) found that almost all the women in their sample believed and adhered to the religious restriction in Islam that women should not read or touch the Qur’an. The majority of women also believed that women should not attend the mosque during their menstruation.

Similar to Judaism and Islam, Hinduism considers it “Tamasic” or inappropriate for someone to touch a menstruating woman. Hindu women are prohibited from entering temples and the kitchen, sleeping during the day, washing and talking loudly (Guterman et al., 2007). In parts of India and Nepal, women are prohibited from staying in their family homes. Moreover, in parts of India, temples explicitly state that menstruating women are not allowed to enter, while in parts of Nepal, women are isolated in menstrual huts (Guterman et al., 2007). Similarly, Crawford et al. (2014) found that women’s negative memories of and feelings towards menarche were augmented by Hindu and Newari religious rituals, which isolated girls from their families at menarche. However, in certain parts of India, Hindu women celebrate menarche by holding ceremonies with food, family, friends and gifts (Bhartiya, 2013).

In contrast, Buddhism primarily views menstruation as a natural physiological phenomenon, however, due to the influence of Hinduism on Buddhism, certain taboos and anti-feminist attitudes have been adopted by Buddhists (Guterman et al., 2007). In Christianity, different denominations have different degrees of proscriptions and prescriptions. For example, in the Eastern Orthodox Christian church, women are instructed not to take Holy Communion or touch a Bible during their menstruation, while Russian Orthodox Christians prescribe that menstruating women should be separated from others in menstrual huts, where they may not attend church services, interact with men, or touch uncooked food (Bhartiya, 2013). Although Western Christian denominations are less strict in requiring women to adhere to these taboos, they still hold negative attitudes towards menstruation, often stigmatising it as a hygienic crisis or a curse that needs to be medically treated and controlled (Bhartiya, 2013; Guterman et al., 2007). However, despite Christianity's extensive history of menstrual taboos, these taboos are seemingly hardly, if ever, adhered to by women. Thus, Dunnivant and Roberts (2012) argue that Judaism, Islam and Hinduism may be considered prescriptive religions as they share many commonalities, while Buddhism and Christianity may be considered less or non-prescriptive.

Dunnivant and Roberts (2012) compared the attitudes towards menstruation of women from prescriptive religions to the attitudes of women from non-prescriptive religions and women who reported not being religious. They found that Muslim, Jewish and Hindu women were most likely to view menstruation as embarrassing and a shameful event that needed to be concealed. Furthermore, Muslim, Jewish and Hindu women were more inclined than Buddhist and Christian women, and "not religious" women to believe that they should adhere to certain rules and regulations, avoid certain tasks and activities, and be isolated from others during menstruation. However, despite the secrecy and taboos, Muslim, Jewish and

Hindu women expressed a greater sense of community, compared to the other religious groups.

In contrast, Bramwell and Zeb (2006) reported no significant differences between Christian and Muslim women regarding their attitudes towards menstruation. The authors attribute the similarity between the religions to their shared origin, with both being Abrahamic religions. However, Christian and Muslim women differed significantly from Hindu women, who viewed menstruation as more debilitating, bothersome, and as a natural event (Bramwell & Zeb, 2006). These negative messages regarding menstruation tend to be maintained by these cultural and religious taboos, and by a patriarchal society which objectifies women, their bodies and natural bodily states (Chrisler, 2011; Fredrickson & Roberts, 1997; Roberts & Waters, 2004). Thus, Chrisler (2011) contends that in patriarchal societies menstrual taboos seem to perform a fundamental function, namely stigmatising and placing restrictions on women's bodies and behaviour.

### **2.3 Stigma Attached to Menstruation**

Menstruation is seen as a condition that evokes disgust and signals a supposed defect and lack of control in a person, and menstrual leaks are stigmatised (Chrisler, 2011). In cultures that objectify women, women's bodies and bodily processes are often labelled as "dirty" or "polluted" (Chrisler, 2011). When women's bodies are objectified, their appearance is prioritised over their health and well-being (Chrisler, 2011; Fredrickson & Roberts, 1997). Consequently, women tend to sanitise their bodies and hide or suppress their bodily processes to avoid stigmatisation and meet the dominant social standards of acceptability (Chrisler, 2011; MacDonald, 2007; Roberts, 2004). Various socialising agents contribute to stigmatising women's bodies. For example, educational booklets and advertisements provided by menstrual hygiene manufacturers often portray menstruation as a hygienic crisis. In focusing on menstruation as a hygienic crisis, these advertisements

promote ways to prevent stains, leaks and odours, thereby portraying menstruation as unfeminine, unclean, and embarrassing; and perpetuating the stigma and secrecy around menstruation (Merskin, 1999).

### **2.3.1 Menstrual stigma and secrecy**

Menstrual stigma is also maintained through silence. The conversation taboo is evident from the euphemisms for menstruation found in most cultures worldwide, such as “period”, “that time of the month”, “the curse”, and “Mother Nature’s gift” (Johnston-Robledo & Chrisler, 2013; McPherson & Korfine, 2004; Merskin, 1999). Euphemisms about menstruation have positive, negative and neutral connotations and allow girls and women to speak about menstruation more comfortably, especially in the presence of men (Kumar & Srivastava, 2011). For example, in Nigeria, menstruation is considered private and embarrassing, and villagers are forbidden to discuss anything associated with menstruation and sexuality, at home or at school (Onyegebu, 2009). Furthermore, educators in Nigeria are often negative and unsupportive of young girls’ experiences, which perpetuates the belief that menstruation is a forbidden topic that needs to be dealt with individually (Simpson, 2005). Onyegebu (2009) argues that this conversation taboo prevents young girls from receiving adequate information about menstruation and menstrual hygiene; and may bring about unnecessary feeling of shame, worry and distress, and foster negative attitudes towards menstruation.

In South Africa, Ismail et al. (2016) found that female university students also regarded their menstruation as a hygienic concern that needs to be concealed to prevent shame. Field-Springer, Randall-Griffiths, and Reece (2017) contend that secrecy about menstruation, which appears to be maintained through silence, tends to instil feelings of fear and promote myths about menstruation. This stigma, and myths about menstruation, could compel many girls and women to conceal, sanitise and scrutinise their bodies to prevent

odours and leaks, which may have implications for their health and well-being (Chrisler, 2011; Johnston-Robledo & Chrisler, 2013).

### **2.3.2 Implications of menstrual stigma for women's bodies**

Stigmatising women and their reproductive processes has implications for women, thus women may go to great lengths to conceal their menstrual status (Chrisler, 2011). For example, Sommer (2009, 2010) states that it is challenging for girls in Northern Tanzania to manage their menstruation because of a lack of adequate hygienic facilities and sanitary products. For these girls, the fear of being stigmatised and ridiculed by their peers because of their failure to prevent menstrual leaks, seems to contribute to girls missing school days or dropping out of school (Kirk & Sommer, 2006; Sommer, 2010). Similarly, a qualitative study by Padmanabhanunni et al. (2017) found that women feared that failing to conceal their menstrual status would negatively affect their reputations and men's desirability of them. Thus, women either avoided interacting with men while they menstruated or were hypervigilant about menstrual leaks. Furthermore, in a study, Roberts et al. (2002) found that women and men viewed a woman who dropped a tampon as less likeable and competent than a woman who dropped a hair pin. Their participants did not want to be associated with the woman who dropped the tampon. Hence, if girls and women accept the outsider's perspective as a true depiction of themselves, regarding their body's appearance as more important than its purpose, they could engage in habitual self-monitoring and hypervigilance and experience body shame. This in turn could lead to girls and women developing negative attitudes towards their bodies and menstruation, and making decisions that may have negative consequence for reproductive and physical well-being (Chrisler, 2011; Fredrickson & Roberts, 1997; Johnston-Robledo et al., 2007).

Furthermore, stigma regarding menstruation and women's bodies could lead to some women feeling too embarrassed to seek reproductive health care, and feeling less confident

about themselves and their bodies (Sommer, Sutherland, & Chandra-Mouli, 2015). This reduced self-confidence and hypervigilance of their bodies may also affect girls' and women's interactions with others (Fingerson, 2006). Stigma and self-objectification could affect the way some girls and women assert themselves in their interactions with others, particularly men (Fingerson, 2006). For example, menstrual stigma, self-objectification and negative attitudes towards menstruation, could increase the likelihood for girls and women to alter their behaviour to meet social standards of desirability, and engage in increased risk-taking behaviours (Chrisler, 2011; Sommer et al., 2015). Moreover, menstrual stigma, secrecy and negative attitudes towards menstruation could be regarded as violating girls and women's human rights. As stated by Dr. Jyoti Sanghera, from the Office of the High Commissioner for Human Rights:

Stigma around menstruation and menstrual hygiene is a violation of several human rights, most importantly the right to human dignity, but also the right to non-discrimination, equality, bodily integrity, health, privacy and the right to freedom from inhumane and degrading treatment from abuse and violence. (Water Supply & Sanitation Collaborative Council [WSSCC], 2013, p. 5)

#### **2.4 Preparation for Menarche and Menstruation**

Menarche is an important part of girls' development. Menarche, which occurs suddenly and relatively late during puberty, is often considered a biological and social marker of girls' transition to womanhood (Crawford et al., 2014; Thurén, 1994). Most girls tend to reach menarche between 11 and 13 years (Marván & Alcalá-Herrera, 2014; Sveindóttir, 2016; Wong & Khoo, 2011). On average, in South Africa, girls reach menarche at 12.5 years (Jones et al., 2009). For example, Van Gesselien (2013) found in a sample of South African university students, aged 18 to 21 years, that most women reached menarche between the ages of 11 and 15 years. This finding is similar to that of Cronjé and Kritzinger (1991) who

found that most women from a university sample in South Africa reached menarche between 11 and 16 years. However, some girls tend to reach menarche earlier or later (Jones et al., 2009).

Despite the varying ages at menarche, girls still tend to report a lack of preparation prior to menarche (Brooks-Gunn & Ruble, 1983; Marván & Molina-Abolnik, 2012; Padmanabhanunni et al., 2017). Marván and Molina-Abolnik (2012) reported that 39% of the women in their sample felt prepared for menarche; while Sveindóttir (2016) found that almost half of women (48.4%) reported having little or no knowledge about menstruation prior to menarche. Similarly, in South Africa, Van Gesselien (2013) found that more than half of the young women (68%) in her sample felt unprepared for menarche. In a qualitative study, with adolescent girls aged 13 to 15 years, from low-income communities, Van Wyk (2015) reported that most girls mentioned that their mothers did not talk to them about menstruation prior to menarche, and thus they felt unprepared for menarche and often cried at menarche. Marván, Morales et al. (2006) suggest that girls' reactions towards menarche and attitudes towards menstruation tend to be influenced by the prior knowledge about menarche and menstruation that they receive from various sources.

#### **2.4.1 Information received prior to menarche**

Marván, Morales et al. (2006) found that irrespective of age, prior knowledge about menarche was related to more positive attitudes and reactions to menarche. Van Gesselien (2013) similarly found that women who were more prepared for menarche were more likely to view menstruation as pleasant, while women who felt unprepared for menarche were more likely to view menstruation as annoying, disabling, to be kept a secret, and having proscriptions and prescriptions.

In a study with rural Kenyan girls, aged 14 to 16 years, Mason et al. (2013) found that most girls reported having had no preparation prior to menarche. Although some girls received information prior to menarche, they reported that the information they received was inadequate. These girls were often only informed that that they would bleed from their vaginas monthly and were cautioned against sexual intercourse as it could lead to pregnancy.

#### **2.4.2 Sources of information about menstruation**

Researchers further suggest that type of source of information about menstruation could influence girls' attitudes, experiences and reactions toward menarche and menstruation (Aflaq & Jami, 2012; Brooks-Gunn & Ruble, 1983; Marván & Molina-Abolnik, 2012; Stubbs, 2008). Female adolescents' main source of information seems to be their mothers, who are often the first person they tell about their menarche. Other sources of information frequently mentioned often include sisters, friends, the school and advertisements (Marván & Molina-Abolnik, 2012; Marván, Morales et al., 2006).

According to Aflaq and Jami (2012), girls' attitudes towards menstruation tend to be more positive if their mothers are their main source of information. For example, a qualitative study by Lee (2008) found that women with mothers who offered them emotional and practical support were less likely to experience menstrual shame and humiliation, and more likely to narrate positive experiences and memories of menarche. Evidently, young girls see their mothers as the "expert" because their mothers have experienced and managed menstruation most of her adult life (Gillooly, 2004). However, in a qualitative study, Costos et al. (2002) found that mothers mostly convey negative messages about menstruation. Mothers often provide their daughters with no or very little information about menarche or urge their daughters to "grin-and-bear-it" (Costos et al., 2002, p. 55). These messages often invalidate girls' feelings, fail to prepare them for the emotional challenges of menstruation, and uphold cultural and religious beliefs, which restrict girls' movement.

Costos et al. (2002) contend that mothers' lack of communication about menstruation could be explained from a cultural perspective. Mothers are embedded in Western culture, where they were most probably not prepared by their mothers for their menarche and where the dominant socio-cultural narratives that stigmatise menstruation as a taboo topic are transferred from one generation to the next. Similarly, Marván and Molina-Abolnik (2012), and Marván, Morales et al. (2006) contend that the information girls receive is often inaccurate and inadequate, mainly focusing on menstruation as a "hygienic crisis" – rather than addressing the possible psychosocial aspects and emotions girls may experience. This, in turn seems to perpetuate the secrecy and shame surrounding menstruation, contribute towards young women's negative attitudes towards menstruation, and lead to a disconnection between mothers and their daughters (Costos et al., 2002). In a recent study, Field-Springer et al. (2017) found that mothers tend to acknowledge the importance of having conversations with their daughters about menarche at an early age, but do not know how to initiate these conversations and present their daughters with the necessary information. In addition to adequate preparation for menarche, research further suggests that age tends to influence young women's attitudes towards menstruation (Chrisler, 1988; Marván et al., 2005; Marván, Morales et al., 2006).

#### **2.4.3 Age differences and attitudes towards menarche and menstruation**

For younger women, in a society that emphasises the importance of their body's appearance, failure to control their bodies and conceal bodily processes, such as menstruation, could lead them to hold more negative attitudes towards menstruation than older women. For example, Chrisler (1988) reported that younger women (18 to 23 years) were more likely than older women (30 to 45 years) to perceive menstruation as bothersome, yet both groups viewed menstruation as a natural event.

Contrary to Chrisler (1988), Thurén (1994) later found that women younger than 30 years were more likely to view menstruation as a natural event, while women older than 30 years were more likely to view menstruation as ambiguous, shameful and a source of danger. Furthermore, women over 30 years had very clear memories of menarche, and reported mixed feelings toward menstruation, such as pride about womanhood, but fear of pregnancy (Thurén, 1994). Regarding proscriptions and prescriptions, Thurén (1994) reported that women older than 30 years seemed to receive more information about menstrual taboos, restricting women from washing and consuming cold foodstuff, which women under 30 years considered irrational. This finding was supported by Marván et al. (2005), who similarly found that middle-aged women (50 to 60 years) were more likely than younger women (18 to 23 years) to believe that menstruation has proscriptions and prescriptions, and that it should be kept a secret. Johnston-Robledo et al. (2007) contend that this age difference could be explained by younger women's heightened consciousness regarding their bodies and menstruation.

## **2.5 Women's Self and Body Evaluation**

Menstrual stigma could have implications for women's embodiment and self-esteem. Menstrual stigma and taboos tend to restrict women's movement, which could lead to women feeling shame towards their bodies, lowered self-esteem and experiencing a reduced quality of life (Onyegegbu, 2009). In a society where women's appearance is often used to measure their overall worth, fear of the repercussions of menstrual leaks, such as embarrassment, ridicule from peers, and unwanted sexual advances could impact women's self-esteem and motivate women to engage in self-objectification – body surveillance and body shame (Chrisler, 2011; Roberts & Waters, 2004).

### 2.5.1 Self-esteem, body surveillance and body shame

According to Rosenberg (1965), an individual's global self-esteem refers to the opinion an individual has of his or her general worth. Considering that a person evaluates their overall feeling towards themselves, self-esteem is a subjective construct (Rosenberg & Simmons, 1971). Global self-esteem differs from trait or specific self-esteem because it refers to one's self-regard irrespective of specific attributes. For example, one can have a high regard for oneself, and still not consider oneself proficient in a specific task, for example, social competence or academic performance (Rosenberg & Simmons, 1971). Individuals with a high self-esteem generally possess feelings of self-respect and are self-assertive, while individuals with low self-esteem view themselves less favourably (Rosenberg, 1965). Furthermore, individuals with high self-esteem tend to recognise their strengths and acknowledge their weaknesses, which they see as an opportunity for improvement, while individuals with a low self-esteem tend to feel inadequate because of their weaknesses (Rosenberg & Simmons, 1971).

Self-esteem remains a widely theorised and researched construct in psychological research (e.g., Baumeister, 1997; Harter, 1999; Orth, Trzesniewski, & Robins, 2010; Robins, Trzesniewski, Tracy, Gosling, & Potter, 2002; Rosenberg, 1965). Research has shown that self-esteem is an important component for physical, social and psychological well-being, and a protective factor against risk behaviours (Mann, Hosman, Schaalma, & De Vries, 2004). For example, Orth, Robins, and Widaman (2012) found that participants who tend to have a high self-esteem were more likely to report more relationship and job satisfaction, occupational status, salary and physical health, and less likely to report undesired moods, depression or other health concerns. On the other hand, low self-esteem tends to be associated with an increase in externalising problems, such as aggression and deviance, and internalising disorders, such as depression and anxiety (Donnellan, Trzesniewski, Robins, Moffitt, &

Caspi, 2005; Mann et al., 2004). Donnellan et al. (2005) found that for both adolescence and college students, a low self-esteem was associated with greater externalising behaviour, such as delinquency, antisocial behaviour, and aggression. These findings were based on participants' reports, and teacher and parent ratings, when using more than one measure for self-esteem and externalising problems, and when controlling for extraneous factors, such as, parental support, intelligence, and socio-economic status (Donnellan et al., 2005).

Furthermore, self-esteem is associated with body surveillance and body shame (Mercurio & Landry, 2008; Tylka & Sabik, 2010). Body surveillance, by which women frequently monitor their bodies and their appearance, is associated with a cluster of negative psychological consequences, such as body shame, appearance anxiety, reduced concentration, decreased awareness of internal states, and decreased life satisfaction (Fredrickson & Roberts, 1997; McKinley & Hyde, 1996; Mercurio & Landry, 2008; Tylka & Sabik, 2010).

Considering that body image is often used as a basis for self-evaluation during adolescence (Fredrickson & Roberts, 1997), body shame could lead to a negative view of oneself (low self-esteem). By contrast, given that women with a high self-esteem are generally satisfied with their appearance, they may in turn be more accepting of their bodies and less likely to engage in body surveillance (Tylka & Sabik, 2010). Empirical research tends to suggest that self-esteem, body surveillance, and body shame differ by age (Augustus-Horvath & Tylka, 2009; McKinley, 1999; Orth et al., 2010; Robins et al., 2002). Given that menstrual stigma often leads to heightened body surveillance and body shame, and that these constructs are associated to self-esteem, menstrual stigma could impact women's self-esteem.

### **2.5.2 Age differences and self-esteem**

Global self-esteem is expected to be relatively stable (Orth & Robins, 2014; Robins et al., 2002). For example, one would expect a person with high self-esteem during adolescence

to have relatively high self-esteem later in life (Orth & Robins, 2014). Although Orth and Robins (2014) contend that global self-esteem is relatively stable, it tends to be dynamic, displaying slow, gradual changes throughout the life cycle.

Generally, individuals tend to experience a sharp decline in self-esteem during adolescence followed by a gradual increase from 18 to 29 years, that tends to become relatively stable during early adulthood (30+ years) (Robins et al., 2002). Similarly, Orth et al. (2010) found that there tends to be an increase in self-esteem during young and middle adulthood (25 to 59 years), with this increase reaching a peak at approximately 60 years, and then declining quite rapidly into old age. This trend in self-esteem was the same despite stressful life events (Orth et al., 2010). Orth et al. (2012) found a similar trajectory of self-esteem in their study. Furthermore, similar to the influence age has on self-esteem, research tends to support the notion that age has an influence on levels of body surveillance and body shame (e.g., Augustus-Horvath & Tylka, 2009; Greenleaf, 2005; McKinley, 1999).

### **2.5.3 Age differences regarding body surveillance and body shame**

In Western patriarchal societies, women's bodies are often scrutinised and evaluated in relation to cultural ideals of attractiveness and thinness (Fredrickson & Roberts, 1997). The standard of an ultra-thin body is basically impossible to achieve naturally, especially during puberty when girls' bodies are changing shape. Consequently, when young women fail to attain the cultural standards of attractiveness or thinness, they tend to experience a discrepancy between their actual body and ideal body, which then manifests as body shame (Fredrickson & Roberts, 1997; McKinley & Hyde, 1996; Noll & Fredrickson, 1998).

Although adult women may experience more extreme appearance standards nowadays, and different studies use different age categories to distinguish younger and older women, adult women tend to engage in body surveillance and experience body shame less

frequently than adolescents and emerging adults (Crawford et al., 2008; Greenleaf, 2005; McKinley, 1999). For example, McKinley (1999) found that mothers of undergraduate students were less likely than their daughters to monitor their bodies and feel ashamed about their bodies. Similarly, Greenleaf (2005) found that younger women (18 to 30 years) had significantly higher levels of body surveillance and body shame than older women (39 to 64 years). A longitudinal study by McKinley (2006) supported the notion that as women age they tend to engage in less body surveillance and experience less body shame. In contrast, Tiggemann and Lynch (2001) found that age influenced levels of body surveillance, but not body shame. Similarly, Augustus-Horvath and Tylka (2009) found that women aged 18 to 24 years were more likely to engage in body surveillance than women aged 25 years and older. However, the two age groups did not differ with regard to body shame.

McKinley (1999) argues that the influence of age on levels of body surveillance and body shame may be explained by the different life challenges younger and older women encounter. For example, younger women tend to strive for independence, and seemingly more importance is placed on their body's attractiveness to attract potential partners and maintain relationships. On the contrary, older women have usually gained a degree of independence and stability, and less emphasis is placed on the importance of their bodies to initiate or maintain relationships. Thus, they tend to engage in less body surveillance and experience less body shame than younger women (McKinley, 1999). McKinley (1999) further contends that older women who pay attention to their body's attractiveness would not follow as strict guidelines of standards of acceptability as younger women. Considering that self-esteem, body surveillance and body shame are related and seemingly influenced by age, these factors and other biopsychosocial factors could tend to influence women's attitudes towards menstruation.

## **2.6 Self-esteem and Attitudes towards Menstruation**

Studies suggest that low self-esteem is associated with a deviation from normative menarcheal timing and inadequate preparation for menarche (Gatti et al., 2014; Marván & Alcalá-Herrera, 2014; Tang et al., 2003). For example, Dan (2013) contends that early menarche tends to be associated with a range of negative outcomes, such as a low self-esteem, more body shame, increased risk behaviour, and negative attitudes towards menstruation. Furthermore, Marván and Alcalá-Herrera (2014) found that girls who reached menarche earlier than their peers, and felt unprepared for menarche, experienced more anxiety and sadness than girls who reached menarche later or at the average age. In addition, girls who reached menarche earlier were more inclined to keep their menarche a secret and tended to hold more negative attitudes towards menstruation (Marván & Alcalá-Herrera, 2014).

## **2.7 Body Surveillance and Body Shame, and Attitudes towards Menstruation**

Moreover, empirical studies suggest that body surveillance and body shame is associated with more negative attitudes towards menstruation, menstrual shame and menstrual stigma (Johnston-Robledo et al., 2007; Roberts, 2004; Schooler, Ward, Merriwether, & Caruthers, 2005; Sveinsdóttir, 2016). For example, Sveinsdóttir (2016) found that women who constantly monitor their appearance and feel shameful about their bodies are more likely to view menstruation as annoying and having proscriptions and prescriptions. In addition, women who experience body shame are more likely to believe that menstruation should be kept secret. Similarly, Chrisler, Marván, Gorman, and Rossini (2015) found that women who appreciate their bodies and hold positive attitudes toward their bodies have more positive attitudes toward menstruation. More specifically, increased body appreciation is associated with increased attitudes towards menstruation as pleasant, while a lack of body

appreciation is associated with a greater belief that menstruation should be kept secret, has a proscriptive and prescriptive purpose, is disabling and an annoyance (Chrisler et al., 2015).

In addition to the psychological consequences mentioned before, menstrual stigma and self-objectification could also lead women to experience increased appearance and safety anxiety, reduced concentration on physical and mental tasks, and reduced awareness of the body's needs (Calogero, 2012). Calogero contends that an increase in appearance and safety anxiety often manifests as women being hypervigilant about their movements and surroundings, and a greater fear of rape and sexual assault. Women who experience reduced concentration because of menstrual stigma and self-objectification often perform poorly in mental and physical activities. Women may experience a decrease in performance and disconnection from their inner bodily needs because most of their time and energy is spent on being hypervigilant and critical about themselves and their bodies (Calogero, 2012).

McMahon et al. (2011) found that girls in Western Kenya associated menstruation with shame, which mostly stemmed from societal expectations to keep menstruation concealed. Besides experiencing menstrual shame, menstrual stigma also led to girls' reduced concentration in class because girls invested most of their energy in concealing their menstruation to prevent menstrual leaks. These physiological and psychological consequences of menstrual stigma and self-objectification could impact women's quality of life.

## **2.8 Theoretical Framework**

Menarche and menstruation are part of girls' development. Menarche, which occurs suddenly and relatively late during puberty, is often considered a biological and social marker of girls' transition to womanhood (Crawford et al., 2014; Marván & Molina-Abolnik, 2012; Thurén, 1994). However, menarche and menstruation could have implications for women's biological, psychological and social well-being across life stages, because along with the

bodily changes young women's "new" bodies somewhat become a "public domain" – being observed and evaluated by others (Fredrickson & Roberts, 1997, p. 193). Considering that menstruation is a biological phenomenon, situated in a socio-cultural context, which could have psychological implications for young women, this study is embedded in a biopsychosocial feminist perspective.

### **2.8.1 Biopsychosocial model**

Engel (1977) proposed the biopsychosocial model in response to the shortcomings of the biomedical model, which is dualistic – strictly dividing body and mind. The medicalisation of menstruation is reductionist, and disregards psychological and social factors that influence menstruation, and women's attitudes towards menstruation (Morse, 1995). Unlike the biomedical model, the biopsychosocial model is more humanistic and holistic – assigning meaning to phenomena and experiences by considering the constant interaction between biological, psychological and social factors (Engel, 1977). To understand women's beliefs and attitudes towards menstruation, all contributing factors need to be considered.

Biological factors include hormonal, anatomical, structural and molecular changes that affect women's attitudes towards menstruation (Thomas & Thurston, 2016). In my study, age and age at menarche are biological factors. Psychological factors include mood and personality traits, motivation, and negative or positive behaviours (Thomas & Thurston, 2016). In my study, psychological factors include self-esteem, body surveillance, and body shame. Social factors may include cultural, religious, familial and environmental factors (Thomas & Thurston, 2016). Further, social factors include religion, level of preparedness, sources of information and the maternal figures' highest level of education. Attitudes towards menstruation is itself a social factor influenced by biological, psychological and other social

factors. Thus, menstruation and attitudes towards menstruation can be seen as a biopsychosocial phenomenon.

### **2.8.2 Menstruation as a biopsychosocial phenomenon**

Menstruation can be explained as a biopsychosocial phenomenon because it is a biological process that is determined by its interaction with psychological and social factors (Chrisler & Johnston-Robledo, 2012). Menstruation as a biological process is influenced by brain circuits and changes in hormone secretions. The hormone and endocrine system that regulate menstruation work in conjunction with the psychological and social factors of women's lives. The way women respond to menarche and menstruation is influenced by their beliefs about and attitudes towards menstruation, which is largely shaped by the biological experience of menstruation, such as the interaction and fluctuation of hormones, and severity of menstrual symptoms. Furthermore, women's experiences take shape and are internalised in a cultural context (Chrisler, 2008). Therefore, although most women experience menstruation, their experiences are not the same and these differences could largely be attributed to the various socio-cultural contexts which influence their experiences and attitudes towards menstruation (Chrisler, 2008; Mansfield & Stubbs, 2007). Given that menstruation is a biopsychosocial phenomenon, I used feminist theory, particularly objectification theory, to understand the seeming influence of the young women's socio-cultural context on the myths and taboos that they hold regarding menstruation.

### **2.8.3 Feminist theory**

There is no unified definition of feminism (Ramazanoğlu & Holland, 2002). Despite this lack of consensus, feminists challenge conventions that maintain unequal power relations between men and women. The main objective of feminist research is the empowerment and liberation of women and other disadvantaged groups. Moreover, feminist research

endeavours to work for social change and an improved quality of life for women by challenging systems that oppress them (Brooks & Hesse-Biber, 2007).

Feminism can be described in the context of three waves. The first feminist wave emerged in the late 1800s and early 1900s and focused on equal access and opportunities for men and women, including the right for women to vote and own property (Kroløkke & Sørensen, 2006). The second wave, which emerged in the late 1960s and early 1970s, emphasised women's sexuality and reproductive rights. In addition, second wave feminists were critical of the capitalist system and believed that women would only be socially equal to men once the capitalist system was removed (Kroløkke & Sørensen, 2006). During this time, female scholars drew attention to the unique lived experience of women, highlighting the androcentric bias of mainstream research and how this bias omitted women from the research questions and its answers (Brooks & Hesse-Biber, 2007; Hesse-Biber, Leavy, & Yaiser, 2004). The third wave of feminism emerged in the late 1990s and has caused much controversy among feminists. The third wave challenges the notion of universal womanhood and appreciates diversity, accepting the complexity of individuals (Bobel, 2010; Kroløkke & Sørensen, 2006).

Feminists employ different design strategies to study oppressed groups (Brooks & Hesse-Biber, 2007; Miner-Rubino & Jayaratne, 2007). Feminist empiricists adopt a quantitative approach to research. They strive to eliminate the androcentric bias of mainstream research by rigorously pursuing the tenets of positivism and by including women, as well as other disadvantaged groups, into research samples (Hesse-Biber et al., 2004). Furthermore, feminist empiricists posit that collecting empirical data that include women and accurately depict their experiences help to improve the objectivity and empirical accuracy of previous research findings (Brooks & Hesse-Biber, 2007). Feminist empiricists also use quantitative surveys because quantitative methods are useful for accessing a relatively large

sample, producing background data to a topic and to convey important information in a simple, yet persuasive manner (Miner-Rubino & Jayaratne, 2007; Westmarland, 2001). Quantitative survey data also provides descriptive statistics, which can assist in the formulation of legislation and influencing public policy to improve women's lives (Miner-Rubino & Jayaratne, 2007).

#### **2.8.4 Objectification theory**

According to Fredrickson and Roberts (1997), girls and women growing up in a patriarchal society are embedded in social discourses and cultural practices that tend to sexually objectify women and their bodies. Sexual objectification refers to the process whereby the female body and processes, body parts, or sexuality is estranged from her being, and reduced to the status of mere parts for the use and desire of others (Fredrickson & Roberts, 1997). Fredrickson and Roberts further contend that in sexually objectifying environments, oppressive ideologies are persistently posed as universal truths, which could influence women's relationships and behaviours with themselves and others. Women may thus engage in self-objectification, considering themselves as objects to be gazed at and assessed for their appearance. Perceiving oneself in this manner may lead to routine body surveillance, which may escalate women's experiences of anxiety and shame, decrease their chances of pursuing their ambitions, and could increase alienation from their own bodies and bodily states (Fredrickson & Roberts, 1997).

#### **2.8.5 Objectification theory as a framework for menstrual attitudes**

According to Merskin (1999), the media plays an integral role in women's experiences of menstruation. Merskin contends that advertising companies portray menstruation as a hygienic crisis that has to be managed with hygienic products in order to avoid staining, soiling, odour, and humiliation. By presenting menstruation as a hygienic

crisis, advertisements tend to suggest that women's bodies are messy and unacceptable. In addition to advertisements, other forms of media, such as films and music videos, tend to reinforce stereotypes of women's status as objects or embellishments for men to admire (Merskin, 1999). Moreover, the media convey the message that concealing women's menstrual status by using their menstrual products will allow women to feel fresh, enhancing their sensuality, and thus increasing men's desire for them (Roberts et al., 2002; Roberts & Waters, 2004). This may lead women to feel self-conscious, suppress their needs, experience anxiety and shame toward their bodies and menstruation, and monitor their bodies and behaviour (Roberts & Waters, 2004). Women often go to great lengths, such as suppressing their menstruation by means of contraceptive pills or hysterectomy, to conceal their menstrual status in order to uphold these cultural standards of beauty (Roberts, 2004; Roberts & Waters, 2004). Furthermore, women often engage in these body-concealing practices because, in a patriarchal society, they are often valued for their appearance, which in turn is important for their self-esteem (Roberts & Waters, 2004).

The above-mentioned theories were deemed relevant for this study as the biopsychosocial approach allows me to explain the complexity of menstruation and women's attitudes towards menstruation, while objectification theory can be used to further explain the socio-cultural context by which menstrual myths and taboos are maintained.

## **2.9 Summary**

In this chapter, I presented a review of the existing literature, which seems to show that women tend to experience menstruation as frightening and hold negative attitudes towards menstruation. Various studies illustrate that such negative attitudes are often related to girls and women receiving inadequate and inaccurate information prior to menarche (Marván & Molina-Abolnik, 2012; Marván, Morales et al., 2006) In addition, menstruation is medicalised and socially constructed as proof that women's bodies are deficient (Chrisler,

2008). These messages are often maintained by cultural and religious taboos, and a patriarchal society which objectifies women, their bodies and natural bodily states (Chrisler, 2011; Fredrickson & Roberts, 1997; Roberts & Waters, 2004). Girls and women, in patriarchal societies such as South Africa, are embedded in social discourses and cultural practices that tend to objectify women, their bodies, and bodily processes (Fredrickson & Roberts, 1997; Roberts & Waters, 2004). In a society where women's bodies are objectified, menstruation is stigmatised and ought to be concealed (Roberts & Waters, 2004).

The existing literature also shows that stigma and objectification towards women and their bodies has implications for women's health and well-being. In the context of reproductive justice, young women having positive attitudes towards their bodies and bodily states, such as menstruation, may have positive implications for their overall health and well-being. As I have shown in this chapter, emerging adulthood is a time of transition in many domains, including greater independence and more serious intimate relationships for young women, which lead women to be more critical of their bodily appearance and sexuality (McKinley & Hyde, 1996). Although emerging adulthood is a time of uncertainty and exploration, it tends to be a time when emerging adult women's self-esteem gradually increases as they approach early adulthood, a time when women tend to view themselves more positively (Robins et al., 2002). Therefore, the existing literature suggests that a healthy self-esteem, positive feelings towards one's body as well as positive attitudes towards menstruation, may contribute to young women experiencing menstruation as more positive and less bothersome.

## CHAPTER THREE

### METHODOLOGY

#### 3.1 Introduction

The primary aim of this study was to explore age and religious differences of female university students' attitudes towards menstruation. The secondary aim was to explore age differences of female university students' evaluation of self and their bodies. A further aim was to explore a number of biological, psychological and social factors, as possible predictors of attitudes towards menstruation. Hence, this study aimed to answer the following research questions:

1. How does this sample of female university students' attitudes towards menstruation differ in terms of age and religion?
2. How does this sample of female university students' evaluation of self and their bodies differ in terms of age?
3. Are the biopsychosocial factors; age, age at menarche, level of preparedness, maternal figure's highest level of education, importance of sources of information, self-esteem, body surveillance and body shame; significant predictors of this sample of female university students' attitudes towards menstruation?

Thus, the research hypotheses were as follows:

- 1.1 H<sub>1</sub>: There is a significant difference between emerging adult and early adult women in terms of scores on the BATM subscales, namely Secrecy, Annoyance, Proscriptions and Prescriptions, Disability, and Pleasant.

H<sub>0</sub>: There is no significant difference between emerging adult and early adult women in terms of scores on the BATM subscales, namely Secrecy, Annoyance, Proscriptions and Prescriptions, Disability, and Pleasant.

1.2 H<sub>1</sub>: There is a significant difference between religions in terms of the BATM subscales, namely Secrecy, Annoyance, Proscriptions and Prescriptions, Disability, and Pleasant.

H<sub>0</sub>: There is no significant difference between religions in terms of the BATM subscales, namely Secrecy, Annoyance, Proscriptions and Prescriptions, Disability, and Pleasant.

2. H<sub>1</sub>: There is a significant difference between emerging adult and early adult women in terms of body surveillance, body shame, and self-esteem scores.

H<sub>0</sub>: There is no significant difference between emerging adult and early adult women in terms of body surveillance, body shame, and self-esteem scores.

3. H<sub>1</sub>: Age, age at menarche, level of preparedness, maternal figure's highest level of education, importance of sources of information, self-esteem, body surveillance and body shame are significant predictors of women's attitudes towards menstruation, as measured by the BATM subscales.

H<sub>0</sub>: Age, age at menarche, level of preparedness, maternal figure's highest level of education, importance of sources of information, self-esteem, body surveillance and body shame are not significant predictors of women's attitudes towards menstruation, as measured by the BATM subscales.

In this chapter, I will discuss the research design, sample, data collection procedures and ethical considerations, and measuring instruments, and will conclude with the data analysis I employed in this study.

### 3.2 Research Design

In this study, I employed a non-probability, cross-sectional, on-line survey, located within a quantitative paradigm. This research strategy allowed me to access a large sample at a relatively low administration cost, and the participants entered the data directly onto the survey platform (Bryman, 2012). Furthermore, the participants could complete the survey in their own time, the online survey thus ensuring participant anonymity and reducing interviewer bias, and there was no interviewer variability (Bryman, 2012).

The possible disadvantages of online surveys are the researcher's inability to prompt participants, which may limit the collection of additional data. The researcher also needs to keep the survey concise to prevent respondent fatigue (Bryman, 2012).

### 3.3 Sample

Participants were invited to participate in the study by convenience sampling, which is a sampling method that includes all eligible participants until the sample meets an acceptable size (Bless, Higson-Smith, & Kagee, 2006). Since menstruation is a topic that is still shrouded by taboos and secrecy, I deemed convenience sampling appropriate so that I could open the survey to a wider sample. The inclusion criteria were that the participants had to be registered full-time female students, aged 18 to 36, studying at the main campus or Tygerberg campus, at Stellenbosch University, in 2015. The survey was sent out to 12 643 participants and I closed the survey after 1660 participants responded. I then cleaned the data and deleted missing data listwise. Pallant (2010) recommends listwise deletion when one has a large data set and the complete deletion of a case from the analyses will not affect the sample size or results. The final sample comprised 1517 women, whose ages ranged between 18 to 36 years of age ( $M = 21.43$ ,  $SD = 2.85$ ). In Table 3.1, I present an overview of the participants' demographic information.

Table 3.1

*Frequency Distribution of Participants' Demographics (N = 1517)*

Variable	Category	F	Valid %	Cumulative %
Age	18–23	1284	84.7	84.7
	24–36	233	15.4	100.0
Race	White	1022	67.4	67.4
	Black	168	11.1	78.4
	Coloured	264	17.4	95.8
	Indian	36	2.4	98.2
	Asian	4	0.3	98.5
	Other	23	1.5	100.0
Religion	Christianity	1178	77.7	77.7
	Hinduism	8	0.5	78.2
	Islam	55	3.6	81.8
	Judaism	3	0.2	82.0
	African Trad.	2	0.1	82.1
	None	231	15.2	97.4
	Other	40	2.6	100.0
Faculty	Agri sciences	107	7.1	7.1
	Arts and Soc. Sci.	360	23.7	30.8
	EMS	240	15.8	46.6
	Education	81	5.3	51.9
	Engineering	110	7.3	59.2
	Law	83	5.5	64.7
	Medicine and Health Sciences	281	18.5	83.2
	Science	244	16.1	99.3
	Theology	11	0.7	100.0
	Level of study	Undergraduate	1191	78.5
Postgraduate		326	21.5	100.0
Academic Year of Study	First	419	27.6	27.6
	Second	367	24.2	51.8
	Third	305	20.1	71.9
	Honours	163	10.7	82.7
	Masters	126	8.3	91.0
	Doctorate	53	3.5	94.5
	Other	84	5.5	100.0

*Note.* African Trad. = African Traditional; Arts and Soc. Sci. = Arts and Social Sciences; EMS = Economic and Management Sciences; Race = Racial classification in South Africa; Other = Own response.

From Table 3.1, it is evident that most participants were undergraduate students and mainly from the faculty of Arts and Social Sciences (23.7%). Seventy-eight percent of participants reported affiliation to Christianity and more than half of the participants identified as White.

In Table 3.2, I present an overview of the participants' socio-contextual information related to menstruation. The mean age of menarche of participants was 12.76 ( $SD = 1.40$ ).

Table 3.2

*Frequency Distribution of Socio-contextual Variables (N = 1517)*

Variable	Category	<i>f</i>	Valid %	Cumulative %
Age at menarche	9	15	1.0	1.0
	10	52	3.4	4.4
	11	154	10.2	14.6
	12	420	27.7	42.3
	13	473	31.2	73.4
	14	232	15.3	88.7
	15	76	5.0	93.7
	16	41	2.7	96.4
	17	11	0.7	97.2
	18	6	0.4	97.6
	19	2	0.1	97.7
	20	0	0.0	97.7
	21	1	0.1	97.8
	Forgot / could not remember	34	2.2	100.0
Level of preparedness	Totally unprepared	345	22.7	22.7
	Somewhat unprepared	357	23.5	46.3
	Somewhat prepared	590	38.9	85.2
	Totally prepared	225	14.8	100.0
Maternal education	Primary school	29	1.9	1.9
	Sec. w/o matric	92	6.1	8.0
	Sec. with matric	307	20.2	28.2
	Post matric	1089	71.8	100.0

*Note.* Sec. w/o matric = Secondary school without matric; Sec. school with matric = Secondary school with matric; Maternal education = Maternal figure's highest level of education.

According to Table 3.2, 34 participants (2.2%) indicated that they could not remember their age at menarche. Interestingly, of the 34 participants who could not remember their age at menarche, only five were from the age group 24 to 36 years. In response to their level of preparedness for menarche, 345 participants (22.7%) felt totally unprepared for menarche, while only 225 (14.8%) indicated that they felt totally prepared. Most participants' (71.8%) mothers had a post-matric qualification. This is not unexpected considering the demographics of the sample and that the participants were university students.

Table 3.3 presents an overview of the participants' sources of information.

Table 3.3

*Frequency Distribution of Participants' Sources of Information (N = 1517)*

Variables	Categories	F	% of cases
Sources of Information	Mother	1322	87.1
	Sister	231	15.2
	Friends	627	41.3
	School	953	62.8
	Mass media	263	17.3
	Father	37	2.4
	Brother	1	0.1
	Others	115	7.6

*Note.* % of cases refers to the percentage of the 1517 participants who indicated each source as a source of information.

Table 3.3 displays that most participants (87.1%) indicated their mothers as their source of information. Other popular sources of information were the school (62.8%) and friends (41.3%). Interestingly, 37 (1.0%) participants indicated their fathers as a source of information and one participant indicated that her brother was a source of information.

In response to the question regarding discussing menstruation, participants seemed to be more comfortable discussing menstruation with their mothers (86.6%) than their fathers

(39.0%). In addition, the majority (79.7%) of participants felt comfortable discussing menstruation with others. Although few participants discussed menstruation with their fathers, it seems that the participants were less likely to adhere to the “verbal taboo” surrounding menstruation.

### **3.4 Data Collection**

#### **3.4.1 Procedure**

The Psychology Department’s Ethics Screening Committee (DESC, see Appendix A) and the Research Ethics Committee (REC, see Appendix B) of Stellenbosch University (SU-HSD-000468) granted ethical clearance for this study. Thereafter, the Division for Institutional Research and Planning gave me permission to conduct the research at SU and provided me with the e-mail addresses of all the students who met the inclusion criteria. Prior to the main study, I conducted a pilot study, to assess the reliability of the measuring instruments. For the pilot study, I recruited 41 participants using convenience sampling.

Once all the measuring instruments were of an acceptable internal consistency (see Table 3.4), I launched the survey via the Sunsurveys online platform. Female students were invited to participate in the study via an electronic mail invitation (see Appendix C), which contained a unique Uniform Resource Locator (URL). Once the participant accessed the URL, she received an electronic consent form (See Appendix D), which briefly explained the purpose of the survey. Participants were informed about their anonymity and confidentiality, and that they could discontinue participation from the survey at any time. The participants were assured that their e-mail addresses were solely used to send them the link to the survey, and were not linked to any responses provided during the survey.

At the end of the questionnaire, the participants were thanked and given the choice to participate in a lucky draw for a shopping voucher of R600. Those who wanted to participate

in the lucky draw were referred to a separate questionnaire where they provided their contact details. In this way, two separate datasets were created, one with the responses to the survey and the other with student contact details for the lucky draw. The survey responses were exported from this database to the Statistical Package for Social Sciences (SPSS) for analysis. The data will be kept on a password protected computer, for five years.

### **3.4.2 Reflexivity as a Researcher**

I position myself as a feminist empiricist. Feminist empiricists seek to conduct research with and for women, to eliminate the androcentric bias of mainstream research (Brooks & Hesse-Biber, 2007). This means that I advocate for the use of quantitative methods, such as survey research to pursue feminist goals. As a feminist empiricist, I differ from traditional scientists and mainstream researchers because I engage in a process of reflexivity, whereby I acknowledge that my personal, situational and intellectual beliefs, experiences and interests influence the research I choose to pursue and the way I interpret the findings. Although reflexivity is more commonly associated with qualitative research, Westerland (2001) contends that subjectivity is inevitable, even when we employ 'rigid' quantitative methods.

I am a 26 year old, coloured woman from a middle-income, Christian family. I have advanced knowledge about psychology and social science research methods. I identify as a social justice activist and feminist advocacy researcher, with a keen interest in the health and well-being of girls, women and other marginalised groups. I am the youngest of two children, the other being my older sister. I was raised in a household, where both my parents were employed, yet each still prescribed to stereotypical gender roles. As a girl child, I adopted a nurturing role. Yet, I was extremely strong-willed and inquisitive. Since my childhood, inequality and suffering have left me feeling very unsettled and yearning to bring about positive change. I have been exposed to feminist texts and documentaries, which contributed to my interest in feminist research and assisted me to articulate my feminist standpoint. Since

the end of 2016, I have volunteered with a Non-Profit Organisation (NPO) focusing on facilitating anti-bullying workshops with secondary school learners.

I am aware that my personal background, family dynamics and my status as a woman and psychology student influenced my interest in feminist research. As a psychology student and woman activist, aware of patriarchy and the prevalence of gender based violence in South Africa, I am committed to contribute to positive social change. Considering that women's bodies and bodily processes tend to be stigmatised and used to oppress women, as an activist of reproductive justice I firmly believe that by collecting empirical data directly from women, my research could contribute to improve the issues of power, objectivity, and empirical accuracy of previous research findings (Brooks & Hesse-Biber, 2007). Although I had no direct contact with the participants, my personal, situational and intellectual background inevitably influenced my interpretation of the findings.

### **3.4.3 Ethical considerations**

Ethical clearance was obtained from the DESC and REC. Thereafter, the Division for Institutional Research and Planning, who provided me with the e-mail addresses of all the students who met the inclusion criteria, gave me permission to conduct the research at the university. With an increase in online and internet-based research, I consulted the guidelines of the British Psychological Society (BPS, 2017) to ensure that I adhered to the ethical guidelines for internet based studies.

The BPS (2017) recommends that valid consent be obtained by the researcher. Once the participant accessed the unique URL in the electronic mail invitation, she was provided with an electronic consent form which outlined the purpose of the study, possible risks and discomforts, and her right to withdraw her participation. It is good practice, when using an online-survey, to include a check box or radio button in response to an explicit consent

statement, to obtain valid consent (BPS, 2017). Therefore, at the end of the informed consent information sheet, participants were presented with the statement ‘I have read the above information thoroughly and I understand information provided to me’ and ‘I hereby accept to voluntarily participate in this study’, followed by radio buttons next to options to ‘Accept’ or ‘Do not accept’. Although there was not an explicit ‘opt-out’ radio button on each page of the survey, participants were informed about their right to may withdraw at any time, without providing a reason for withdrawal and without consequences of any kind. In the consent form, I provided my contact details and the contact details of my supervisor, should participants have any concerns about the research.

To protect the anonymity of the participants during data collection, their e-mail addresses were solely used to send the link to the survey, and were not linked to any responses provided during the survey. Participants were informed in the consent form that participation in the lucky draw will require their personal contact details and compromise their anonymity. However, I assured them that, although their anonymity may be compromised, their contact details were not linked to their responses, and all personal contact information and responses would be treated as strictly confidential and would not be divulged to anyone or be misused in any way.

### **3.5 Measuring Instruments**

In this study, participants first provided their biographical details and their socio-contextual information, and then completed the following self-report measures: The Beliefs about and Attitudes toward Menstruation questionnaire (BATM), Body Surveillance and Body Shame, two subscales from the Objectified Body Consciousness Scale (OBCS), and the Rosenberg Self-Esteem Scale (RSES).

### 3.5.1 Beliefs about and Attitudes toward Menstruation Questionnaire (BATM)

Marván, Ramírez-Esparza et al.'s (2006) 45-item BATM (see Appendix E) was originally developed in Spanish with Mexican people of diverse ages, educational and social backgrounds. Unlike the widely used Menstrual Attitude Questionnaire (MAQ) (Brooks-Gunn & Ruble, 1980), the BATM does not include personal items and measures the beliefs and attitudes independent of menstrual related symptoms. Furthermore, the BATM measures stereotypical proscriptions and prescriptions toward menstruating women, and the secretive nature and shame attached to menstruation. The BATM also allows women to view menstruation as normal, yet undesirable (Marván, Ramírez-Esparza et al., 2006). Thus, the BATM was deemed more appropriate for the aims of the study.

The BATM consists of five subscales, namely Secrecy, Annoyance, Proscriptions and Prescriptions, Disability, and Pleasant, which are rated on a 5-point Likert scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Items 1, 5, and 39 are reverse-scored. The Secrecy subscale (12 items) emphasises the importance placed by society on keeping menstruation private and includes the following item, "It is important to talk about the menstrual period with men". The Annoyance subscale (13 items) suggests that menstruation is a nuisance by stating that, for example, "The period is a big problem". The Proscriptions and Prescriptions subscale (nine items) comprises activities women are encouraged to partake in and activities women should avoid during menstruation, such as "Women must drink tea while we are having our periods" and "Women must avoid smoking while we are having our periods". The Disability subscale (five items) measures beliefs that menstruation hinders women's ability to complete their everyday activities, for example, "The period affects the performance of women at work". Lastly, the Pleasant subscale (six items) explores the potential feelings of comfort and satisfaction that women could experience because of

menstruating, such as “Women get excited when we have our first period” (Marván, Ramírez-Esparza et al., 2006).

A total score cannot be calculated for the BATM because the scale measures both positive and negative beliefs and attitudes. An average score for each subscale is computed by summing the responses and dividing the total by the number of response items. A higher total score on the Secrecy, Annoyance, Proscriptions and Prescriptions, and Disability subscales indicates more negativity towards menstruation, while a low score indicates more positivity towards menstruation. However, a higher score on the Pleasant subscale indicates more positivity towards menstruation and a low score indicates more negativity towards menstruation.

The BATM has been used in many countries, including South Africa, among diverse groups of women (Chrisler et al., 2015; Marván, Ramírez-Esparza et al., 2006; Sveindóttir, 2016; Van Gesselien, 2013; Wong et al., 2013). The BATM’s psychometric properties have been evaluated. Iacobucci and Duhachek (2003) suggest that it is standard for reliability to be a Cronbach alpha value, of which .60 to .70 is satisfactory, .70 to .80 is very good, while .80 to .95 is exceptional. In Table 3.4, I provide a summary of the reliability data for the BATM from a few of the studies as well as the reliabilities of the pilot and main study in the current study.

Table 3.4

*Summary of the Cronbach Alpha Scores for the BATM Subscales*

Study	Sample	Country	Secrecy	Annoyance	Pro- and Prescriptions	Disability	Pleasant	BATM
Chrisler et al. (2015)	72 American women (18–45 years)	United States	.85	.86	.84	NA	.74	NR
Marván, Ramírez-Esparza et al. (2006)	1090 Mexican people (18–60 years)	Mexico	.82	.83	.76	.75	.71	.89
Marván, Ramírez-Esparza et al. (2006)	274 undergraduate students (18–24 years):							
	157 Mexican students	Mexico	.82	.84	.78	NA	.62	.86
	117 US students	United States	.79	.80	.83	NA	.69	.80
Sveindóttir (2016)	319 Icelandic women (18–41 years)	Iceland	.77	.86	.81	NA	.73	NR
Van Gesselleen (2013)	200 female students (18–21 years)	South Africa	.77	.83	.75	.72	.60	NR
Wong et al. (2013)	436 Hong Kong undergraduate students	Hong Kong	NR	NR	NR	NR	NR	.89
<b><u>Current study:</u></b>								
Pilot study	41 female university students (18–34 years)	South Africa	.84	.88	.81	.71	.73	.86
Main study	1517 female university students (18–36 years)	South Africa	.82	.84	.80	.76	.62	.86

*Note.* BATM = Beliefs about and Attitudes Towards Menstruation Questionnaire; NA = Not Applicable / Used in the study; NR = Not Reported.

It is evident from Table 3.4 that the BATM's reliability has been established. Furthermore, Marván, Ramírez-Esparza et al. (2006) tested for construct validity by means of factor analysis, employing Varimax rotation. All the items had a factor score greater than .40, displaying adequate construct validity. Wong et al. (2013) reported satisfactory content validity with all validity index values being greater than .56,  $p < .05$ .

I further conducted Pearson's correlations for the five subscales. In Table 3.5, I present a comparison of the significant correlations found in the study by Marván, Ramírez-Esparza et al. (2006) and the current main study.

Table 3.5

*Correlations between the BATM Subscales for the Original Study with Mexican People and the Current Main Study*

	Marván, Ramírez-Esparza et al. (2006) 1090 Mexican people (18–60 years)					Current study: Main study 1517 female undergraduate students (18–36 years)				
	Secrecy	Annoyance	Pro- and Prescriptions	Disability	Pleasant	Secrecy	Annoyance	Pro- and Prescriptions	Disability	Pleasant
Secrecy	–	–	–	–	–	–	–	–	–	–
Annoyance	.26***	–	–	–	–	.27**	–	–	–	–
Pro- and Prescriptions	.46***	.34***	–	–	–	.34**	.26**	–	–	–
Disability	.44***	.42***	.37***	–	–	.38**	.51**	.46**	–	–
Pleasant	–	–	-.08**	–	–	-.15**	-.29**	.12**	-.10**	–

*Note.* BATM = Beliefs about and Attitudes Towards Menstruation Questionnaire.

\*\* $p < .01$ , \*\*\* $p < .001$ .

Table 3.5 shows that for both studies the Secrecy subscale was positively correlated with the Annoyance, Proscriptions and Prescriptions, and Disability subscales. The Annoyance subscale was positively correlated with Proscriptions and Prescriptions, and Disability subscales in both studies, while the Proscriptions and Prescriptions subscale is positively correlated with the Disability subscale in both studies. However, in contrast to the study by Marván, Ramírez-Esparza et al. (2006), in the current study both the Secrecy, Annoyance, and Disability subscales were negatively correlated with the Pleasant subscale. Proscriptions and Prescriptions was negatively correlated with Pleasant in the study by Marván, Ramírez-Esparza et al. (2006), but surprisingly positively correlated with the Pleasant subscale in the current study. Furthermore, the studies showed significant correlations between the subscales at different alpha levels.

### 3.5.2 The Objectified Body Consciousness Scale (OBCS)

McKinley and Hyde's (1996) OBCS consists of three subscales, namely the Body Surveillance, Body Shame and Appearance Control Beliefs subscales. Previous studies have only used the Body Surveillance and Body Shame subscales to measure self-objectification (e.g., Aumend, 2007; Calogero & Thompson, 2009; Johnston-Robledo et al., 2007; Muehlenkamp & Saris-Baglama, 2002). Hence, in the current study, I also only used these subscales to measure self-objectification.

The Body Surveillance and Body Shame subscales consists of eight items each (see Appendix E). The Body Surveillance subscale was used to measure the degree to which women monitor their body's appearance, while the Body Shame subscale measured the level of shame women feel toward their bodies because of their inability to conform to cultural standards. Items on the Body Surveillance subscale include, "I rarely think about how I look" and "I rarely worry how I look to other people", while the Body Shame subscale includes items such as, "I would be ashamed for people to know what I really weigh" and "When I'm not the size I think I should be, I feel ashamed". The average scores for each of the subscales were computed separately by summing the responses and dividing the total by the number of non-missing items. A high score on the Body Surveillance subscale is indicative of frequent surveillance and greater concern for the body's appearance, while low scores are indicative of rare surveillance and little concern for the body's appearance. A high score on the Body Shame subscale indicates more shame that one's body does not conform to social standards, while a low score indicates satisfaction with one's body (McKinley & Hyde, 1996). The OBCS was developed and validated in three studies, with samples of mostly heterosexual, European-American undergraduate, college and middle-aged women.

In Table 3.6, I present a summary of the reliability data for studies conducted in different countries as well as the reliability of the pilot and main study of the current study.

Table 3.6

*Summary of the Cronbach Alpha Scores for the Body Surveillance and Body Shame subscales of the OBCS*

Study	Sample	Country	Body Surveillance	Body Shame
Calogero & Thompson (2009)	112 Southeastern UK university women	United Kingdom	.85	.88
McKinley & Hyde (1996)	121 undergraduate women (17–39 years)	United States	.89	.75
	278 undergraduate women (17–22 years)	United States	.79	.84
Mercurio & Landry (2008)	227 undergraduate female students (18–31 years)	United States	.82	.84
Sveinsdóttir (2016)	319 Icelandic women	Iceland	.71	.77
Tylka & Sabik (2010)	274 Midwestern US college women (18–29 years)	United States	.85	.84
<b><u>Current study:</u></b>				
Pilot study	41 female university students (18–34 years)	South Africa	.84	.34
Main study	1517 female university students (18–36 years)	South Africa	.76	.83

*Note.* OBCS = Objectified Body Consciousness Scale.

Table 3.6 shows that both the body surveillance and body shame subscales were reliable measures for this study.

In the current study, the pilot sample yielded reliability coefficients of .84 and .34 for the Body Surveillance and Body Shame subscales, respectively. The reliability coefficient for the Body Shame subscale was rather low and could be ascribed to the Not Applicable (N/A)

option on the survey that cannot be assigned a definite code. Hence, the data for participants who stated N/A on this scale were deleted and dealt with as missing data. The remaining 33 participant's data yielded an exceptional Cronbach alpha coefficient of .84. In the original study, McKinley and Hyde (1996) mention using both a 6-point Likert scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*) with a N/A option, as well as a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*) with an option for neither agree nor disagree and N/A. After running the reliability of the pilot data for this scale, as well as discussing the items with my supervisor and consulting other studies that scored the scale on a 7-point Likert scale without a N/A option, (e.g., Aumend, 2007; Crawford et al., 2008), I decided it would be best to use a 7-point Likert scale ranging from strongly disagree to strongly agree in the survey for the main study.

### **3.5.3 Rosenberg Self-Esteem Scale (RSES) (Rosenberg, 1965)**

Rosenberg's (1965) 10 item RSES (see Appendix E) is a global measure of self-esteem, initially developed to measure self-esteem in high school students. The RSES consists of positive and negative items, presented interchangeably to avoid response bias. The items are rated on a 4-point Likert scale, ranging from 0 (*strongly disagree*) to 3 (*strongly agree*). The minimum total score is 0 and maximum total score is 30, and the scale is scored by summing all the items after the negatively worded items have been reverse-scored. Higher scores represent higher self-esteem, while lower scores represent lower self-esteem.

Rosenberg (1965) suggests that scores between 15 and 25 are considered the norm, while scores below 15 are suggestive of low self-esteem. The RSES has been used worldwide, including South Africa, among varied samples (Makhubela & Mashegoane, 2017; Sinclair et al., 2010; Westaway, Jordaan, & Tsai, 2015). Over a 14-day period the RSES revealed correlations of .85 and .88, indicating excellent test-retest reliability (Rosenberg, 1965). In a study by Sinclair et al. (2010), the RSES showed satisfactory convergent validity as all the

items had factor loadings greater than .40. In Table 3.7, I present the reliability data for the RSES.

Table 3.7

*Summary of the Cronbach Alpha Scores for the RSES*

Study	Sample	Country	RSES Reliability
Makhubela & Mashegoane (2017)	862 students from two South African universities	South Africa	.73
Rosenberg (1965)	High school students	New York	.92
Sinclair et al. (2010)	Diverse group of adults	United States	.91
Westaway et al. (2015)	Diverse group of adult residents	South Africa	.93 to .97
<b><u>Current study:</u></b>			
Pilot study	41 female university students (18–34 years)	South Africa	.92
Main study	1517 female university students (18–36 years)	South Africa	.88

*Note.* RSES = Rosenberg Self-Esteem Scale.

It is evident from Table 3.7 that the RSES is widely used and a reliable measure for self-esteem. Given the reliability from the pilot study, I deemed the RSES appropriate for the main study.

In Table 3.8, I present a summary of the reliability coefficients of all the measuring instruments in my pilot and main study.

Table 3.8

*Cronbach Alpha Scores for the Pilot and Main Survey of the Current Study*

Scales	Subscales	No. of Items	Pilot Reliability	Main study Reliability
RSES		10	.92	.88
BATM		45	.86	.86
	Secrecy	12	.84	.82
	Annoyance	13	.88	.84
	Proscriptions and Prescriptions	9	.81	.80
	Disability	5	.71	.78
	Pleasant	6	.73	.62
OBCS	Body Surveillance	8	.84	.76
	Body Shame	8	.84	.83

*Note.* RSES = Rosenberg Self-Esteem Scale; BATM = Beliefs about and Attitudes Towards Menstruation Scale; OBCS = Objectified Body Consciousness Scale.

From Table 3.8, it is evident that all the measuring instruments are reliable and suitable to be used in the data analysis.

### 3.6 Data Analysis

I coded, cleaned and analysed the raw data obtained from the questionnaires using the IBM Statistical Package for Social Sciences (SPSS, version 24). The analyses included descriptive statistics, Multiple Analysis of Variance (MANOVA), using Hotelling's  $T^2$ -tests and Pillai's trace, and standard multiple regression analyses. Below I provide a brief description of each of the analyses and the assumptions underlying each test.

#### 3.6.1 Multivariate tests

MANOVA is an extension of Analysis of Variance (ANOVA), used when there are two or more dependent variables. MANOVA limits the risk of a type 1 error which may occur when conducting a series of ANOVAs separately for each of the dependent variables

(Pallant, 2010). A type 1 error refers to incorrectly rejecting the null hypothesis (Hair, Black, Babin, & Anderson, 2014). MANOVAs were used to determine whether there were significant differences between groups (emerging adult versus early adult women; Christian, Muslim and Not religious women) on the dependent variables.

The Hotelling's  $T^2$ -test is a multivariate alternative to the t-test and a "specialised form of the MANOVA" (Hair et al., 2014, p. 671). Hotelling's  $T^2$  tests are applicable when one has an independent variable with two levels and several dependent variables related to the same underlying construct (Pretorius, 2007). Therefore, Hotelling's  $T^2$ -tests were used to explore possible age differences between emerging adult and early adult women on the various constructs. Religions tend to perpetuate menstrual taboos and could influence attitudes towards menstruation (Bhartiya, 2013; Bramwell & Zeb, 2006; Guterman et al., 2007). Religion was measured using a single question. I am aware that this single question may not accurately reflect participants' religiosity, but rather indicate an affiliation to the religion. However, I decided to explore whether there are significant differences between religions in terms of the BATM subscales because being affiliated to a religious group could still influence one's attitudes towards menstruation (Bramwell & Zeb, 2006).

A MANOVA, using Pillai's trace was used to explore possible differences in religion on the BATM, because it is the most robust, especially when group sizes are unequal. For the analyses using religion, only Christianity, Islam and None were included, considering that the other religious groups had too few participants for adequate analyses. Follow-up analyses, also known as post-hoc tests, were conducted using Games-Howell's post-hoc tests. Post-hoc tests are necessary when there are more than two independent variables, to ascertain where the significant differences lie (Pallant, 2010).

### 3.6.2 Assumptions of Multivariate Tests

The following assumptions underlie multivariate group comparisons: adequate sample size and independence, normality, absence of univariate and multivariate outliers, linearity, and homogeneity of variance-covariance matrices.

The rule of thumb states that the number of cases in each group needs to be larger than the total number of dependent variables or at least 20 cases per group for robustness (Hair et al., 2014). Independence requires observations to be statistically independent. Independence assumes that there is no relation between observations, therefore there should be different participants in each group, and a participant may only be in one group. In my study both the assumption of adequate sample size and independence were met. Normality refers to the dependent variable being normally distributed within groups. The  $F$  test allows for deviations from normality, providing it is not caused by outliers. MANOVAs are very sensitive to outliers – observations that significantly deviate from the rest – which may cause a type 1 or type 2 error. Whereas a type 1 error refers to incorrectly rejecting the null hypothesis, a type 2 error refers to accepting the null hypothesis when it should have been rejected (Hair et al., 2014).

Univariate normality and outliers were tested for by comparing the mean of each of the dependent variables to the 5% trimmed mean, examining skewness and kurtosis values, as well as histograms, stem-and-leaf and boxplots, normal probability plots and detrended plots, and Kolmogorov-Smirnov and Shapiro-Wilk's statistic. The statistical power of both Kolmogorov-Smirnov and Shapiro-Wilk's statistic are affected by a large sample size, where small deviations from normality may yield significant results (Field, 2013). I therefore further assessed normality by examining skewness and kurtosis values. A distribution is normally distributed if the values for skewness and kurtosis are zero. Skewness refers to the degree of symmetry of a distribution. A distribution with a tail longer on the right is skewed to the right

or positively skewed, a distribution with a tail longer on the left is skewed to the left or negatively skewed, while a distribution with tails similar on both ends is normally distributed or symmetrical (Bulmer, 1979). According to Bulmer (1979), a distribution with a skewness value greater than -1 and 1 is highly skewed, between -0.5 and -1 or 0.5 and 1 is moderately skewed, and -0.5 and 0.5 is relatively normally distributed. Kurtosis refers to the peakedness of a distribution and can be leptokurtic or platykurtic. Field (2013) states that a distribution with a kurtosis of zero is normally distributed, while distributions greater than zero are leptokurtic and distributions smaller than zero are platykurtic. Skewness and kurtosis values are reported in Table 3.9 I deleted all univariate outliers listwise.

Table 3.9

*Skewness and Kurtosis for the BATM Subscales, RSES, and Body Surveillance and Body Shame Subscales of the OBCS*

	Secrecy	Annoyance	Proscriptions and Prescriptions	Disability	Pleasant	RSES	Body Surv.	Body Shame
Skewness	.20	-.16	.10	.30	-.10	-.23	-.09	.37
<i>SE</i> of skewness	.06	.06	.06	.06	.06	.06	.06	.06
Kurtosis	-.49	-.40	-.66	-.61	-.33	-.48	-.36	-.39
<i>SE</i> of kurtosis	.13	.13	.13	.13	.13	.13	.13	.13

*Note.* BATM = Beliefs about and Attitudes Towards Menstruation Scale; RSES = Rosenberg Self-Esteem Scale; OBCS = Objectified Body Consciousness Scale; Body Surv. = Body Surveillance.

Using Bulmer's (1979) guidelines, Table 3.9 shows that in terms of skewness, the values for the BATM subscales, Body Surveillance and Body Shame, and RSES were close to zero and approximately symmetric. However, for kurtosis, the values are smaller than zero, indicating that the distributions are platykurtic.

Multivariate normality and outliers were identified using Mahalanobis distance in the linear regression menu. Mahalanobis distance value is compared with a critical chi-square value with the degrees of freedom equal to the number of dependent variables. The BATM

has five subscales which form five dependent variables. The Mahalanobis distance critical chi-square value is 20.52 for five variables and 16.27 for three variables. Violating the assumption of normality has a great effect if the sample is small. However, a larger sample (200 or more) allows for deviations from normality if it is not caused by outliers (Hair et al., 2014). Before deleting univariate and multivariate outliers, the maximum Mahalanobis distance value was 24.50, which is larger than the critical chi-square value,  $p < .001$ , for the five BATM subscales. The Mahalanobis value for the final sample ( $N = 1517$ ) was 20.07 for the five BATM subscales and 15.10 for Self-Esteem, Body Surveillance and Body Shame.

Linearity assumes that there is a linear relationship between the independent variables and dependent variable. I visually examined within cell scatterplots for linearity. There were no deviations from linearity, for example, curvilinear relationships. It is ideal for the dependent variables to be moderately correlated. Pearson's product-moment correlations showed that the dependent variables were moderately correlated, with no coefficients over .80. Homogeneity of variance-covariance matrices assumes that the variances of the different groups are the same. When group sample sizes are unequal as is the case in my study, MANOVA is sensitive to violation of this assumption. I tested for this assumption using Box's  $M$  test, found in the MANOVA output. Tabachnick and Fidell (2013) advise using an alpha  $p < .001$  rather than  $p < .05$  as a criterion for Box's  $M$  if sample sizes are large and unequal. Box's  $M$  indicated non-significant results for age ( $p = .004$ ,  $p = .059$ ), and religious differences ( $p = .001$ ). Therefore, the covariance matrices were assumed to be relatively equal. However, these values were still worrisome and therefore I randomly selected 233 cases from the larger group (emerging adult women) to equalise the group sizes. After removing univariate and multivariate outliers, the subsample ( $n = 435$ ) was approximately 20% of the full sample. I tested Box's  $M$  again, and test indicated non-significant results for age ( $p = .326$ ,  $p = .256$ ) and religious differences ( $p = .091$ ) on the dependent variables.

### 3.6.3 Multiple Regression Analyses

Multiple regression analysis is an extension of the bivariate correlation (Pretorius, 2007). Multiple regression analysis is used to determine whether a set of variables, known as the predictors, predict an outcome variable (Pallant, 2010). In standard multiple regression, all the predictors are entered at the same time and the predictive power of the set of predictors on the outcome variable is evaluated. In the current study, I used multiple regression analyses to ascertain significant predictors of attitudes toward menstruation.

### 3.6.4 Assumptions of Regression Analyses

According to Osborne and Waters (2002), many assumptions of multiple regression tolerate violations. However, there are four assumptions which are more sensitive to violations, namely reliability, normality, linearity and homoscedasticity.

The measuring instruments displayed adequate reliability, as outlined previously in the section on the psychometric properties of the instruments (see Section 3.5.1). From testing the assumption of normality for multivariate tests, Mahalanobis distance exceeded the critical value for the BATM subscales, indicating that there were multiple outliers for the BATM subscales. The standardised residual scores cut off point is  $\pm 3$ . If values exceed  $\pm 3$ , there are possible outliers. For univariate and multivariate outliers, cases were deleted listwise. Initially, number of sources and importance of sources were entered as predictors of menstrual attitudes. Both yielded tolerance values smaller than .20 and VIF values larger than 5. The condition index was higher than 30 for both variables. This indicates the likelihood of multicollinearity between the predictors and that the predictors may be measuring the same underlying construct. Therefore, I decided to remove the number of sources and retain the importance of sources. Although the evidence is premature, the literature suggests that it

matters from whom and where girls receive information because different sources convey different information (Brookes-Gunn & Ruble, 1983; Marván & Molina-Abolnik, 2012).

Linearity and homoscedasticity were tested by examining standardised residual plots between the predicted dependent variable scores and errors of prediction (Osborne & Waters, 2002). Homoscedasticity assumes that the dependent variables have equal variance across the independent variables (Hair et al., 2014). It is ideal for the residuals to be scattered evenly around the horizontal line. A visual examination of the plots (see Figure 1 to 5 in Appendix F) shows that the scatterplot is linear and homoscedastic. In addition, regression analyses assume no multicollinearity, which means that the predictor variables should not be highly correlated ( $r < 0.8$ ). Table 3.10 displays Pearson's product-moment correlations between the predictor variables.

Table 3.10

*Pearson's Correlation Matrix among Predictor Variables*

	Age	Age at Menarche	Level of Preparedness	Maternal Education	Importance of Sources	Self-Esteem	Body Surveillance	Body Shame
Age	1.00	.04	.03	.01	-.00	.08**	-.11***	-.13***
Age at Menarche		1.00	.15***	.04	.07**	.08**	.00	-.05
Level of Preparedness			1.00	.09**	.11***	.10***	.00	-.07**
Maternal Education				1.00	.02	.05	.01	-.01
Importance of Sources					1.00	-.01	.07**	.05
RSES						1.00	-.34***	-.49***
OBCS: Body Surveillance							1.00	.455***
OBCS: Body Shame								1.00

*Note.* RSES = Rosenberg Self-Esteem Scale; OBCS = Objectified Body Consciousness Scale.

\*\* $p < .01$ , \*\*\* $p < .001$

It is evident from Table 3.10 that there are no correlations greater than 0.8 and thus no multicollinearity among the predictor variables

### **3.7 Summary**

In this chapter, I briefly discussed the methodology employed in this study to answer the research questions and hypotheses. I first provided a brief description of the research design I employed, followed by a description of my sample, the procedures and ethical considerations I followed, the measuring instruments I utilised, and concluded with the data analysis I employed in this study. In the next chapter, I will present the assumptions underlying each of the statistical tests I used and the findings of this study.

## CHAPTER FOUR

### RESULTS

#### 4.1 Introduction

My analyses aimed to explore differences in female university students' attitudes towards menstruation for age and religious groups, age differences of their evaluation of self and their bodies, and possible predictors of their attitudes towards menstruation. The previous chapter provided an overview of the methodology used in this study. In this chapter, I report the descriptive statistics for the variables used in the multivariate tests; and the findings from the multivariate tests, using Hotelling's  $T^2$  and Pillai's Trace, to test for group differences on the various dependent variables. Thereafter, I present the descriptive statistics for the variables used in the regression analyses and the findings from the analyses.

#### 4.2 Multivariate Tests

##### 4.2.1 Descriptive statistics

Below I report the descriptive statistics for the variables used in the multivariate tests: Hotelling's  $T^2$  tests and Pillai's trace (Hypothesis 1 and 2). The descriptive statistics of the full sample and the 20% sample for each of the analyses are reported below. In addition to using the 20% sample to re-test Box's  $M$ , I used the 20% sample to ensure that I did not wrongfully reject the null hypothesis because of the large sample size and unequal group sizes of the full sample. Table 4.1 displays the descriptive statistics for the dependent variables of the full sample and the 20% sample.

### 4.2.1.1 Hotelling's $T^2$ tests

Table 4.1

*Descriptive Statistics for the Dependent Variables for the Full Sample (N = 1517) and the Twenty Percent Sample (n = 435)*

Measures	Full sample (N = 1517)							Twenty percent sample (n = 435)					
	Min	Max	M	SD	Skewness	Kurtosis	Min	Max	M	SD	Skewness	Kurtosis	
BATM													
Secrecy	1.00	3.92	2.24	.61	.20	-.49	1.00	3.67	2.20	.57	.17	-.38	
Annoyance	2.08	5.00	3.56	.58	-.16	-.40	2.08	5.00	3.49	.56	-.00	-.41	
Proscriptions and Prescriptions	1.00	3.89	2.18	.64	.10	-.66	1.00	3.78	2.11	.64	.10	-.80	
Disability	1.00	4.80	2.31	.81	.29	-.61	1.00	4.20	2.22	.74	.37	-.46	
Pleasant	1.33	4.50	2.85	.61	-.10	-.33	1.67	4.00	2.84	.55	-.21	-.57	
RSES	5.00	30.00	20.15	5.38	-.23	-.48	7.00	30.00	20.57	5.17	-.16	-.50	
OBCS													
Body Surv.	2.00	7.00	4.47	.95	-.09	-.36	2.00	6.38	4.34	.86	-.11	-.43	
Body Shame	1.00	7.00	3.55	1.22	.37	-.39	1.00	6.50	3.36	1.14	.38	-.34	

*Note*, BATM = Beliefs about and Attitudes Towards Menstruation Scale; RSES = Rosenberg Self-Esteem Scale; OBCS = Objectified Body Consciousness Scale ; Body Surv. = Body Surveillance.

It is evident from Table 4.1 that the descriptive statistics of the full sample and the 20% sample on the dependent variable are similar, and thus, the results of the samples are comparable.

In Table 4.2, I report the mean scores for age groups on the BATM subscales. Here, I report the mean scores for the full sample and the 20% sample.

Table 4.2

*Mean Scores of Age Groups on the BATM Subscales for the Full Sample (N = 1517) and the Twenty Percent Sample (n = 435)*

Measures	Full sample (N = 1517)				Twenty percent sample (n = 435)			
	Emerging adult women (n = 1284)		Early adult women (n = 233)		Emerging adult women (n = 214)		Early adult women (n = 221)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Secrecy	2.26	.62	2.13	.54	2.30	.59	2.11	.54
Annoyance	3.57	.59	3.47	.55	3.52	.56	3.46	.55
Proscriptions and Prescriptions	2.22	.64	2.00	.63	2.20	.65	2.01	.62
Disability	2.35	.82	2.14	.71	2.30	.78	2.14	.69
Pleasant	2.86	.61	2.81	.59	2.87	.54	2.82	.56

*Note.* BATM = Beliefs about and Attitudes Towards Menstruation.

Table 4.2 shows that the descriptive statistics of the full sample and the 20% sample, for each age group, on the BATM subscales are similar and comparable.

In Table 4.3, I report the mean scores for self-esteem, body surveillance and body shame, by age group. The mean scores for the full sample are reported alongside the mean scores of the 20% sample.

Table 4.3

*Mean Scores for Age Groups on Self-Esteem, and the Body Surveillance and Body Shame Subscales of the OBCS, for the Full Sample (N = 1517) and the Twenty Percent Sample (n = 435)*

Measures	Full sample (N = 1517)				Twenty percent sample (n = 435)			
	Emerging adult women (n = 1284)		Early adult women (n = 233)		Emerging adult women (n = 214)		Early adult women (n = 221)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
RSES	20.01	5.38	20.88	5.33	20.25	5.15	20.87	5.17
OBCS: Body Surveillance	4.51	.95	4.23	.88	4.50	.85	4.19	.85
OBCS: Body Shame	3.61	1.23	3.21	1.08	3.53	1.18	3.19	1.07

*Note.* RSES = Rosenberg Self-Esteem Scale; OBCS = Objectified Body Consciousness Scale.

Table 4.3 confirms that the descriptive statistics of the full sample and the 20% sample, for self-esteem, body surveillance and body shame, by age are similar and comparable.

#### 4.2.1.2 MANOVA – Pillai’s Trace

In Table 4.4, I display the descriptive statistics for the full sample and the 20% sample included in the analysis for religious differences, on the BATM subscales. The descriptive statistics only include participants who indicated an affiliation to three religious groups, namely Christianity, Islam, and women who were not religious, labelled “None”, because the other religions had too few participants to yield statistical significance. The purpose of the 20% sample was to ensure that I did not wrongfully reject the null hypothesis because of the large sample size and unequal group sizes of the full sample.

Table 4.4

*Descriptive Statistics for the BATM Subscales for the Full Sample (N = 1464) and the Twenty Percent Sample (n = 425)*

Measures	Full sample (N = 1464)						Twenty percent sample (n = 425)					
	Min	Max	M	SD	Skewness	Kurtosis	Min	Max	M	SD	Skewness	Kurtosis
Secrecy	1.00	3.92	2.26	.61	.18	-.48	1.00	3.67	2.21	.57	.16	-.39
Annoyance	2.08	5.00	3.56	.58	-.17	-.38	2.08	5.00	3.49	.56	-.00	-.41
Proscriptions and Prescriptions	1.00	3.89	2.19	.64	.10	-.64	1.00	3.78	2.10	.64	.11	-.79
Disability	1.00	4.80	2.33	.80	.28	-.63	1.00	4.20	2.22	.74	.37	-.47
Pleasant	1.33	4.50	2.85	.61	-.10	-.34	1.67	4.00	2.84	.54	-.23	-.56

*Note*, BATM = Beliefs about and Attitudes Towards Menstruation Scale.

It is evident from Table 4.4, that the descriptive statistics for the full sample and the 20% sample, on the BATM subscales, are similar, and thus, the results of the samples are comparable.

In Table 4.5, I only present the descriptive statistics for participants who indicated an affiliation to three religious groups, namely Christianity, Islam, and women who were not religious, labelled “None”, because the other religions had too few participants to yield statistical significance. For each religion, I report the descriptive statistics of the full sample and the 20% sample.

Table 4.5

*Mean Scores for Religion on the BATM Subscales for the Full Sample (N = 1464) and the Twenty Percent Sample (n = 425)*

	Full sample (N = 1464)						Twenty percent sample (n = 425)					
	Christianity (n = 1178)		Islam (n = 55)		None (n = 231)		Christianity (n = 324)		Islam (n = 15)		None (n = 86)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Secrecy	2.31	.60	2.17	.62	1.99	.58	2.27	.56	2.32	.31	1.96	.57
Annoyance	3.58	.58	3.33	.65	3.53	.55	3.48	.56	3.47	.55	3.52	.57
Proscriptions and Prescriptions	2.22	.64	2.50	.63	1.97	.57	2.13	.65	2.70	.36	1.91	.56
Disability	2.36	.81	2.39	.77	2.13	.74	2.25	.76	2.40	.57	2.09	.72
Pleasant	2.84	.62	3.12	.45	2.05	.53	2.83	.55	3.01	.26	2.86	.55

*Note.* BATM = Beliefs about and Attitudes Towards Menstruation Scale.

Table 4.5 shows that the descriptive statistics of the full sample and the 20% sample, for each religious group, on the BATM subscales are similar and comparable.

## 4.2.2 Results of multivariate tests

For the analyses of each of the hypotheses, I present the data for the full sample and the 20% sample. The purpose of the 20% sample was for me to check that I did not wrongfully reject the null hypothesis, thus making a Type 1 error. Drawing a random 233 cases from the larger group remedied the issue of unequal group sizes and concerns I had about homogeneity of variance-covariance.

### 4.2.2.1 Hotelling's $T^2$ tests

To determine whether there were differences between emerging adult women (18 to 23 years) and early adult women (24 to 36 years), in terms of their attitudes towards menstruation, as well as self-esteem, body surveillance and body shame, the scores for the age groups were compared with each other. These two groups were compared in terms of the BATM subscales which measures one construct, namely attitudes towards menstruation (Hypothesis 1.1). The two groups were also compared using the RSES, and Body Surveillance and Body Shame subscales of the OBCS, which are conceptually related and measure a second underlying construct relating to women's evaluation of the self and body (Hypothesis 2). Multivariate (Hotelling's  $T^2$ ) and univariate ( $F$ -test) analyses were conducted to test both hypotheses. The results of the multivariate tests are presented in Table 4.6.

Table 4.6

*Results of Multivariate Tests for Age Differences for the Full Sample (N = 1517) and the Twenty Percent Sample (n = 435)*

Variable	Test statistic	Full sample (N = 1517)			Twenty percent sample (n = 435)		
		Value	F	p	Value	F	p
Age differences (Hypothesis 1.1)	Hotelling's $T^2$	.019	5.73	< .001	.043	3.66	.003
Age differences (Hypothesis 2)	Hotelling's $T^2$	.018	9.09	< .001	.042	6.08	< .001

*Note.* Hypothesis 1.1 = Age differences on the Beliefs about and Attitudes Towards Menstruation (BATM) subscales; Hypothesis 2 = Age differences on the Rosenberg Self-Esteem Scale (RSES), and Body Surveillance and Body Shame subscales of the Objectified Body Consciousness Scale (OBCS).

The results of the multivariate analyses in Table 4.6 indicates a significant main effect for attitudes towards menstruation, for the full sample and the 20% sample, Hotelling's  $T^2 = .019$ ,  $F(5,1511) = 5.73$ ,  $p < .001$  and Hotelling's  $T^2 = .043$ ,  $F(5,429) = 3.66$ ,  $p < .01$ , respectively. Furthermore, for the full sample and the 20% sample, Table 4.7 indicates a significant main effect for self-esteem, body surveillance and body shame, Hotelling's  $T^2 = .018$ ,  $F(3,1513) = 9.09$ ,  $p < .001$  and Hotelling's  $T^2 = .042$ ,  $F(3,431) = 6.08$ ,  $p < .001$ , respectively.

Given the significance of the overall test, the univariate main effects were examined. When examining univariate analyses, it is suggested that one use a higher alpha level to lower the chance of a Type 1 error. The adjusted alpha level is set by using a Bonferroni's adjustment. This is done by dividing the original alpha level of .05 by the number of dependent variables (Pallant, 2010; Tabachnick & Fidell, 2013). Since, I explored five dependent variables measuring attitudes towards menstruation, I divided .05 by 5, which gave me a new alpha level of .01. I considered the results from the univariate analyses significant only if  $p < .01$ . I present the univariate results for difference in age groups in terms of attitudes towards menstruation in Table 4.7.

Table 4.7

*Results of Univariate Tests of the Differences between Emerging Adult and Early Adult Women in terms of the BATM Subscales for the Full Sample (N = 1517) and the Twenty Percent Sample (n = 435)*

Variable	Full sample (N = 1517)			Twenty percent sample (n = 435)				
	Mean difference		F	p	Mean difference		F	p
	Emerging adult - Early adult women				Emerging adult - Early adult women			
Secrecy	0.13		9.68	.002	0.19		12.28	.001
Annoyance	0.11		6.56	.011	0.06		1.18	.279
Proscriptions and Prescriptions	0.21		22.27	< .001	0.16		9.61	.002
Disability	0.21		13.29	< .001	0.16		5.03	.025
Pleasant	0.05		1.26	.262	0.05		0.78	.377

*Note.* Used a Bonferroni adjusted alpha level of .01. Results are significant if  $p < .01$ ; BATM = Beliefs about and Attitudes Towards Menstruation Scale.

It is evident from Table 4.7 that, for the full sample, emerging adult women ( $n = 1284$ ) differed significantly from early adult women ( $n = 233$ ) in terms of secrecy,  $F(1,1515) = 9.68, p < .01$ , proscriptions and prescriptions,  $F(1,1515) = 22.27, p < .001$ ; and disability,  $F(1,1515) = 13.29, p < .001$ . Similarly, for the 20% sample, Table 4.7 indicates that emerging adult women ( $n = 214$ ) differed significantly from early adult women ( $n = 221$ ) in terms of secrecy,  $F(1,433) = 12.28, p < .01$  and proscriptions and prescriptions  $F(1,433) = 9.61, p < .01$ . Unlike to the results of the full sample, the disability subscale did not yield any age group differences.

More specifically, from the means presented in Table 4.2, it is evident that, for both samples, emerging adult women were more likely than early adult women to view menstruation as secretive, and having proscriptions and prescriptions. Thus, I rejected the null hypothesis which stated that there are no significant differences between emerging adult women and early adult women regarding attitudes towards menstruation.

In Table 4.8, I present the univariate results for age differences in terms of self-esteem, body surveillance, and body shame. Tabachnick and Fidell (2013) recommend that one should use a higher alpha level to lower the chance of a Type 1 error when examining the univariate main effects. The higher alpha level is set by dividing the original alpha level .05 by the number of dependent variables. Since I explored three dependent variables, I divided .05 by 3, which gave me a new alpha level of .017. I considered the results from the univariate analyses significant only if  $p < .017$ .

Table 4.8

*Results of Univariate Tests of the Differences between Emerging Adult and Early Adult Women in terms of Self-esteem, and the Body Surveillance and Body Shame subscales of the OBCS for the Full Sample (N = 1517) and the Twenty Percent Sample (n = 435)*

Variable	Full sample (N = 1517)			Twenty percent sample (n = 435)		
	Mean difference			Mean difference		
	Emerging adult - Early adult women	F	p	Emerging adult - Early adult women	F	p
RSES	0.87	5.07	.024	0.62	1.57	.210
Body Surveillance	0.28	17.50	< .001	0.31	14.62	< .001
Body Shame	0.40	21.30	< .001	0.34	10.10	.002

*Note.* Used a Bonferroni adjusted alpha level of .017. Results are significant if  $p < .017$ ; RSES = Rosenberg Self-Esteem Scale; OBCS = Objectified Body Consciousness Scale.

It is evident from Table 4.8, that for the full sample, emerging adult women ( $n = 1284$ ) differed significantly from early adult women ( $n = 233$ ) in terms of body surveillance,  $F(1,1515) = 17.50, p < .001$  and body shame,  $F(1,1515) = 21.30, p < .001$ , but not self-esteem. Similarly, from Table 4.9 it is evident that the results of the 20% sample confirmed the findings of the full sample and indicate that emerging adult women ( $n = 214$ ) differed significantly from early adult women ( $n = 221$ ) only in terms of body surveillance,  $F(1,433) = 14.62, p < .001$  and body shame  $F(1,433) = 10.10, p < .01$ .

More specifically, from the mean scores in Table 4.3, it is evident that, for both samples, emerging adult women were more likely than early adult women to engage in body surveillance and body shame. Thus, although there were no significant age differences with regard to self-esteem, I rejected the part of the null hypothesis which stated that there are no significant differences between emerging adult women and early adult women in terms of body surveillance and body shame.

#### **4.2.2.2 MANOVA – Pillai's Trace**

To determine whether there were religious group differences in terms of attitudes towards menstruation the scores for the religious groups were compared with each other (hypothesis 1.2). Because the other religions had too few participants to yield statistical significance, I compared the scores of participants who indicated an affiliation to three religious groups, namely Christianity, Islam and "None", which describes women who are not religious. Therefore, of the 1517 participants, of the full sample, 1464 were eligible for this analysis. The purpose of the 20% sample was to ensure that I did not make a Type 1 error. The 20% sample used for testing religious differences was the same sample used for age differences. However, considering that only three religious groups were eligible, this sample consisted of 425 participants. Although the group sizes were still unequal, Box's  $M$  was greater than .05, and I no longer had concerns about homogeneity of variance-covariance

matrices. The three religious groups were compared in terms of the BATM subscales by means of multivariate (Pillai's Trace) and univariate ( $F$ -test) analyses. I present the results of the multivariate tests in Table 4.9.

Table 4.9

*Results of Multivariate Tests for Religious Differences on the BATM for the Full Sample ( $N = 1464$ ) and the Twenty Percent Sample ( $n = 425$ )*

Variable	Test statistic	Full sample ( $N = 1464$ )			Twenty percent sample ( $n = 425$ )		
		Value	$F$	$p$	Value	$F$	$p$
Religion	Pillai's Trace	.071	10.76	< .001	.095	4.18	< .001

*Note.* BATM = Beliefs about and Attitudes Towards Menstruation Scale.

It is evident from Table 4.9 that the one-way MANOVA revealed a significant multivariate main effect for religion, for the full sample and the 20% sample, Pillai's Trace = .071,  $F(10,2916) = 10.76$ ,  $p < .001$ , and Pillai's Trace = .095,  $F(10,838) = 4.18$ ,  $p < .001$ , respectively.

Since the overall test was significant, I examined the univariate main effects. I used a higher alpha level when I examined the univariate main effects, to lower the chance of a Type 1 error. Since I had five dependent variables, the higher alpha level was set by dividing the original alpha level of .05 by five (Tabachnick & Fidell, 2013). The new alpha level is .01. I only considered the results from the univariate analyses significant if  $p < .01$ . In Table 4.10, I present the univariate results.

Table 4.10

*Results of Univariate Tests of the Differences between Participants indicating Christianity, Islam and No Religious Affiliation as their Religious Groups, on the Five BATM Subscales for the Full Sample (N = 1464) and the Twenty Percent Sample (n = 425)*

Variable	Full sample (N = 1464)		Twenty percent sample (n = 425)	
	F	p	F	p
Secrecy	28.00	< .001	10.79	< .001
Annoyance	5.19	.006	.16	.855
Proscriptions and Prescriptions	22.21	< .001	11.30	< .001
Disability	8.80	< .001	2.00	.137
Pleasant	5.80	.003	.81	.447

*Note.* Used a Bonferroni adjusted alpha level of .01. Results are significant if  $p < .01$ ; BATM = Beliefs about and Attitudes Towards Menstruation Scale.

Table 4.10 indicates that, for the full sample, there were significant differences between religions in terms of secrecy,  $F(2,1461) = 28.00$ ,  $p < .001$ ; annoyance,  $F(2,1461) = 5.19$ ,  $p < .01$ ; proscriptions and prescriptions,  $F(2,1461) = 22.21$ ,  $p < .001$ ; disability,  $F(2,1461) = 8.80$ ,  $p < .001$ ; and pleasant,  $F(2,1461) = 5.80$ ,  $p < .01$ . However, for the 20% sample, Table 4.10 indicates that there were only significant differences between religions in terms of secrecy,  $F(2,422) = 10.79$ ,  $p < .001$  and proscriptions and prescriptions  $F(2,422) = 11.30$ ,  $p < .001$ . The mean scores, for the three religious groups, on the BATM subscales are reported in Table 4.5.

### Post-hoc analyses

Bonferroni's post-hoc test is the most commonly used test. The Bonferroni's test controls well against a Type I error rate and is easy to compute, but lacks statistical power when sample sizes are unequal. I used an alpha level of  $p > .001$  for Box's  $M$  because my sample size was large and unequal (Tabachnick & Fidell, 2013). Box's  $M$  for religious differences had a significance,  $p = .001$  which is the exact cut off (Tabachnick & Fidell,

2013). Considering that there is some uncertainty about the homogeneity of variance-covariance assumption in this instance and my group sample sizes are unequal, I conducted Games-Howell's post-hoc tests for the full sample (Field, 2013.).

However, Hochberg GT2 post-hoc tests should be used when sample sizes are unequal, but equal variances are assumed (Field, 2013). Because my sample sizes differ, but equal variances are assumed, I conducted Hochberg's GT2 post-hoc tests for the 20% sample. I used a higher alpha level to reduce the chance of a Type 1 error. The new alpha level is calculated by dividing .05 by the number of pair-wise tests. Therefore, I divided 0.5 by the number of comparisons made, which is three, thus the new alpha level is .017. Table 4.11 reports the post-hoc analyses for the full sample and 20% sample.

Table 4.11

*Multiple Comparisons of Religious Groups on the BATM Subscales using Games Howell's Post-hoc Analyses for the Full**Sample (N = 1464) and Hochberg's GT2 Post-hoc Analyses for the Twenty Percent Sample (n = 425)*

Dependent Variable	(I) Religion	(J) Religion	Games-Howell's Post-hoc Analyses Full sample (N = 1464)				Hochberg's GT2 Post-hoc Analyses Twenty percent sample (n = 425)				
			Mean Difference (I-J)	p	95% CI		Mean Difference (I-J)	p	95% CI		
					LL	UL			LL	UL	
Secrecy	Christianity	None	.32	< .001	.22	.42	.31	< .001	.15	.47	
		Islam	.14	.226	-.06	.35	-.05	.982	-.40	.30	
	None	Christianity	-.32	< .001	-.42	-.22	-.31	< .001	-.47	-.15	
		Islam	-.18	.144	-.40	.04	-.36	.064	-.73	.01	
	Islam	Christianity	-.14	.226	-.35	.06	.05	.982	-.30	.40	
		None	.18	.144	-.04	.40	.36	.064	-.01	.73	
	Annoyance	Christianity	None	.04	.544	-.05	.14	-.04	.930	-.20	.13
			Islam	.25	.018	.04	.46	.01	1.000	-.34	.37
None		Christianity	-.04	.544	-.14	.05	.04	.930	-.13	.20	
		Islam	.21	.078	-.02	.43	.05	.984	-.33	.43	
Islam		Christianity	-.25	.018	-.46	-.04	-.01	1.000	-.37	.34	
		None	-.21	.078	-.43	.02	-.05	.984	-.43	.33	
Proscriptions And Prescriptions		Christianity	None	.25	< .001	.15	.35	.22	.011	.04	.40
			Islam	-.28	.005	-.49	-.08	-.57	.002	-.96	-.17
	None	Christianity	-.25	< .001	-.35	-.15	-.22	.011	-.40	-.04	
		Islam	-.53	< .001	-.75	-.31	-.79	< .001	-1.21	-.37	
	Islam	Christianity	.28	.005	.08	.49	.57	.002	.17	.96	
		None	.53	< .001	.31	.75	.79	< .001	.37	1.21	

*Note.* Used a Bonferroni adjusted alpha level of .017. The mean difference is significant if  $p < .017$ ; BATM = Beliefs about and Attitudes Towards Menstruation Scale; CI = Confidence Interval; LL = Lower Limit; UL = Upper Limit.

Table 4.11 continued

Dependent Variable	(I) Religion	(J) Religion	Games-Howell's Post-hoc Analyses				Hochberg's GT2 Post-hoc Analyses			
			Full sample ( $N = 1464$ )				Twenty percent sample ( $n = 425$ )			
			Mean Difference (I-J)	$p$	95% CI		Mean Difference (I-J)	$p$	95% CI	
				<i>LL</i>	<i>UL</i>			<i>LL</i>	<i>UL</i>	
Disability	Christianity	None	.24	< .001	.11	.37	.16	.218	-.06	.37
		Islam	-.03	.963	-.28	.23	-.15	.827	-.62	.32
	None	Christianity	-.24	< .001	-.37	-.11	-.16	.218	-.37	.06
		Islam	-.27	.059	-.54	.01	-.31	.358	-.81	.19
	Islam	Christianity	.03	.963	-.23	.28	.15	.827	-.32	.62
		None	.27	.059	-.01	.54	.31	.358	-.19	.81
Pleasant	Christianity	None	-.01	.988	-.10	.09	-.02	.976	-.18	.13
		Islam	-.28	< .001	-.44	-.13	-.18	.514	-.52	.17
	None	Christianity	.01	.988	-.09	.10	.02	.976	-.13	.18
		Islam	-.28	< .001	-.45	-.11	-.15	.672	-.52	.21
	Islam	Christianity	.28	< .001	.13	.44	.18	.514	-.17	.52
		None	.28	< .001	.11	.45	.15	.672	-.21	.52

*Note.* Used a Bonferroni adjusted alpha level of .017. The mean difference is significant if  $p < .017$ ; BATM = Beliefs about and Attitudes Towards Menstruation Scale; CI = Confidence Interval; LL = Lower Limit; UL = Upper Limit.

Games-Howell's post-hoc analyses in Table 4.11 indicates that, for the full sample, on level of secrecy and disability, significant differences were found between Christianity and no religious affiliation ( $p < .001$ ). Regarding proscriptions and prescriptions, there were significant differences between Christianity and no religious affiliation, as well as Islam and no religious affiliation ( $p < .001$ ), and Christianity and Islam ( $p < .01$ ). Similarly, on level of pleasantness, there were significant differences between Islam and Christianity, and Islam and no religious affiliation ( $p < .001$ ). There were no significant differences on level of annoyance associated with menstruation, using a Bonferroni adjusted alpha level of .017. For the 20% sample, the univariate analyses indicated that there were significant differences on level of secrecy as well as proscriptions and prescriptions.

Similar to the full sample, from Hochberg's GT2 post-hoc analyses, in Table 4.11, it is evident that on level of secrecy, significant differences were found between Christianity and no religious affiliation ( $p < .001$ ). For proscriptions and prescriptions, there were significant differences between Christianity and no religious affiliation ( $p < .05$ ), Islam and no religious affiliation ( $p < .001$ ), and Islam and Christianity ( $p < .01$ ). There were no significant differences on level of annoyance, disability and pleasantness associated with menstruation, using a Bonferroni adjusted alpha level of .017. The confidence intervals for these significant results, for both samples, do not cross zero, therefore I can be confident that religion seems to have an effect on attitudes towards menstruation. Thus, I rejected the null hypothesis which stated that there are no significant differences between religions in terms of attitudes towards menstruation.

### 4.3 Multiple Regression Analyses

#### 4.3.1 Descriptive statistics

Thirty-four participants, from the full sample, indicated that they could not remember their age at menarche. These cases and cases with outliers were deleted listwise for the regression analyses. Therefore, the regression analyses were conducted using the data of the remaining 1456 participants. The survey did not ask participants to rank their sources of information according to importance. Therefore, I used the literature to guide me in deciding the importance of sources, and allocating a numerical value to each, with eight being allocated to the most important source and one to the source of least importance. The literature emphasises the mother as an important source of information (Marván & Molina-Abolnik, 2012; Marván, Morales et al., 2006; Ruble & Brookes-Gunn, 1982; Uskul, 2004). The ranking of the additional sources of information is not reiterated and confirmed. However, it seems as if the mother as a source of information is followed by sisters and other female relatives, friends, mass media, school, and other, such as books, doctors, nurses and relatives. The father is suggested to play a minimal role, while brothers are seldom mentioned in the literature. The values were summed and the minimum total score was 0 while the maximum total score was 36 for each participant. I selected a 20% random sample ( $n = 315$ ) from the full sample ( $N = 1456$ ). The 20% sample was, once again, used to ensure that I did not make a Type 1 error. Table 4.12 summarises the descriptive statistics for the full sample and 20% sample.

Table 4.12

*Descriptive Statistics for Predictor and Criterion Variables for the Full Sample (N = 1456) and the Twenty Percent Sample (n = 315)*

Measure	Full sample (n = 1456)						Twenty percent sample (n = 315)					
	Min.	Max.	M	SD	Skewness	Kurtosis	Min.	Max.	M	SD	Skewness	Kurtosis
Predictor Variables:												
Age	18.00	33.00	21.26	2.48	1.56	3.25	18.00	32.00	21.26	2.67	1.79	3.91
Age at menarche	9.00	19.00	12.76	1.40	.40	1.17	9.00	18.00	12.68	1.34	.04	.83
Level of prep.	1.00	4.00	2.46	1.00	-.13	-1.07	1.00	4.00	2.45	1.02	-.05	-1.13
Maternal educ.	1.00	4.00	3.64	.66	-1.93	3.43	1.00	4.00	3.65	.66	-2.08	4.27
Import. of sources	3.00	33.00	14.26	5.87	.35	-.34	3.00	30.00	14.09	6.04	.27	-.59
RSES	5.00	30.00	20.12	5.33	-.23	-.44	5.00	30.00	20.21	5.33	-.36	-.32
Body Surveillance	2.00	7.00	4.48	.94	-.09	-.35	2.25	6.75	4.50	.90	-.10	-.26
Body Shame	1.00	7.00	3.56	1.21	.37	-.37	1.13	6.75	3.41	1.14	.52	-.20
Criterion Variables:												
Secrecy	1.00	3.92	2.24	.61	.20	-.50	1.00	3.58	2.21	.58	.11	-.44
Annoyance	2.08	5.00	3.56	.58	-.14	-.40	2.15	4.85	3.52	.57	-.20	-.60
Proscriptions and Prescriptions	1.00	3.89	2.19	.64	.10	-.63	1.00	3.67	2.19	.64	.13	-.68
Disability	1.00	4.80	2.32	.81	.29	-.62	1.00	4.40	2.29	.80	.14	-.88
Pleasant	1.33	4.50	2.85	.61	-.09	-.33	1.33	4.33	2.84	.62	-.05	-.37

*Note.* Level of prep. = Level of preparedness; Maternal educ. = Maternal figure's highest level of education; Import. of sources = Importance of sources of information; RSES = Rosenberg Self-Esteem Scale.

It is evident from Table 4.12 that the descriptive statistics of the full sample and the 20% sample are similar, and thus, the results of the samples are comparable. Skewness values for the dependent variables are between -0.5 and 0.5, showing that the distributions for dependent variables are approximately symmetrical.

#### **4.3.2 Regression analyses**

Five separate multiple regression analyses were performed to test whether selected biographical and socio-contextual variables (age, age at menarche, level of preparedness, maternal figure's highest level of education, and importance of sources), as well as self-esteem, body surveillance and body shame predicted attitudes towards menstruation. The subscales of the BATM (Secrecy, Annoyance, Proscriptions and Prescriptions, Disability and Pleasant) were used as criterion variables, while the biographical variables, self-esteem, body surveillance and body shame were the predictor variables in all the regression analyses. Table 4.13 and Table 4.14 provide a summary of the individual and shared contribution of variables predicting attitudes towards menstruation, for the full sample and the 20% sample, respectively.

Table 4.13

*Summary of Multiple Regression Analyses for Variables Predicting Attitudes Towards Menstruation for the Full Sample (N = 1456)*

Variable	Secrecy		Annoyance		Proscriptions and Prescriptions		Disability		Pleasant	
	<i>R</i> <sup>2</sup>		<i>R</i> <sup>2</sup>		<i>R</i> <sup>2</sup>		<i>R</i> <sup>2</sup>		<i>R</i> <sup>2</sup>	
	<i>F</i>	14.80	<i>F</i>	15.24	<i>F</i>	15.38	<i>F</i>	11.06	<i>F</i>	9.74
	<i>p</i>	< .001	<i>p</i>	< .001	<i>p</i>	< .001	<i>p</i>	< .001	<i>p</i>	< .001
	<i>B</i>	<i>p</i>	<i>B</i>	<i>p</i>	<i>B</i>	<i>p</i>	<i>B</i>	<i>p</i>	<i>β</i>	<i>p</i>
Age	-.05	.038	-.05	.060	-.13	< .001	-.09	< .001	-.04	.150
Age at menarche	.08	.002	.04	.136	.02	.537	.04	.175	-.03	.214
Level of prep.	-.02	.393	-.06	.025	-.002	.945	-.02	.538	.12	< .001
Maternal educ.	-.03	.236	-.04	.114	-.15	< .001	-.08	.002	-.02	.373
Import. of sources	.10	< .001	-.06	.017	-.04	.099	-.03	.205	.11	< .001
RSES	-.02	.576	-.15	< .001	-.13	< .001	-.11	< .001	.03	.274
Body Surv.	-.003	.930	.06	.057	-.14	< .001	-.07	.011	-.12	< .001
Body Shame	.23	< .001	.10	.001	.09	.007	.14	< .001	-.04	.165

*Note.* Level of prep. = Level of preparedness; Maternal educ. = Maternal figure's highest level of education; Import. of sources = Importance of sources of information about menstruation; RSES = Rosenberg Self-Esteem Scale; Body Surv. = Body Surveillance.

Table 4.14

*Summary of Multiple Regression Analyses for Variables Predicting Attitudes Towards Menstruation for the Twenty Percent Sample (n = 315)*

Variable	Secrecy		Annoyance		Proscriptions and Prescriptions		Disability		Pleasant	
	$R^2$	.092	$R^2$	.102	$R^2$	.067	$R^2$	.096	$R^2$	.042
	$F$	3.90	$F$	4.37	$F$	2.75	$F$	4.06	$F$	1.68
	$P$	< .001	$p$	< .001	$p$	.006	$p$	< .001	$p$	-
	$B$	$p$	$B$	$p$	$B$	$p$	$B$	$p$	$\beta$	$p$
Age	-.12	.038	-.03	.557	-.15	.008	-.11	.056	-.01	.897
Age at menarche	.10	.061	-.09	.101	.03	.611	.06	.303	.02	.797
Level of prep.	.03	.641	-.06	.266	-.001	.983	-.01	.876	.09	.137
Maternal educ.	-.05	.370	-.07	.209	-.17	.004	-.19	.001	-.14	.015
Import. of sources	-.21	< .001	-.05	.403	-.08	.184	-.12	.035	.03	.591
RSES	.04	.533	-.14	.028	-.06	.323	-.08	.242	.04	.518
Body Surv.	-.01	.882	.17	.007	-.05	.457	.07	.261	-.10	.133
Body Shame	.16	.016	.03	.711	.03	.661	.06	.353	-.03	.678

*Note.* Level of prep. = Level of preparedness; Maternal educ. = Maternal figure's level of education; Import. of sources = Importance of sources of information about menstruation; RSES = Rosenberg Self-Esteem Scale; Body Surv. = Body Surveillance.

For the full sample, it is evident from Table 4.13, that for secrecy, age ( $p < .05$ ), age at menarche ( $p < .01$ ), importance of sources of information ( $p < .001$ ), and body shame ( $p < .001$ ) were significant predictors. These four predictors explained 7.6% of the variance in secrecy levels ( $R^2 = .076$ ,  $F(8,1447) = 14.80$ ,  $p < .001$ ). Level of preparedness ( $p < .05$ ), importance of sources of information ( $p < .05$ ), self-esteem ( $p < .001$ ) and body shame ( $p < .01$ ) were significant predictors of annoyance. These four predictors accounted for 7.8% of the variance in annoyance levels ( $R^2 = .078$ ,  $F(8,1447) = 15.24$ ,  $p < .001$ ). Age ( $p < .001$ ), maternal figure's level of education ( $p < .001$ ), self-esteem, ( $p < .001$ ), body surveillance ( $p < .001$ ) and body shame ( $p < .01$ ) were significant predictors of proscriptions and prescriptions. Similarly, age ( $p < .001$ ), maternal figure's level of education ( $p < .01$ ), self-esteem, ( $p < .001$ ), body surveillance ( $p < .05$ ) and body shame ( $p < .001$ ) were significant predictors of disability. These five predictors explained 7.8% of the variance in levels of proscriptions and prescriptions ( $R^2 = .078$ ,  $F(8,1447) = 15.38$ ,  $p < .001$ ) and accounted for 5.8% of variance in disability levels ( $R^2 = .058$ ,  $F(8,1447) = 11.06$ ,  $p < .001$ ). Lastly, when pleasantness was predicted, level of preparedness ( $p < .001$ ), importance of sources of information ( $p < .001$ ) and body surveillance ( $p < .001$ ) were significant predictors. These three predictors accounted for 5.1% of the variance in pleasant scores ( $R^2 = .051$ ,  $F(8,1447) = 9.74$ ,  $p < .001$ ).

For the 20% sample, Table 4.14 shows that for secrecy, age ( $p < .05$ ), importance of sources of information ( $p < .001$ ), and body shame ( $p < .05$ ) were significant predictors. These three predictors explained 9.2% of the variance in secrecy levels ( $R^2 = .092$ ,  $F(8,306) = 3.90$ ,  $p < .001$ ). Self-esteem ( $p < .05$ ) and body surveillance ( $p < .01$ ) were significant predictors of annoyance. These predictors accounted for 10.2% of the variance in annoyance levels ( $R^2 = .102$ ,  $F(8,306) = 4.37$ ,  $p < .001$ ). Age ( $p < .01$ ) and maternal figure's level of education ( $p < .01$ ) were significant predictors of proscriptions and prescriptions, and accounted for 6.7% of the variance in prescription and proscription scores ( $R^2 = .067$ ,

$F(8,306) = 2.75, p < .01$ ). For level of disability, maternal figure's level of education ( $p = .001$ ) and importance of sources of information ( $p < .05$ ) were significant predictors, and accounted for 9.6% of the variance ( $R^2 = .096, F(8,306) = 4.06, p < .001$ ). For level of pleasantness, the overall statistic was not significant,  $p > .05$ . Thus, I rejected the null hypothesis which stated that age, age at menarche, level of preparedness, maternal figure's highest level of education, importance of sources of information, self-esteem, body surveillance and body shame are not significant predictors of women's attitudes towards menstruation.

#### 4.4 Summary

In this chapter, I reported the findings of the multivariate tests, using Hotelling's  $T^2$  and Pillai's Trace, and multiple regression analyses. For each test, I presented descriptive statistics and the findings for the full sample and the 20% sample. The 20% sample enabled me to check that I did not make a Type 1 error.

I hypothesised that emerging adult women and early adult women would differ in terms of their attitudes towards menstruation, and their levels of self-esteem, body surveillance and body shame. It is interesting to note that the 20% sample only confirms differences between emerging adult women and early adult women regarding level of secrecy and beliefs in proscriptions and prescriptions, but not disability scores found in the full sample. Also, emerging adult women and early adult women did not seem to differ in terms of self-esteem. Further, I hypothesised that Christian, Muslim and women who are not religious may differ in terms of their attitudes towards menstruation. Again, the 20% sample only confirmed differences between religions regarding level of secrecy and beliefs in proscriptions and prescriptions. Moreover, from the post-hoc analyses it is evident that for levels of secrecy, for the full sample and the 20% sample, there were significant differences between Christian women and women who are not religious, but not Muslim women and

Christian women or Muslim women and women who are not religious. Interestingly, for beliefs in proscriptions and prescriptions, there were significant differences between all three religious groups. Therefore, for hypothesis one and two, exploring differences by age and religion, I rejected the null hypothesis.

With regard to possible predictors of attitudes towards menstruation, some similarities were found between the full sample and the 20% sample. For example, age, importance of sources about menstruation, and body shame seem to account for the variance in secrecy levels. For annoyance, self-esteem seems to be a significant predictor; while age and maternal figure's highest level of education seem to account for the variance in proscription and prescription scores. Furthermore, maternal figure's highest level of education seems to consistently predict disability levels. However, for the pleasant subscale, level of preparedness, importance of sources of information and body surveillance accounted for the significance of the overall model, in the full sample; yet for the 20% sample, the overall model did not yield significance. Considering that some of the variables seem to predict attitudes towards menstruation, I rejected the null hypothesis for the third hypothesis. In the next chapter, I will present the discussion, where I will contextualise my findings in relation to the literature and theoretical framework.

## CHAPTER FIVE

### DISCUSSION

#### 5.1 Introduction

In this chapter, I will contextualise my findings in relation to previous research and frame my findings using the biopsychosocial approach and objectification theory. For the purpose of this discussion, I will primarily focus my discussion on the findings that were similar for the full sample and the 20% sample. Results from the full sample, not confirmed by the 20% sample, could most likely be attributed to the large sample and unequal group size. This chapter consists of a summary of the study, discussion of the findings, limitations and strengths of the study, implications for practice, recommendations for future research, and conclusions.

#### 5.2 Summary of the Study

Young women's attitudes towards menstruation have implications for their reproductive and general well-being. It is particularly important to study women's attitudes towards menstruation because menstruation is still largely stigmatised, and menstrual taboos tend to inhibit women's freedom of movement, bodily autonomy and self-esteem, and promote gender based discrimination (Johnston-Robledo et al., 2007). The primary aim of this study was to explore whether a group of female university students' attitudes towards menstruation differ in terms of age and religion. Further aims were to explore age differences of young women's evaluation of self and their bodies, and predictors of attitudes towards menstruation. I, therefore, hypothesised that emerging adult women (18 to 23 years) and early adult women (24 to 36 years) would differ regarding their attitudes towards menstruation, and that Christian, Muslim and women who are not religious would differ regarding their attitudes towards menstruation. In addition, I hypothesised that emerging adult and early

adult women would differ in their evaluation of self and their bodies. I further hypothesised that age, age at menarche, level of preparedness, maternal figure's highest level of education, importance of sources of information, self-esteem, body surveillance and body would be significant predictors of attitudes towards menstruation.

In this study, I used a cross-sectional, online survey to measure women's attitudes towards menstruation, self-esteem and self-objectification. Participants were asked to provide their biographical information and then complete the following self-report measures: The Beliefs about and Attitudes toward Menstruation questionnaire (BATM), the Body Surveillance and Body Shame subscales, from the Objectified Body Consciousness Scale (OBCS), and the Rosenberg Self-Esteem Scale (RSES). The measuring instruments all yielded excellent reliability scores. The study included 1517 women, whose ages ranged between 18 to 36 years. The research questions were as follows:

1. How does this sample of female university students' attitudes towards menstruation differ in terms of age and religion?
2. How does this sample of female university students' evaluation of self and their bodies differ in terms of age?
3. Are the biopsychosocial factors; age, age at menarche, level of preparedness, maternal figure's highest level of education, importance of sources of information, self-esteem, body surveillance and body shame; significant predictors of this sample of female university students' attitudes towards menstruation?

## **5.3 Discussion of the Findings**

### **5.3.1 Socio-contextual factors**

Similar to other studies (e.g., Cronjé & Kritzinger, 1991; Rembeck et al., 2006; Sveinsdóttir, 2016), the mean age at menarche of the women in my study was 12.76, and the

majority of women reached menarche between 12 and 13 years. Consistent with previous studies (e.g., Aflaq & Jami, 2012; Marván, Morales et al., 2006; Marván & Molina-Abolnik, 2012), many participants in my study (87.1%) indicated their mothers as a source of information. Contrary to the above-mentioned studies, the women in this study also reported school (62.8%) and friends (41.3%) as popular sources of information. Few participants (15.2%) selected sisters as a source of information, which could be explained as only 35.8% of participants had an older sister. Perhaps, it could be argued that participants' older sisters, who reached menarche before them, may not have been prepared for their menarche and possibly did not feel confident or comfortable speaking about it to their younger siblings.

In this study, 38.9% of the participants reported feeling somewhat prepared for menarche. However, only 14.8% of the participants felt totally prepared for menarche, while 22.7% and 23.5% felt totally unprepared and somewhat unprepared for menarche, respectively. This finding is broadly consistent with the results of Marván and Molina-Abolnik (2012) who found that 39% of women reported feeling prepared to start menstruating. Approximately 46% of this sample felt unprepared (somewhat unprepared and totally unprepared) for menstruation. This finding is similar to the findings by Van Gesselleen (2013), where most participants similarly indicated feeling unprepared for menarche.

Despite most of the women in this sample reporting that their mothers had a post matric qualification, a considerable number of women reported feeling unprepared for menarche and being secretive about menstruation. These findings illustrate a lack of intergenerational transfer of information about menstruation as a maturational phenomenon between mothers and their daughters, and that mothers or significant others are not comfortable talking about menstruation to their daughters. On a socio-cultural level, given that South Africa is still a very patriarchal society (Albertyn, 2009; Bower, 2014), mothers

could still be embedded in a culture that encourages them to raise daughters that adopt stereotypical feminine attitudes to “grin and bear” their menstruation (Stubbs & Costos, 2004, p. 44). Stubbs and Costos (2004) contend that such an approach by mothers could cause a disconnection between them and their daughters, that it perpetuates the secrecy taboo about menstruation, and enables the transfer of negative attitudes about menstruation between generations.

### **5.3.2 Age and religious differences**

*How does this sample of female university students’ attitudes towards menstruation differ in terms of age and religion?*

#### **Age differences**

The first hypothesis, underlying the first research question that emerging adult and early adult women differed regarding their attitudes towards menstruation, was supported. Emerging adult women were more likely than early adult women to believe that menstruation should be kept a secret and had proscriptions and prescriptions regarding menstruation. This finding is contrary to findings from previous studies (e.g., Marván et al. 2005; Marván, Morales et al., 2006; Thurén, 1994), where older women were more likely than younger women to believe that menstruation should be managed with secrecy and that there are activities women should and should not do while menstruating. This difference in findings could be explained by the appearance culture prevailing on the university campus, where emerging adult women are more likely to internalise an outsider’s perspective about their bodies and menstruation. Thus, they still seem to believe that menstruation should be kept a secret and that there are certain activities women should and should not do while menstruating. Consistent with Fredrickson and Roberts’ (1997) objectification theory that, as women age they tend to become less concerned with others’ views about their bodies, early

adult women (the older group) in this study seemed more comfortable with their bodies. These early adult women were more likely to resist the shame, secrecy and taboos about menstruation compared to the emerging adult women. Furthermore, supposing that emerging adult women (18 to 23 years) reached menarche at 13 years, they have only menstruated for approximately 5 to 10 years, and may still believe in the taboos, portraying menstruation as a hygienic crisis that needs to be concealed, as communicated by various socialising agents.

### **Religious differences**

The second hypothesis, underlying the first research question, that Christian, Muslim and not religious women differed in terms of attitudes towards menstruation, was accepted. Religious differences were found on the secrecy as well as proscriptions and prescriptions subscales. Regarding secrecy, there were no significant differences between Muslim and Christian women or Muslim women and women who are not religious. However, Christian women were more likely than women who are not religious to believe that menstruation should be kept a secret. This finding differs with that of Dunnivant and Roberts (2012) where Muslim women were more likely than Christian and women who are not religious to believe that menstruation should be concealed. Similar to Bramwell and Zeb (2006), the absence of differences between Christian and Muslim women regarding secrecy may be attributed to these religion's shared Abrahamic origins. However, the findings of this study seem to support the assumption that women who are affiliated to more prescriptive religions tend to hold more negative attitudes towards menstruation (Dunnivant & Roberts, 2012). Dunnivant and Roberts (2012) contend that compared to Christianity, Islam could be considered a prescriptive religion. Similar to the findings by Dunnivant and Roberts (2012), Muslim women in my study were more likely to believe that menstruation has a proscriptive and prescriptive function compared to Christian women and women who are not religious, while women who are not religious were least likely to believe that there are certain activities

women should avoid and should do while menstruating. Considering that South Africa is a largely patriarchal society and that religion, as an institution, tends to be an important factor in others' perceptions of women and young women's socialisation about their position in society, insight into religious beliefs about menstruation can assist in addressing gender based discrimination (Bower, 2014). Once one has insight into religious taboos, one is able to contest these beliefs and highlight the irrationality of such taboos, creating opportunities for girls and women to adopt healthier, self-enhancing beliefs that empower them to make informed decisions regarding their bodies (Morse, 1995).

It is interesting that there were consistent age and religious differences on the level of secrecy, and proscriptions and prescriptions about menstruation. Although I did not test this, one can hypothesise that younger religious women would hold more negative attitudes towards menstruation. More specifically, emerging adult Muslim and Christian women may be more secretive about menstruation and believe that there are certain activities women should and should not do while menstruating, than early adult Muslim and Christian women and women with no religious affiliation. This may be because early adults tend to adopt and refine their worldviews, separate from their parents. Early adults also tend to be more critical of religion than emerging adults (Arnett, 2000).

### **Women's Self and Body Evaluation**

*How does this sample of female university students' evaluation of self and their bodies differ in terms of age?*

The findings for the second research question partially supported the hypothesis that emerging adult and early adult women differed in terms of their evaluation of self and their bodies. More specifically, emerging adult and early adult women only differed in terms of body surveillance and body shame, which measured self-objectification but not self-esteem.

The result that self-esteem did not differ for emerging adult and early adult women is broadly consistent with the literature which shows that self-esteem gradually increases from 18 years onwards (Orth & Robins, 2014; Robins et al., 2002). Furthermore, the finding could most likely be attributed to all the women attending a university with quite a competitive admission policy and the fact that the age range used in my study was not as diverse as that of previous studies (e.g., Orth et al., 2010; Orth & Robins, 2014; Robins et al., 2002).

Considering that body surveillance and body shame were used to measure self-objectification, emerging adult women were more likely than early adult women to engage in self-objectification. This finding is broadly consistent with the literature that shows that age influences self-objectification, particularly body surveillance (McKinley, 1999, 2006; Greanleaf, 2005; Tiggemann & Lynch, 2001). My findings concur with the findings of Augustus-Horvath and Tylka (2009) who found that 18 to 24-year-old women were more likely than women 25 years and older to engage in body surveillance. Contrary to Augustus-Horvath and Tylka (2009), emerging adult and early adult women in my study differed in terms of body shame. The most likely explanation is that emerging adult women tend to be more preoccupied with their body's appearance than early adult women, who tend to feel more comfortable with their bodies and are more preoccupied with their life goals. Therefore, as women age they tend to be more likely to resist cultural messages that devalue their bodies, and tend to engage in less body surveillance and feel less shame towards their bodies (Augustus-Horvath & Tylka, 2009; McKinley, 1999). For emerging adult women, a culture that objectifies women's bodies and attaches women's worth and success to their body's appearance, could inform their tendency to engage in more body surveillance and experience more body shame than early adult women.

### 5.3.3 Predictors of attitudes towards menstruation

*Are the biopsychosocial factors; age, age at menarche, level of preparedness, maternal figure's highest level of education, importance of sources of information, self-esteem, body surveillance and body shame; significant predictors of this sample of female university students' attitudes towards menstruation?*

The hypothesis that age, age at menarche, level of preparedness, maternal figure's highest level of education, importance of sources of information, self-esteem, body surveillance and body shame would be significant predictors of attitudes towards menstruation was partially supported. More specifically, age was a significant predictor of level of secrecy as well as proscriptions and prescriptions. Although it only explains 7.6% of the variance in secrecy levels, importance of sources and body shame seem to be consistent predictors of secrecy. This finding is broadly consistent with Johnston-Robledo et al. (2007) who found that women who experienced menstrual shame were also more likely to feel greater body shame. Besides being a significant predictor of secrecy, body shame was also a significant predictor of levels of annoyance, proscriptions and prescriptions and disability for the full sample but not the 20% sample. These findings concur with that of Sveinsdóttir (2016) that showed that women who feel shameful about their bodies are more likely to believe that menstruation should be kept secret, and view menstruation as annoying and having proscriptions and prescriptions.

In addition, self-esteem seems to predict levels of annoyance; while maternal figure's level of education seems to be a predictor for proscriptions and prescriptions as well as level of disability. These findings show that women's attitudes towards menstruation can most likely be explained as a biopsychosocial phenomenon. For example, age which is a biological factor, body shame which is a psychological factor, and importance of sources which is a social factor, all seem to contribute significantly to level of secrecy. Furthermore, age and

maternal figure's highest level of education, a biological and social factor respectively, seems to contribute to women's belief in proscriptions and prescriptions.

It is interesting that age at menarche and level of preparedness were not consistent significant predictors of attitudes towards menstruation, for the full sample and the 20% sample. This does not mean that these variables do not influence attitudes towards menstruation. The results may have been influenced by most women reaching menarche at the average age of between 12 and 13 years. The literature shows that it could be that girls who reach menarche earlier or later than their peers tend to have more negative attitudes towards menstruation (Dan, 2013; Marván & Alcalá-Herrera, 2014). In addition, level of preparedness was measured by a single item which may not have adequately captured women's preparedness for menarche and may have influenced the findings. Furthermore, it is possible that another variable mediates or moderates the influence that age at menarche and level of preparedness has on attitudes towards menstruation. However, the findings, for the full sample, provide some evidence that women's level of preparedness could influence their likelihood to view menstruation as an annoyance and as pleasant. This finding is similar to Van Gesselleen (2013) who found that women who were more prepared for menarche were more likely to view menstruation as pleasant; while women who felt unprepared for menarche were more likely to view menstruation as annoying, disabling, to be kept a secret, and having proscriptions and prescriptions.

#### **5.4 The Biopsychosocial Approach and Objectification Theory as a Framework for Attitudes Towards Menstruation**

The above findings may be explained from a biopsychosocial approach, using objectification theory, as follows. Girls and women are active participants embedded in a specific context, where different biological, psychological and social factors influence their experiences, beliefs and attitudes towards menstruation. These biopsychosocial factors are bi-

directional and constantly interact with each other, influencing each other and the individual (Chrisler & Johnston-Robledo, 2012; Thomas & Thurston, 2012).

For example, the biological factor, age at menarche and the social factors, level of preparedness and sources of information about menstruation, may influence girls' initial reactions to menarche, which in turn may affect their self-esteem and tendency to engage in self-objectification. All of these factors could also further influence women's attitudes towards menstruation. For example, in my study, the biological factor, age, the social factor, importance of sources of information about menstruation and the psychological factor, body shame, seem to influence women's secrecy towards menstruation. However, women's attitudes towards menstruation could in turn influence the way they feel about their bodies and behave towards their bodies (Chrisler et al., 2015; Schooler et al., 2005). For example, in my study, emerging adult women seemed to hold more negative attitudes towards menstruation, and engage in greater self-objectification (body surveillance and body shame) than early adult women.

In addition, culture tends to be pervasive and exert influence on the various levels of women's experiences. Cultural messages, from various socialising agents such as family, friends, the media and religion, that encourage women to conceal their menstruation, may also encourage women to be hyper-vigilant about their bodies and feel shame regarding their body's appearance. Consistent with Fredrickson and Roberts' (1997) objectification theory, emerging adult women, in this study, tend to be more critical about their body's appearance and their sexuality than early adult women (McKinley & Hyde, 1996). During emerging adulthood, women's body's attractiveness seems to be associated with their worth, success, and ability to gain the attention of potential partners; while early adult women, are often in more stable relationships, tend to be more comfortable with their bodies and less reliant on their body's appearance to attain certain objectives. Considering that emerging adult women

tend to be more preoccupied by their body's appearance, they could be more prone to accept messages from socialising agents which stigmatise menstruation as a hygienic crisis that needs to be contained by them, for them to meet cultural standards of beauty and be socially accepted, than early adult women. Thus, in a society that objectifies women, their bodies and bodily processes, emerging adult women may feel the need to conceal their menstruation, adhere to proscriptions and prescriptions, and engage in more self-objectification in order to uphold culturally acceptable standards of appearance (Roberts, 2004; Robert & Waters, 2004). Viewing one's body in an objectifying manner and feeling shame about one's body and menstruation could have emotional and mental health consequences for women, such as anxiety, depression, low self-esteem, sexual dysfunctions and increased risk taking (Calogero, 2012; McKinley & Hyde, 1996; Roberts & Waters, 2004).

In contrast, as women age, society places less importance on their body's appearance (McKinley, 1999). Thus, early adult women tend to be more comfortable with their bodies and menstruation, and less likely to treat their menarche with secrecy, adhere to proscriptions and prescriptions, and engage in less self-objectification. In addition, early adult women's attention often shifts to their new responsibilities and roles regarding their careers, relationships, and potential motherhood, and less focus on their body's appearance. This is not to say that early adult women never engage in self-objectification. However, it seems as if age is a protective factor and helps early adult women to resist cultural messages that may shame their bodies.

## **5.5 My Findings in Relation to the South African Context**

In contrast to the study conducted by Van Gesselleen (2013), the findings of the current study are broadly consistent with the existing literature. There may be various reasons for this discrepancy. The two university contexts are different. Van Gesselleen's (2013) study was conducted in a university historically and still largely disadvantaged because of South

Africa's historical background, while the university in my study has a history of privilege. Although our studies both measured attitudes towards menstruation, we used different biopsychosocial variables. The fact that our sampling methods were different, and we administered our questionnaires in different ways, should also be considered. Furthermore, Van Gesselien's (2013) study was one of the first studies in South Africa to explore attitudes towards menstruation. Although there is a dearth of South African studies about attitudes towards menstruation, in the past two years there has been an increase in menstrual activism and awareness on campuses and in the public sphere.

Similar to previous studies (e.g., Chrisler et al., 2015; Johnston-Robledo et al., 2007; Schooler et al., 2005), the participants in my study were mostly White women, while most of the participants in Van Gesselien's (2013) study were Black and Coloured women. Therefore, the similarities in findings from my study and other studies abroad could be attributed to similarities in the demographics of the sample. Although contextual differences should be considered, one should be mindful of the similarities regarding women's attitudes towards menstruation across contexts. For example, girls and women's who feel prepared for menstruation tend to have more positive attitudes towards menstruation, irrespective of age and context (Marván, Morales et al., 2006; Van Gesselien, 2013).

Taken together, the findings of my study seems to have more statistical than practical significance. However, this does not mean that the findings should be disregarded. The most likely explanation may be that the women in my study were all university students, who are well educated, and have access to resources about menstrual stigma as well as awareness campaigns that advocate for menstruation to be destigmatised. Therefore, instead of being disregarded, the findings of this study should rather be viewed in the context of the study's limitations.

## 5.6 Limitations and Strengths of the Study

There are a few limitations to my study that could have influenced my results. Firstly, the limitations of my study relate to the sampling method and the sample. I used non-probability, convenience sampling to recruit participants for the study. Considering that menstruation still seems to be a mostly taboo topic, shrouded with secrecy, using convenience sampling assisted me to open the survey to a wider sample. However, due to time and cost constraints, my study is still limited in its scope because I only sampled women from one tertiary education institution and all the women were educated. Women who are less educated may have different attitudes towards menstruation. Thus, the sampling method and sample composition limits the generalisability of my findings.

Secondly, I used self-report measures, as well as a cross-sectional research design. Given the stigma attached to women's bodies and bodily processes, participants may have responded dishonestly despite the survey being anonymous. Furthermore, certain of the self-report questions required the women to recall experiences and rely on their memory, which could cause errors. The quantitative, cross-sectional nature of the study also prevents me from further exploring and making inferences about causal links between the predictor variables and attitudes towards menstruation. For example, I cannot draw conclusions about the type of information received or the content of the activities women believe they should and should not do when menstruating. Due to feasibility, the online survey was only available in English. However, considering that entrance into university requires students to have a standard level of proficiency in English, this limitation was unlikely to adversely affect the results. It is also possible that other, unmeasured systemic variables, such as race, socio-economic status or access to menstrual hygiene resources, might play a role in the relationships between the variables in my study.

To my knowledge, this study is one of a few studies in South Africa to explore university students attitudes towards menstruation, and the first to explore self-esteem as a predictor of attitudes towards menstruation. Although more studies exploring the relationship between various biopsychosocial factors and attitudes towards menstruation are needed in South Africa, the findings from this study could have implications for theory and practice.

### **5.7 Implications for Practice**

This study contributes to our understanding of female university students' attitudes towards menstruation and their embodiment and may have implications for theory and practice. The findings offer support for objectification theory to be extended as a framework to explain attitudes towards menstruation and could inform policies. These findings could be of interest to social researchers and health practitioners who seek to create interventions that contribute towards women's reproductive health and well-being.

Although it seems as if menstruation is discussed more freely, the findings of this study tend to suggest that women still believe that it should be dealt with secrecy. The findings also indicate that girls seemingly do not feel prepared for menarche and that their mothers tend to be a consistent source of information. Therefore, the findings could inform the development of educational resources that address the secrecy surrounding menstruation and the shame attached to menstruation and women's bodies. This could help to prepare girls for menarche so that they are less anxious and more confident about its occurrence. The results from my study also suggest the need for education about the misconceptions regarding proscriptions and prescriptions among girls and women before early adolescence and throughout emerging adulthood. Furthermore, psycho-educational programmes and interventions need to address the misconceptions and myths about menstruation, so that women do not reinforce dominant stereotypical discourses of menstruation with their own

daughters and are able to raise girls who are better prepared for menarche and menstruation, and more appreciative of their bodies.

The findings on a university sample's attitudes towards menstruation could assist student counselling and support services who may aim to reduce the shame, secrecy and stigma attached to menstruation. Student counsellors could offer training to students about menstruation, embodiment and sexuality, and psychosocial support to students for whom menstruation may have adverse psychosocial and emotional consequences on their educational experience (Padmanabhanunni & Fennie, 2017).

These findings may be important to healthcare practitioners because these age differences allow one to identify the needs of at-risk groups, such as the emerging adult women, and tailor educational programmes and interventions for their needs. The age differences in attitudes towards menstruation and self-objectification also illustrates a need for programmes that educate girls and women about menstruation and debunk the myths and stigma that perpetuate the secrecy about menstruation. Furthermore, the findings illustrate the possibility to start grassroots initiatives, where one recruits and trains early and middle adult women, who are more accepting and appreciative of their bodies, to assist in educating younger women and girls.

These psycho-educational programmes should adopt multi-sectoral and participatory approaches to address menstruation (Kirk & Sommer, 2006). In South Africa, which is still largely a patriarchal society, plagued by discrimination and the injustices of the past, a participatory approach addresses the unequal power relations between researchers and participants. A participatory approach encourages the mutual exchange of information between researchers, who are often considered the "experts", and their participants, allowing the latter to exercise agency and be empowered (Sommer, 2009). Psycho-educational programmes need to be incorporated into the mainstream school curriculum, and address the

psychological, social and emotional aspects of menstruation with learners of all genders. Moreover, these programmes should be offered to primary and secondary schools, and in tertiary education institutions. Furthermore, as Kirk and Sommer (2006) suggests, sensitisation training is required for teachers, parents, other stakeholders and members from the broader community.

## **5.8 Recommendations for Future Research**

Considering that this study is one of a few studies in South Africa about women's attitudes towards menstruation, there is a need for future research to further explore the relationship between the variables used in this study, and other unmeasured systemic variables, such as race, socio-economic status, access to menstrual hygiene resources and parental involvement, with diverse and multi-generational samples. In addition, future studies in South Africa may explore the attitudes towards menstruation of university students from different universities or create an online survey open to the general public.

Although the BATM showed excellent reliability for this sample, it needs to be tested and validated for samples from diverse educational and socio-economic backgrounds. Considering the unique cultural and linguistic context of South Africa, future research could benefit from translating the BATM into the indigenous languages in South Africa, such as isiXhosa and isiZulu. Future research should also consider using path analysis or structural equation modelling, to explore the interaction between the variables associated with attitudes towards menstruation, and test possible causal models for attitudes towards menstruation.

Furthermore, future studies in South Africa need to explore the attitudes of boys and men toward menstruation because their understanding could have implications for intimate partner relationships and gender based violence. Exploring the attitudes towards menstruation of boys and men are important in challenging taboos about menstruation and reducing the

impact of deep rooted, negative cultural narratives of menstruation. Research and interventions with boys and men are important because it could encourage them to appreciate menstruation and support women (Aflaq & Jami, 2012; Cheng et al., 2007).

Although there are advantages to quantitative studies, studies incorporating mixed methods could provide a deeper understanding of women's attitudes towards menstruation. For example, focus groups often provide a safe space for culturally taboo topics regarding reproductive health and sexuality, such as menstruation, to be discussed. Gillooly (2004) emphasises the importance of mothers having conversations with their daughters about maturation and menstruation, which can be initiated by them sharing their stories of menarche with their daughters. Van Wyk (2015) contends that these discussions should start at home and at school, "where women and men, and boys and girls can have courageous conversations and jointly re-imagine and re-define [their realities] in a socially just and equitable manner" (p. 320).

Lastly, similar to previous studies, my study was not gender inclusive and framed in a cis-normative manner. There is a need for future studies to adopt a third-wave, radical feminist approach, centred on the principles of intersectionality, when exploring individual's attitudes and experiences towards menstruation. An intersectional feminist approach is gender inclusive and recognises that all women do not menstruate and everyone that menstruates is not a woman. Therefore, future studies should explore the lived experience and attitudes of masculine of centre and transgender men.

## **5.9 Conclusions**

In a society that objectifies women's bodies and menstruation, women who internalise these messages are likely to engage in self-objectification and experience menstrual shame (Johnston-Robledo et al., 2007; Roberts, 2004). Particularly, age and religion seem to

influence women's secrecy about menstruation and their beliefs in proscriptions and prescriptions. Self-objectification and negative attitudes about menstruation may have adverse physiological and psychological consequences for women, such as increased anxiety about one's appearance and safety, reduced ability to focus on tasks, decreased awareness of one's body's needs, lowered self-esteem, depression, eating disorders and increased risk taking (Calogero, 2012). It seems that as women age, they are more likely to resist cultural messages that devalue their bodies and stigmatise menstruation, and also tend to engage in less self-objectification and hold more positive attitudes towards menstruation. Thus, women's age seems to be a protective factor against negative attitudes towards menstruation and self-objectification.

The findings of this study further illustrate that no single factor or approach can be used to conceptualise women's attitudes towards menstruation. Women's attitudes towards menstruation vary across geographical contexts, cultures and from one woman to another. Therefore, the complexity of women's attitudes towards menstruation can best be understood taking into consideration various biological, psychological and social factors (Chrisler & Johnston-Robledo, 2012). This study's findings seem to support the importance of multi-sectoral, psycho-educational programmes to adequately prepare girls for menarche, and reduce the impact of deep rooted cultural beliefs that portray menstruation as dangerous and taboo (Kirk & Sommer, 2006). Despite the fact that South Africa has one of the most progressive constitutions regarding gender equity, 23 years after democracy menstruation still seems to be burdened with stigma and secrecy.

Furthermore, although most girls and women report their mothers as their main source of information about menstruation, there seems to be a need for conversations about menstruation as a maturational process between parents and their daughters. Women often see their mothers as the experts because their mothers have dealt with the challenges of

menstruation for most of their lives (Gillooly, 2004), but fathers' involvement could be important to break the stigma that menstruation is a women's issue. It is important to adopt systemic approaches which are embedded in feminist perspectives when addressing menstruation and attitudes about menstruation because menstruation matters to ensure gender equality, and the dignity, empowerment and well-being of girls and women (WSSCC, 2013).

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## APPENDICES

### Appendix A: Departmental Ethics Screening Committee (DESC) Report

#### Departmental Ethics Screening Committee Report

**Ethics application reference number:**

**Name of applicant:** Bronwen I Pietersen

**SU number:**

**Title of research project:** Exploring the Relationship between the Beliefs about and Attitudes toward Menstruation, and Body Surveillance, Body Shame and Self-esteem among Female Students at Stellenbosch University

**Degree:** MA (Psychology)

**1) Please argue the ethical risks that are related to the research proposal submitted for review, together with the DESC's proposals on how to avoid or mitigate these ethical risks. (Rows may be added if space below is limited)**

Any ethical issues that need to be highlighted?	What must/could be done to minimise the ethical risk?
Ms Pietersen has applied adequate attention to the ethical aspects of the study.	<b>DESC member 1</b>
In my opinion, detailed attention have been applied to relevant ethical aspects of the study. However, the following point needs clarification: Do you need permission from the respective authors to use the measuring instruments? If so, will it be sought before commencement of the study?	<b>DESC member 2</b>

2) Please mark with an X the applicable risk classification assessed for this project:

Minimal risk	
Low risk	
Medium risk	X
High risk	

For definitions of the above risk levels, please consult the DESC guidelines on the DRD-website: [DESC Guidelines](#)

3) If Minimal or Low risk, should this application still be referred to the Research Ethics Committee for further review? (Please mark your decision with an X)

Yes

No

3.1) If YES, please motivate why the application has been referred for REC review:

4) Please mention any additional information that should be noted by the REC:

5)  \_\_\_\_\_  
Signature of DESC Administrator

\_\_\_\_\_ 2 May 2015 \_\_\_\_\_  
Date

## Appendix B: Research Ethics Committee (REC) Approval Notice



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### Approval Notice Stipulated documents/requirements

23-Jul-2015

Pietersen, Bronwen BI

**Proposal #: SU-HSD-000468**

**Title: Exploring the Relationship between Menstrual Attitudes, Self-objectification and Self-esteem among Female Students at Stellenbosch University**

Dear Ms Bronwen Pietersen,

Your **Stipulated documents/requirements** received on **02-Jul-2015**, was reviewed by members of the **Research Ethics Committee: Human Research (Humanities)** via Expedited review procedures on **23-Jul-2015** and was approved. Sincerely,

Clarissa Graham  
REC Coordinator  
Research Ethics Committee: Human Research (Humanities)

# Investigator Responsibilities

## Protection of Human Research Participants

Some of the general responsibilities investigators have when conducting research involving human participants are listed below:

- 1. Conducting the Research.** You are responsible for making sure that the research is conducted according to the REC approved research protocol. You are also responsible for the actions of all your co-investigators and research staff involved with this research. You must also ensure that the research is conducted within the standards of your field of research.
- 2. Participant Enrollment.** You may not recruit or enroll participants prior to the REC approval date or after the expiration date of REC approval. All recruitment materials for any form of media must be approved by the REC prior to their use. If you need to recruit more participants than was noted in your REC approval letter, you must submit an amendment requesting an increase in the number of participants.
- 3. Informed Consent.** You are responsible for obtaining and documenting effective informed consent using **only** the REC-approved consent documents, and for ensuring that no human participants are involved in research prior to obtaining their informed consent. Please give all participants copies of the signed informed consent documents. Keep the originals in your secured research files for at least five (5) years.
- 4. Continuing Review.** The REC must review and approve all REC-approved research proposals at intervals appropriate to the degree of risk but not less than once per year. There is **no grace period**. Prior to the date on which the REC approval of the research expires, **it is your responsibility to submit the continuing review report in a timely fashion to ensure a lapse in REC approval does not occur**. If REC approval of your research lapses, you must stop new participant enrollment, and contact the REC office immediately.
- 5. Amendments and Changes.** If you wish to amend or change any aspect of your research (such as research design, interventions or procedures, number of participants, participant population, informed consent document, instruments, surveys or recruiting material), you must submit the amendment to the REC for review using the current Amendment Form. You **may not initiate** any amendments or changes to your research without first obtaining written REC review and approval. The **only exception** is when it is necessary to eliminate apparent immediate hazards to participants and the REC should be immediately informed of this necessity.
- 6. Adverse or Unanticipated Events.** Any serious adverse events, participant complaints, and all unanticipated problems that involve risks to participants or others, as well as any research related injuries, occurring at this institution or at other performance sites must be reported to Malene Fouch within **five (5) days** of discovery of the incident. You must also report any instances of serious or continuing problems, or non-compliance with the REC's requirements for protecting human research participants. The only exception to this policy is that the death of a research participant must be reported in accordance with the Stellenbosch University Research Ethics Committee Standard Operating Procedures. All reportable events should be submitted to the REC using the Serious Adverse Event Report Form.
- 7. Research Record Keeping.** You must keep the following research related records, at a minimum, in a secure location for a minimum of five years: the REC approved research proposal and all amendments; all informed consent documents; recruiting materials; continuing review reports; adverse or unanticipated events; and all correspondence from the REC
- 8. Provision of Counselling or emergency support.** When a dedicated counsellor or psychologist provides support to a participant without prior REC review and approval, to the extent permitted by law, such activities will not be recognised as research nor the data used in support of research. Such cases should be indicated in the progress report or final report.
- 9. Final reports.** When you have completed (no further participant enrollment, interactions, interventions or data analysis) or stopped work on your research, you must submit a Final Report to the REC.
- 10. On-Site Evaluations, Inspections, or Audits.** If you are notified that your research will be reviewed or audited by the sponsor or any other external agency or any internal group, you must inform the REC immediately of the impending audit/evaluation.

## Appendix C: Invitation to Participate in the Study

### Invitation to take a survey at Checkbox® 6

S SUNsurveys <surveys@sun.ac.za>  
Mon 2015-09-28, 02:48 PM  
Pietersen, Bl, Me <16215729@sun.ac.za>

Reply all |

Inbox

**STAND A CHANCE TO QUALIFY FOR A R 600 SHOPPING VOUCHER!!**

Dear Student,

You are invited to participate in a research study exploring menstrual beliefs and attitudes conducted at Stellenbosch University in the Psychology Department. You were chosen to participate in the study because you are a registered female full-time student at Stellenbosch University, between the ages of 18 -36 years. I know that this is a busy time of year for you, but I hope that you will take the time to participate in this brief web survey. You will be assisting me with my MA Thesis. Participation will require about 20 minutes of your time. Participation is entirely voluntary; you may withdraw from the study at any time without consequences.

I look forward to your participation.

Best wishes,

Bronwen Pietersen

[Click here](#) to take the survey.

## Appendix D: Electronic Consent Form

Please read the following form thoroughly. The Afrikaans version follows below.



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### STELLENBOSCH UNIVERSITY CONSENT TO PARTICIPATE IN RESEARCH

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Exploring the Relationship between Menstrual Attitudes, Self-objectification and Self-esteem among Female Students at Stellenbosch University

You are asked to participate in a research study conducted by Bronwen Pietersen, a Masters student from the Psychology Department, at Stellenbosch University. You were selected as a possible participant in this study because you are a female student at Stellenbosch University.

The research is taking place under the supervision of Mrs. S van Wyk. The study has been endorsed by the aforementioned supervisor and has received ethical clearance from the Psychology Departmental Ethics Screening Committee. This has been ratified by the Research Ethics Committee at Stellenbosch University. Any ethical concerns regarding the research can be addressed directly to Ms Maléne Fouché at the Division for Institutional Research and Planning. Ms Fouché's contact details are provided at the end of this document.

#### 1. PURPOSE OF THE STUDY

The study aims to explore women's attitudes towards menstruation and how they feel about their bodies. No recent studies regarding women's menstrual attitudes have been conducted in South Africa and such information could be used for interventions about reproductive health issues. This study does not aim to obtain information of individuals and all responses will be combined for statistical analysis. All data gathered from this research will form part of a Psychology Master's degree and will therefore be used for academic purposes only.

#### 2. PROCEDURES

If you volunteer to participate in this study, we would ask you to please do the following:

- a) Complete the informed consent form
- b) Complete all the items in the online survey by selecting the most appropriate answer
- c) Submit the online survey

#### 3. POTENTIAL RISKS AND DISCOMFORTS

Certain questions in the survey are of a personal nature. You are allowed to withdraw from the survey at any time without consequences of any kind. Should any of the questions cause you discomfort or concerns, please contact any of the following:

- Centre for Student Counselling and Development (CSCD): (021) 808 4994  
37 Victoria Street  
Stellenbosch, 760 0
- CSCD Tygerberg Campus: (021) 938 9590
- 24 Hour Crisis Service (Stellenbosch & Tygerberg Campus): 082 557 0880

#### **4. POTENTIAL BENEFITS TO SUBJECTS AND/OR TO SOCIETY**

There are no direct benefits for the participants. However, research about women's menstrual attitudes could contribute to our knowledge of reproductive health and the development of future interventions.

#### **5. PAYMENT FOR PARTICIPATION**

No remuneration will be provided to participants; however those that successfully complete and submit the survey will stand a chance to qualify for a R600 voucher for the Somerset Mall in Somerset-West. Once the survey has been completed and submitted, you will be asked whether you would like to enter the lucky draw, should you wish to do so, you will be referred to a separate questionnaire where you will be asked to provide your contact details. If you agree to provide your contact details for the lucky draw, I can assure you that your contact details will not be linked to your responses as two separate questionnaires will be created, thus ensuring your anonymity. Once the study is complete, a lucky draw will determine the winner of the prize who will be contacted via e-mail. In the instance that we are not able to contact the winner within 2 working days, another draw will be conducted and a new winner will be contacted.

#### **6. CONFIDENTIALITY**

Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission or as required by law. Confidentiality will be maintained by means of data safeguarding. The data will be securely stored on a password protected central database and my computer which will only be accessible to me and my supervisor. Your personal contact information will not be linked to your responses during the data collection process or reporting of results.

#### **7. PARTICIPATION AND WITHDRAWAL**

You can choose whether to participate in the study or not. If you volunteer to be in this study, you may withdraw at any time, without providing a reason for withdrawal and without consequences of any kind. The investigator may withdraw you from this research if circumstances arise which warrant doing so.

#### **8. IDENTIFICATION OF INVESTIGATORS**

If you have any questions or concerns about the research, please feel free to contact:

Mrs S Van Wyk (Supervisor) – (021) 808 3452  
Bronwen Pietersen (Researcher) – 082 689 1636

#### **9. RIGHTS OF RESEARCH SUBJECTS**

You may withdraw your consent at any time and discontinue participation without penalty. You are not waiving any legal claims, rights, or remedies because of your participation in this research study. If you have questions regarding your rights as a research subject, contact Ms Maléne Fouché [mfouche@sun.ac.za; 021 808 4622] at the Division for Institutional Research and Planning.

I have read the above information thoroughly and I understand information provided to me.



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## Sielkunde Departement

### TOESTEMMING OM DEEL TE NEEM IN NAVORSING

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'n Onderzoek na die Verhouding tussen Houdings ten op sigte van Menstruasie, Self-objektivering en Selfbeeld onder Vroulike Studente aan die Universiteit Stellenbosch

U word uitgenooi om deel te neem aan 'n navorsingstudie gelei deur Bronwen Pietersen, 'n student van die Departement Sielkunde aan die Universiteit van Stellenbosch. U is gekies as 'n moontlike deelnemer aan hierdie studie, omdat u 'n vroulike student aan die Universiteit van Stellenbosch is.

Die navorsing vind plaas onder die toesig van Mev S van Wyk en het etiese klaring van die Sielkunde Departement se Etieksiftingskomitee ontvang. Die studie is deur Universiteit Stellenbosch se Navorsingsetiekkomitee goedgekeur. Enige etiese besorgdhede met betrekking tot die navorsing kan direk gerig word aan Me. Maléne Fouché by die Afdeling Institusionele Navorsing en Beplanning. Me. Fouché se kontakbesonderhede word aan die einde van hierdie dokument verskaf.

#### 1. DOEL VAN DIE STUDIE

Die studie beoog om vroue se houdings ten opsigte van menstruasie en hul gevoelens oor hul liggaam te ondersoek. Daar is tans min studies rakende vrouens se oortuigings en houdings teenoor menstruasie in Suid-Afrika onderneem, en hierdie inligting kan gebruik word vir intervensies in verband met reprodktiewe gesondheidskwessies. Die doel van hierdie studie is nie vir individuele inligting nie en alle antwoorde sal gekombineer word vir statistiese analise. Alle data wat uit hierdie navorsing versamel is sal deel van 'n Sielkunde Meestersgraad vorm, en sal dus slegs vir akademiese doeleindes gebruik word.

#### 2. PROSEDURES

As u vrywillig besluit om deel te neem in hierdie studie, vra ons u om asseblief die volgende te doen:

- a) Voltooi die ingeligte toestemmingvorm
- b) Voltooi al die items in die aanlyn-opname deur die geskikste antwoord te kies
- c) Dien die aanlyn-opname in

#### 3. POTENSIËLE RISIKOS EN ONGEMAK

Sekere vrae in die opname is van 'n persoonlike aard. U mag u deelname aan die aanlyn-opname enige tyd terugtrek, sonder gevolge van enige aard. Indien enige van die vrae veroorsaak dat u ongemak of bekommernis ervaar, kontak asseblief enige van die volgende:

- Sentrum vir Studentevoorigting en -Ontwikkeling (SSVO): (021) 808 4994  
Victoriastraat Street 37  
Stellenbosch, 7600
- SSVO Tygerberg Kampus: (021) 938 9590
- 24 uur Krisisdienst (Stellenbosch & Tygerberg Kampus): 082 557 0880

#### 4. POTENSIËLE VOORDELE VIR DEELNEMERS EN/OF DIE SAMELEWING

Daar is geen direkte voordele vir deelnemers nie. Navorsing in verband met vroue se houdings ten opsigte van menstruasie kan egter bydra tot ons kennis van reprodktiewe gesondheid en die ontwikkeling van toekomstige intervensies.

#### 5. VERGOEDING VIR DEELNAME

Geen vergoeding sal aan deelnemers verskaf word nie, maar diegene wat suksesvol die opname voltooi en indien sal 'n kans staan om vir 'n R600 geskenkbewys vir die Somerset Mall in Somerset-Wes te kwalifiseer. Sodra u die opname voltooi en ingehandig het, sal u gevra word of u aan die gelukstrekking wil deelneem. Indien u instem, sal u na 'n aparte vraelys verwys word waar u u kontakbesonderhede kan verskaf. As u besluit om u kontakbesonderhede te verskaf vir die gelukstrekking, verseker ek u dat u kontakbesonderhede nie gekoppel sal word aan u antwoorde nie omdat twee afsonderlike vraelyste geskep sal word. U anonimiteit word so beskerm. Sodra die studie voltooi is, sal 'n gelukstrekking bepaal wie die wenner van die prys is. Die wenner sal per e-pos gekontak word. In die geval dat ons nie met die wenner binne 2 werksdae in kontak kan kom nie, sal 'n ander trekking gedoen word en 'n nuwe wenner gekontak word.

#### 6. VERTROULIKHEID

Enige inligting wat in verband met hierdie studie verkry is en wat geïdentifiseer kan word met u sal vertroulik bly en sal openbaar gemaak word slegs met u toestemming of soos deur die wet vereis. Vertroulikheid sal gehandhaaf word deur gebruik te maak van data-beveiliging. Die data sal veilig gestoor word op 'n wagwoord beskermde sentrale databasis en my persoonlike rekenaar wat slegs toeganklik is aan my en my studieleier. U persoonlike inligting sal nie aan u antwoorde gekoppel word tydens die data-insamelingproses of verslaggewing van die resultate nie.

#### 7. DEELNAME EN ONTTREKING

U kan kies of u deel wil wees in hierdie studie of nie. As u vrywillig instem om deel te neem in hierdie studie, kan u enige tyd onttrek sonder gevolge van enige aard. Die navorser, ek, mag u van hierdie navorsing onttrek indien omstandighede ontstaan wat dit regverdig.

#### 8. IDENTIFIKASIE VAN ONDERSOEKERS

Indien u enige vrae of kommentaar oor die navorsing het voel asseblief vry om enige van die onderskeie partye te skakel:

Me. S. van Wyk (Studieleier) – (021) 808 3452  
Bronwen Pietersen (Navorser) – 082 689 1636

#### 9. REGTE VAN DEELNEMERS

U kan enige tyd u deelname aan die opname onttrek sonder enige straf. U doen geen afbreuk aan enige wetlike eise, regte of regsmiddele as gevolg van u deelname aan hierdie navorsing nie. As u vrae het oor u regte as 'n deelnemer, kontak gerus Me. Maléne Fouché [mfouche@sun.ac.za, 021 808 4622] by die Afdeling Institusionele Navorsing en Beplanning.

Ek het die bostaande inligting deeglik gelees en verstaan die inligting wat aan my verskaf is.

*\*I hereby accept to voluntarily participate in this study / \*Ek aanvaar hiermee om vrywillig deel te neem in die navorsing*

- Accept / Aanvaar  
 Do not accept / Aanvaar nie

Next

## Appendix E: Questionnaire

Please specify the following:

### \*Age

### \*Race

- (1) White
- (2) Black
- (3) Coloured
- (4) Indian
- (5) Asian
- (7) Other: Please specify

### \*Religious orientation

- (1) Christianity
- (2) Hinduism
- (3) Islam
- (4) Judaism
- (5) African Traditional
- (6) None
- (7) Other: Please specify

### \*Faculty

- (1) AgriSciences
- (2) Arts and Social Sciences
- (3) Economic and Management Sciences
- (4) Education
- (5) Engineering
- (6) Law
- (7) Medicine and Health Sciences
- (8) Sciences
- (9) Theology

### \*Level of study

- (1) Undergraduate
- (2) Postgraduate

### \*Academic year of study

- (1) First
- (2) Second
- (3) Final
- (4) Honours
- (5) Masters
- (6) Doctorate
- (7) Post-Doctorate

**\*Age at menarche (your first period)**

- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 19
- 20
- 21
- I cannot remember
- Other: Please specify

**\*When have you had your last period?**

- (1) Currently
- (2) 1 week ago
- (3) Two weeks ago
- (4) Three weeks ago
- (5) More than a month ago

**\*Do you have any siblings?**

- (1) Yes
- (2) No

**\*If you have any siblings, please specify (you may select more than one):**

- (1) Older brother(s)
- (2) Older sister(s)
- (3) Younger brother(s)
- (4) Younger sister(s)

**\*Who or which of the following provided you with information about menstruation?  
You may select more than one of the categories.**

- (1) Mother
- (2) Sister(s)
- (3) Friends
- (4) School
- (5) Mass media
- (6) Father
- (7) Brother(s)
- (8) Other: Please specify.

**\*How prepared do you think you were for your first menstruation?**

- (1) Totally unprepared
- (2) Somewhat unprepared
- (3) Somewhat prepared
- (4) Totally prepared

**What is the highest level of education of your significant maternal figure?**

- (1) Primary school only
- (2) Secondary school only
- (3) Secondary school with matric
- (4) Post matric

**\*Are you comfortable discussing menstruation with your significant maternal figure?**

- (1) Yes
- (2) No

**\*Are you comfortable discussing menstruation with your significant paternal figure?**

- (1) Yes
- (2) No

**\*Are you comfortable discussing menstruation with others (for e.g. aunt, uncle, grandparents, siblings, cousins, friends or partners)?**

- (1) Yes
- (2) No

Next

## Rosenberg Self-Esteem Scale

**\*Please read each statement carefully and consider the extent to which you think it is like you. Select the option for each statement that best reflects your answer on a scale from 0 to 3, where 0 = Strongly Disagree; 1 = Disagree; 2 = Agree; and 3 = Strongly Agree. There are no right or wrong answers, so please complete each item as honestly and accurately as possible.**

	0	1	2	3
1. On the whole, I am satisfied with myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. At times, I think that I am no good at all.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I feel that I have a number of good qualities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I am able to do things as well as most other people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I feel I do not have much to be proud of.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. I certainly feel useless at times.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. I feel that I am a person of worth, at least on an equal plane with others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. I wish I could have more respect for myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. All in all, I am inclined to feel that I am a failure.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. I take a positive attitude toward myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Next

## Beliefs about and Attitudes Towards Menstruation Questionnaire

\*Secrecy items: 1, 5, 9, 12, 15, 17, 21, 24, 29, 32, 39, 45

\*Annoyance items: 3, 6, 8, 11, 14, 19, 23, 30, 33, 35, 38, 41, 43

\*Proscriptions and Prescriptions items: 2, 7, 18, 20, 22, 27, 31, 34, 44

\*Disability items: 10, 25, 37, 40, 42

\*Pleasant items: 4, 13, 16, 26, 28, 36

**\*Please read each statement carefully and consider the extent to which you agree or disagree. Select the option for each statement that best reflects your answer, on a scale from 1 to 5, where 1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; and 5 = Strongly Agree. There are no right or wrong answers, so please complete each item as honestly and accurately as possible.**

	1	2	3	4	5
1. It is important to talk about the menstrual period with men.	<input type="radio"/>				
2. Women must avoid swimming while we are having our periods.	<input type="radio"/>				
3. I think there are times when we women cannot stand our periods.	<input type="radio"/>				
4. Women are proud when we start having our periods.	<input type="radio"/>				
5. It is important to discuss the topic of the period at school with boys and girls together	<input type="radio"/>				
6. The period is dirty.	<input type="radio"/>				
7. Women must avoid eating or drinking cold things when we are having our periods.	<input type="radio"/>				
8. Men have a great advantage not having the annoyance of the period.	<input type="radio"/>				
9. We women must hide anything that shows that we are having our periods.	<input type="radio"/>				
10. The period affects the performance of women at work.	<input type="radio"/>				
11. We women wish that the period would last for just a few minutes.	<input type="radio"/>				
12. It is important to buy sanitary pads without being seen.	<input type="radio"/>				
13. There are women who feel content to have their periods.	<input type="radio"/>				
14. Women wish that we did not have our periods.	<input type="radio"/>				
15. It is uncomfortable for us women to talk about our periods.	<input type="radio"/>				
16. There are women who are happy every time they have their periods.	<input type="radio"/>				
17. It is important that nobody knows when a woman is having her period.	<input type="radio"/>				
18. Women must avoid smoking while we are having our periods.	<input type="radio"/>				
19. The period is annoying.	<input type="radio"/>				

20. Women must avoid eating certain foods while we are having our periods,	<input type="radio"/>				
21. It is embarrassing when a man finds out that a women is having her period.	<input type="radio"/>				
22. Women must drink tea while we are having our periods.	<input type="radio"/>				
23. The period is painful.	<input type="radio"/>				
24. Women blush when we see an advertisement about sanitary pads when we are with a man.	<input type="radio"/>				
25. The period disables women.	<input type="radio"/>				
26. There are women who enjoy having their periods.	<input type="radio"/>				
27. Women must avoid carrying heavy things when we are having our periods.	<input type="radio"/>				
28. There are women who look more attractive while they are having their periods.	<input type="radio"/>				
29. It is important to keep the period a secret.	<input type="radio"/>				
30. It is uncomfortable for us women to have our periods.	<input type="radio"/>				
31. Women must take showers with hot water while we are having our periods.	<input type="radio"/>				
32. We women should avoid talking about our periods when there are men present.	<input type="radio"/>				
33. The period is a big problem.	<input type="radio"/>				
34. Women must avoid exercising while we are having our periods.	<input type="radio"/>				
35. The period is something that we women have to bear.	<input type="radio"/>				
36. Women get excited when we have our first periods.	<input type="radio"/>				
37. The period affects a woman's ability to do housework.	<input type="radio"/>				
38. It is hard to live with the period.	<input type="radio"/>				
39. It is important to discuss the topic of the period at home openly.	<input type="radio"/>				
40. Having the period is a punishment for women.	<input type="radio"/>				
41. It is annoying for us women to have the period every month.	<input type="radio"/>				
42. The period affects women's daily activities.	<input type="radio"/>				
43. The period is really annoying.	<input type="radio"/>				
44. Women must eat or drink hot things when we are having our periods.	<input type="radio"/>				
45. Women must stay away from men while we are having our periods.	<input type="radio"/>				

Next

## Body Surveillance and Body Shame subscales of the Objectified Body Consciousness Scale (OBCS)

\*First eight items are the Body Surveillance subscale; last eight items are the Body Shame subscale

**\*Please read each statement carefully and consider the extent to which you think it is like you. Select the option for each statement that best reflects your answer, on a scale from 1 to 7, where 1 = Strongly Disagree; 2 = Disagree; 3 = Somewhat Disagree; 4 = Neutral; 5 = Somewhat Agree; 6 = Agree; and 7 = Strongly Agree. There are no right or wrong answers, so please complete each item as honestly and accurately as possible.**

	1	2	3	4	5	6	7
1. I rarely think about how I look.	<input type="radio"/>						
2. I think it is more important that my clothes are comfortable than whether they look good on me.	<input type="radio"/>						
3. I think more about how my body feels than how my body looks.	<input type="radio"/>						
4. I rarely compare how I look with how other people look.	<input type="radio"/>						
5. During the day, I think about how I look many times.	<input type="radio"/>						
6. I often worry about whether the clothes I am wearing make me look good.	<input type="radio"/>						
7. I rarely worry about how I look to other people.	<input type="radio"/>						
8. I am more concerned with what my body can do than how it looks.	<input type="radio"/>						
9. When I can't control my weight, I feel like something must be wrong with me.	<input type="radio"/>						
10. I feel ashamed of myself when I haven't made the effort to look my best.	<input type="radio"/>						
11. I feel like I must be a bad person when I don't look as good as I could.	<input type="radio"/>						
12. I would be ashamed for people to know what I really weigh.	<input type="radio"/>						
13. I never worry that something is wrong with me when I am not exercising as much as I should	<input type="radio"/>						
14. When I'm not exercising enough, I question whether I am a good enough person.	<input type="radio"/>						
15. Even when I can't control my weight, I think I'm an okay person.	<input type="radio"/>						
16. When I'm not the size I think I should be, I feel ashamed.	<input type="radio"/>						

Next

Thank you for taking the time to participate in my survey.



Next

**\*Would you like to qualify to win a R600 shopping voucher?**

(1) Yes

(2) No

***If no, participants would click the finish command and be shown the message ‘ Enjoy your day further!’.***

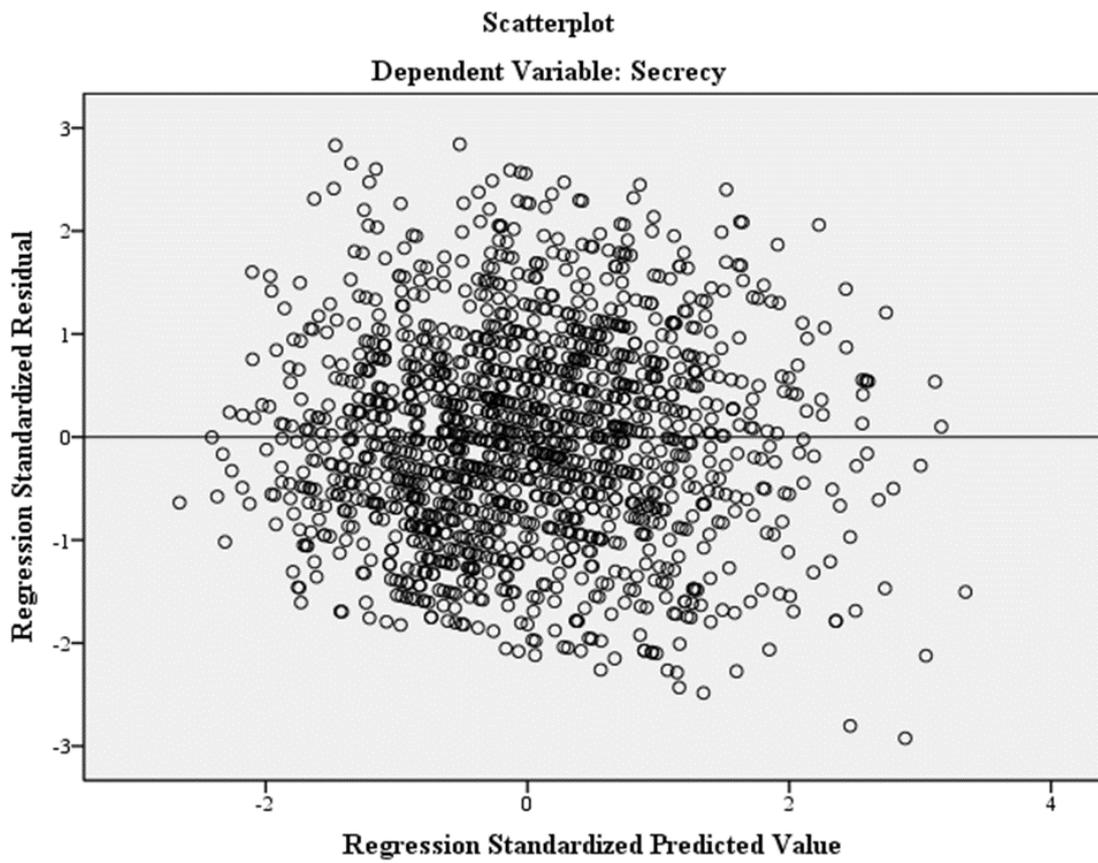
***If yes, participants were redirected to a separate questionnaire where they could enter their contact details in a text box.***

**\*Please provide your e-mail address in the space below**

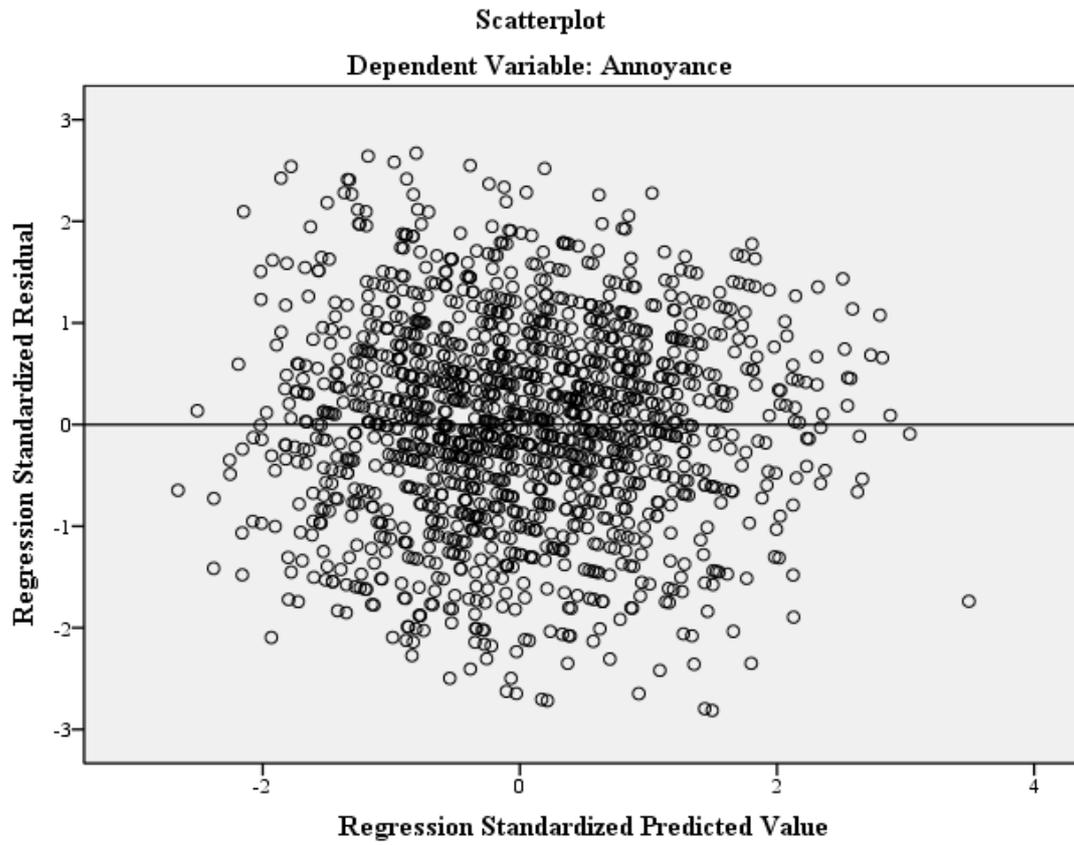
Finish

Enjoy your day further!

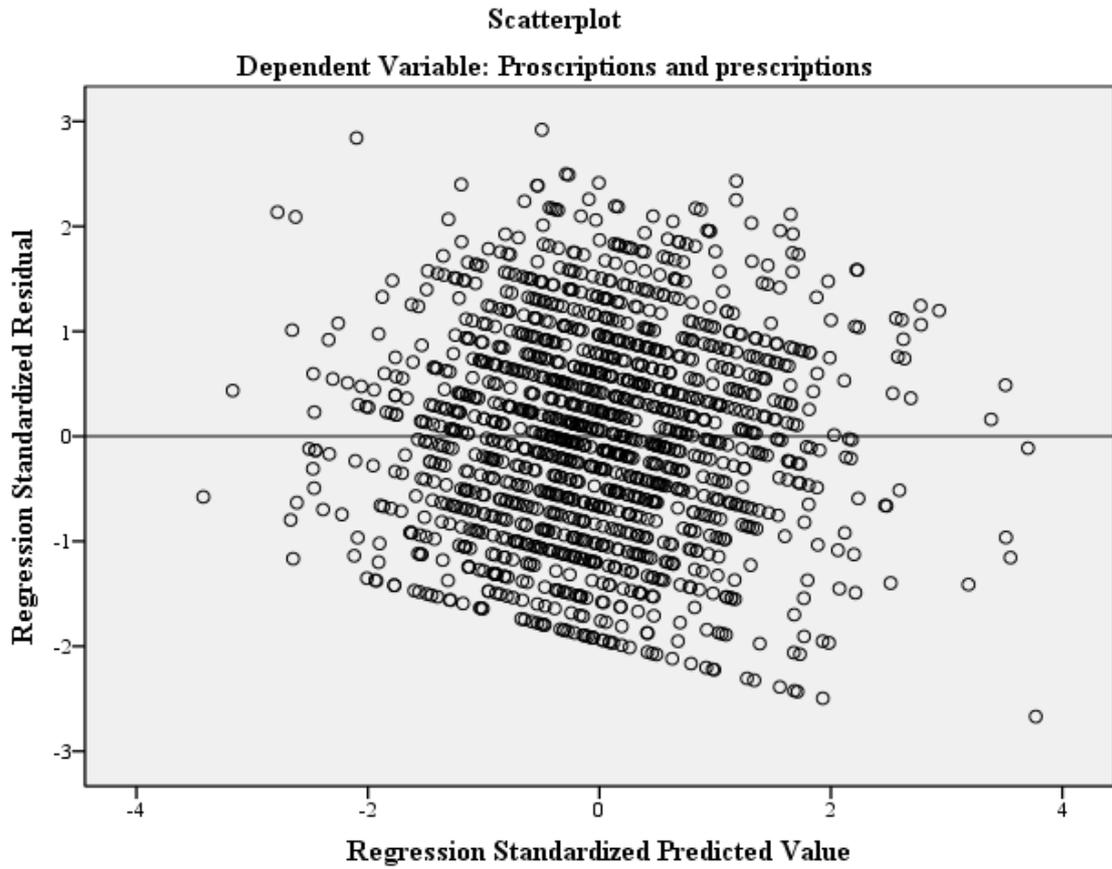
**Appendix F: Scatterplot of Standardised Residuals by the Regression Standardised Predicted Values for BATM Subscales**



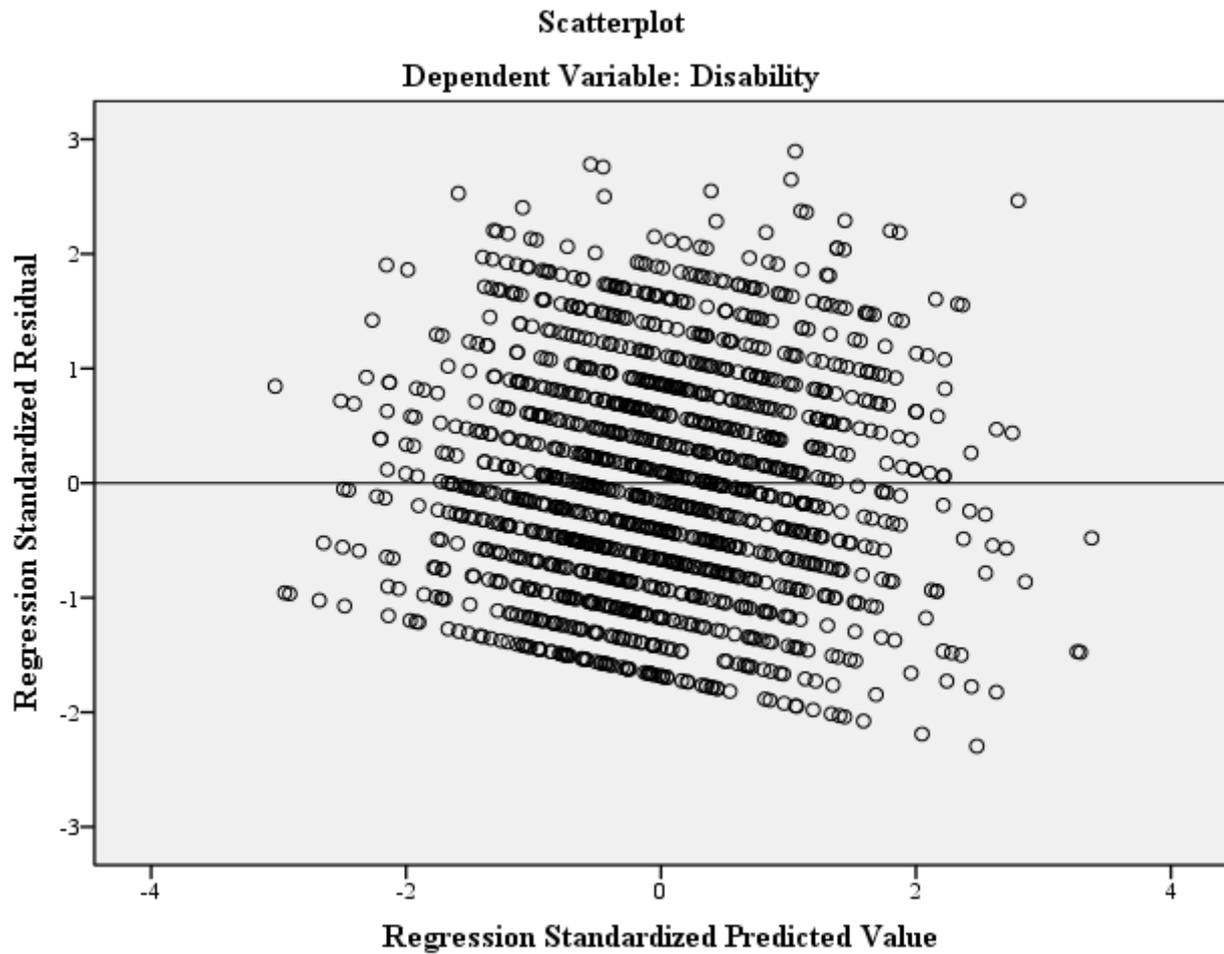
*Figure 1.* Scatterplot of standardised residuals by the regression standardised predicted values for the secrecy subscale



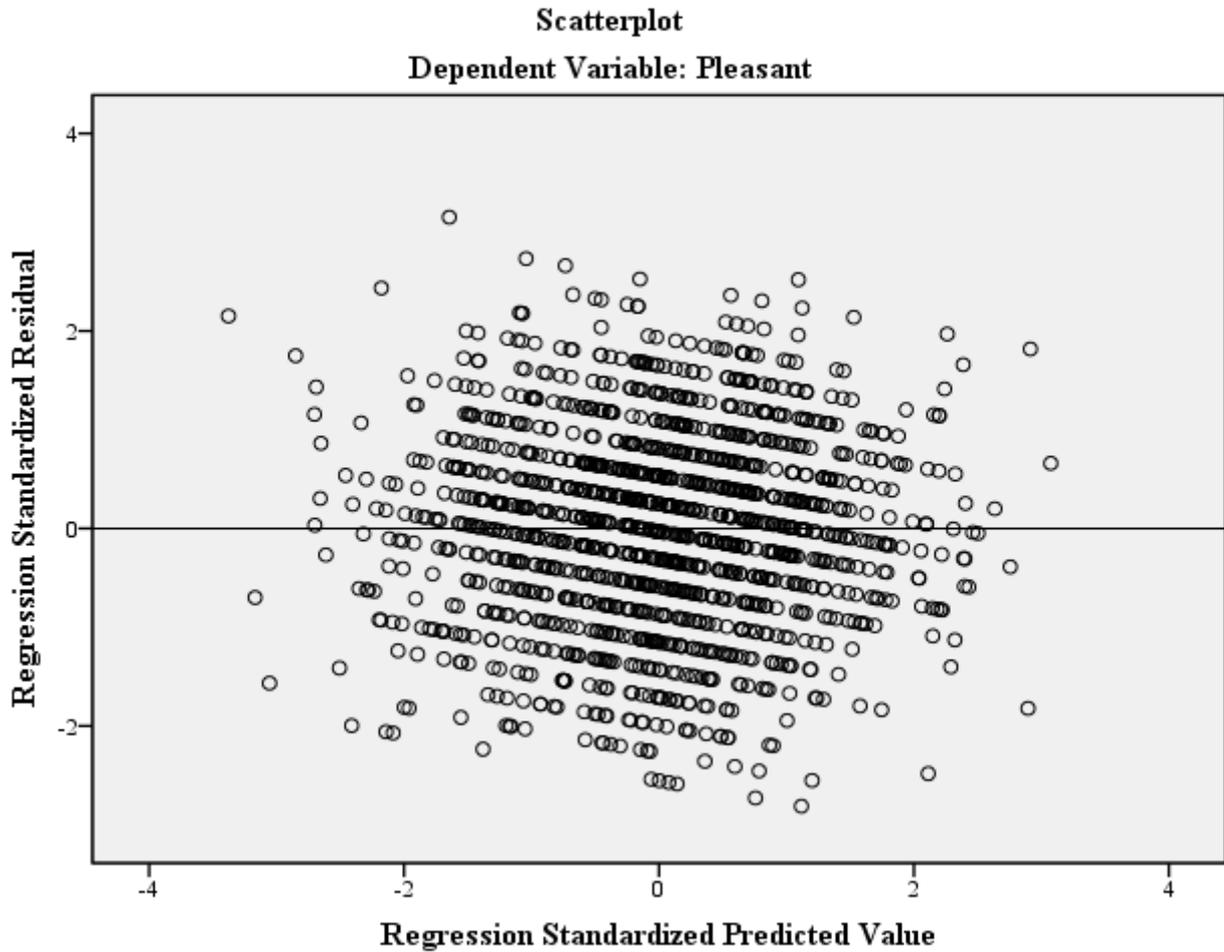
*Figure 2.* Scatterplot of standardised residuals by the regression standardised predicted values for the annoyance subscale



*Figure 3.* Scatterplot of standardised residuals by the regression standardised predicted values for the prescriptions and proscriptions subscale



*Figure 4.* Scatterplot of standardised residuals by the regression standardised predicted values for the disability subscale



*Figure 5.* Scatterplot of standardised residuals by the regression standardised predicted values for the pleasant subscale