UNIVERSITY OF THE WESTERN CAPE

Faculty of Community and Health Sciences

THESIS

Title:

An investigation into the attitudes of male undergraduate students towards
menstruation: The psychometric properties of the Menstrual Attitude Questionnaire.

Researcher:

Karen Roos

Supervisor:

Dr. Anita Padmanabhanunni

Department of Psychology

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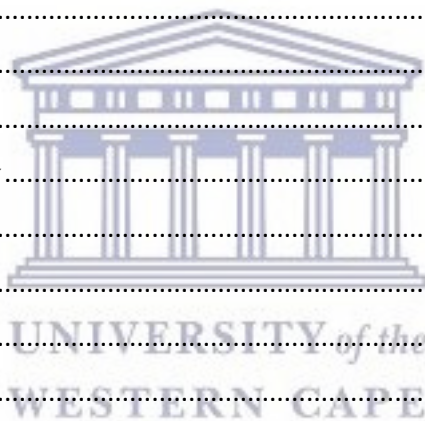
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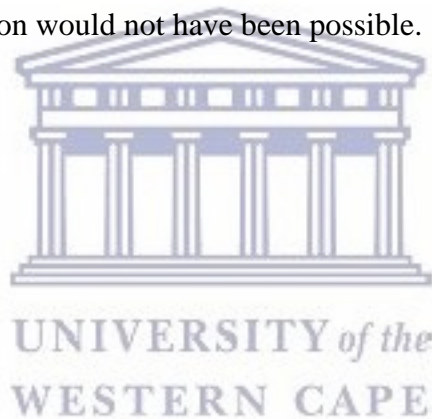
Abstract:

Menstruation is an integral and normal part of human life, indeed of human existence. Instead of being celebrated as a noteworthy landmark of biological maturity in a young girl's life, menstruation has become an organic experience burdened with socio-cultural implications (Ussher, 2006). Existing studies suggest that males often view menstruation in a more negative light, which have shown to promote sexism and negative attitudes towards women (Marvan, Vazquez-Toboada, & Chrisler, 2013). The Menstrual Attitude Questionnaire (MAQ) was designed to assess attitudes towards menstruation among men and women and has been applied in a variety of contexts (Brooks-Gun and Ruble, 1980). Despite the extensive use of this scale in various contexts (Jarrah & Kamel, 2012; Neşe Sahin Ozdemir, 2013) there is limited information on its psychometric properties, specifically the factor structure of the instrument. For the MAQ to be meaningful when used in South Africa, it is first necessary to explore the psychometric properties of the instrument when applied to a South African sample. Participants (n = 163) for the study were young male students from the University of the Western Cape who were recruited through purposive sampling. Permission to access students was obtained from the registrar's office. Informed consent was obtained from participants for data collection and for use of the data for research purposes. The questionnaires were anonymous in order to protect participant identities. To further ensure confidentiality, all data was kept on a password protected personal computer. Furthermore, this study utilised a cross-sectional research design. Two self-report measures were administered: the MAQ and a demographic questionnaire. Exploratory Factor Analysis (EFA) was used to uncover the underlying structure of the MAQ. The study found that both the EFA, as well as the forced factor solution, did not produce a meaningful pattern of loadings. All ethical guidelines stipulated by the University of the Western Cape were strictly adhered to.

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1. Introduction

Menstruation can be explained as the shedding of the uterine wall through the process of periodic vaginal bleeding (Ussher, 2006). It is an integral and normal part of human life, indeed of human existence. Instead of being celebrated as a noteworthy landmark of biological maturity in a young girl's life, menstruation has become an organic experience burdened with socio-cultural implications. In many societies, menstruation is constructed as an improper matter for conversation; therefore, it is a source of shame requiring concealment and a great deal of secrecy (Johnston-Robledo & Chrisler, 2011). Such notions have resulted in women's bodies and their associated biological processes being pathologised, often times by the members of the opposite sex (Chadwick, 2006). While there is a relatively large body of literature exploring the significance of menstruation to women, there is comparatively less known about men's attitudes towards menstruation (Fisherman, 2014).

Existing studies suggest that men often view menstruation in a more negative light; in some cases, viewing the presence of menstrual blood as a source of disease and contamination (Chrisler, 2011). Such negative views have shown to promote sexism and negative attitudes towards women (Marvan, Vazquez-Toboada, & Chrisler, 2013) and have resulted in implications for intimate relationships and reproductive decision making (Allen et al., 2010). In other cases, negative attitudes held by men towards menstruation have amplified sexual harassment in schools (Power, 1995), and have contributed to unhygienic menstrual practises that have impacted on women's health (Rajak, 2015). While a great deal of the existing body of literature on male attitudes towards menstruation is international, there is comparatively less known about the attitudes of males towards menstruation, particularly in the South African context.

The Menstrual Attitude Questionnaire (MAQ) was designed to assess attitudes towards menstruation among men and women (Brooks-Gun and Ruble, 1980). The scale has been used extensively in the international arena (Jarrah & Kamel, 2012; Neşe Sahin Ozdemir, 2013; Liang et al., 2012; Fitzgerald, 1990), but predominantly among women. A local study also used the MAQ on a sample of young women (Padmanabhanunni & Fennie, 2017). Despite the extensive use of this scale in various contexts, there is limited information on its application to a male sample, as well as on its psychometric properties; specifically the factor structure of the instrument.

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The aim of the present study is to address this gap in the literature by assessing the psychometric properties of the MAQ as used among a sample of young men in a developing country.

There exists an increasing awareness for the need to investigate the various causes of problematic attitudes across racial, gender, cultural and socioeconomic groups. However, there is an ever present tendency in current research practices to assume that measures can be equally applied across varying groups, despite the fact that the measures often were developed within one specific group with a specific set of construct conditions (Harachi et al., 2006). Harkness, Mohler, and Van de Vijver (2003) maintain that, constructs and their meanings may differ across various groups. In addition, measures which are developed to measure certain constructs in one group, may not measure the construct in the same manner in another group. The authors go on to explain that research cannot assume the universality of measures across groups, and that observed differences are a reflection of actual differences rather than a difference in patterns of response to items within a particular measure. Instead they advise that researchers should first employ strategies to assess whether, constructs are comparable; and second, whether instruments which are suitable and adequate in a single context remain so in another (Harkness, et al., 2003). Assessing the factor structure of an instrument is considered a prerequisite for meaningful and accurate comparisons across cultural groups (Harachi et al., 2006; Kankaraš & Moors, 2010).

Due to the unique history and culture in South Africa, research in this context necessitates a great deal of sensitivity. Padmannabhannui (2017) states that psychological research in this country often involves the investigations with samples of people who have been exposed to varied political, social and historical factors. Therefore, research in South Africa demands instruments capable of recognising similar constructs in diverse groups of people (Padmannabhannui, 2017).

2. Literature Review

2.1. The significance of measuring attitudes towards menstruation

Literature indicates that both women and men hold predominantly negative attitudes towards menstruation (Rembeck, Moller & Gunnarsson, 2006; Fisherman, 2014; Rajak, 2015; Marvan & Molina- Abolink, 2012). These negative attitudes are laden with prescriptions (certain things that women should do while they are menstruating) and proscriptions (certain things that women should not do while they are menstruating), and span from associated feelings of embarrassment to feelings of disgust (Marvan et al, 2013). In many cultures, women maintain high levels of secrecy surrounding their monthly menstruations. This proves to be additional work for the psychological and physical burden that is menstruation (Shanbhag, Shilpa, D'Souza, Josephine, Singh & Goud, 2012). These notions regarding the significance of menstruation for woman is a subject that has been well documented (Marvan et al, 2013; Rajak, 2015; Beausang & Razor, 2002; Kissling, 1996; Kotoh, 2008; Adinma & Adinma, 2008).

Typically, existing research indicates that both developed and developing nations usually hold mostly negative attitudes towards menstruation. Nonetheless the majority of research on attitudes towards menstruation has been conducted in Europe and the United States. For instance, in Beausang and Razor's (2002) study, young European women traditionally described their experiences of menstruation as negative and associated the phenomenon with concepts of pollution and taboo. Such research is corroborated by a study done by Cevirme, Cevirme, Karaoglu, Ugurlu and Korkmaz (2010) in Turkey, which looked at the attitudes towards menstruation among married women. It was found that, even in marriage, a woman's menstrual bleeding was considered dirty, shameful and disgusting and therefore, should remain hidden from the men in her company. Studies conducted in the United States showed similar findings. For example, in both Rempel and Baumgartner (2003) and Marvan, Vazquez-Toboada and Chrisler's (2013) studies, exploring female attitudes toward menstruation, it was found that almost all females identified with the negative perceptions and associated stereotypes usually aligned with menstruation. In the United States, Kissling (1996) conducted extensive interviews with adolescent girls to determine communication strategies that girls use to avoid embarrassment about their menstrual cycle. The study found that all the girls were embarrassed of their periods, but that their embarrassment was almost solely based on the anticipation of others finding out that they were menstruating.

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In addition, a large majority of the girls who were interviewed reported that they were so ashamed, they did not tell their mothers for days or months after the onset of menarche, and went to even greater lengths to avoid sharing their developmental milestone with fathers, brothers or other male peers.

In comparison, substantially less research has been undertaken in the context of low-to-middle income countries. In India, menstruating women may be excluded from using water or sanitation facilities, are unable to participate in educational, religious or other social activities, and may even be rejected from their homes (Mahan, Tripathy & Singh, 2015). In other traditional cultures, such as those in Ghana, the Akan (the largest cultural group in the country) view menstruation as a source of pollution, limiting women during the menstrual cycle from any contact with men (Kotoh, 2008). Such restrictions extend to not being allowed to cook for men or even share the same eating utensils with a male (Kotoh, 2008). Similar results were reported by Adinma and Adinma (2008) in their study conducted in Nigeria, which found that superstition and traditional myths around menstruation greatly influenced attitudes. These ethnic groups believe that menstrual blood is contaminating and that during menstruation women are not permitted to engage in sexual intercourse or even sleep in the same room as their husband (Umeora & Egwuatu, 2009). Such convictions result in women experiencing menstruation with dread, distress and shame (Adinma & Adinma, 2008).

Research within South Africa, although scant, has largely supported the findings on the African continent with regards to menstruation. In traditional ama-Xhosa culture, menstruating women are considered contaminated and are not allowed near cattle (symbols of wealth) while menstruating (Carver, 2007; Padmanabhanunni, et al., 2017). Blanketed in cultural taboos about sex and sexuality, ama-Xhosa women do not speak about menstruation to any one, as the sharing of such narratives is regarded as shameful and dishonourable (Tutani & Rankin, 2000). In another study, conducted by Shefer (2009), it was found that in Coloured communities in the Western Cape Province, menstruation is viewed as a negative and dangerous transition as post menarche girls are considered to be more vulnerable to pregnancy and sexual exploitation by men.

While the majority of existing literature on attitudes towards menstruation is focused on women, research into the attitudes of males towards menstruation, both locally and internationally, remain scant.

Both men and boys greatly influence a girl's experience of menstruation through various roles, including those as fathers, brothers, husbands, teachers, peers, community leaders, employers and policymakers (Mahan et al., 2015). However, few studies have investigated men's attitudes towards menstruation.

Marvan et al. (2005) conducted a study which, in part, assessed the attitudes and beliefs of Mexican men towards menstruation. It was found that men were more likely to perceive menstruation to be disabling and obtrusive, rather than viewing it as an important, positive biological process. Men also believed that women were more irritable and angry during menstruation. In another study focusing on the attitudes of college men towards menstruation, Fisherman (2014) found that most of the men reported being "disgusted" by menstrual blood. They also reported experiencing menstruation as an undesirable phenomenon and would distance themselves socially from a menstruating woman, appraising them as less likeable and less competent. The men in this study also felt that menstruation was an "irrelevant" topic and "unrelatable" to their lives (Fisherman, 2014, p46). Such notions have resulted in women's bodies and their associated biological processes being pathologised, often times by members of the opposite sex (Chadwick, 2006).

Existing studies appear to suggest that males often view menstruation in a more negative light compared to women (Chrisler, 2011). Such negative views have been shown to promote sexism and negative attitudes towards women (Marvan et al., 2013) and have implications for intimate relationships and reproductive decision making (Allen et al., 2010). In other cases, such negative attitudes held by men towards menstruation have been associated with sexual harassment in schools (Power, 1995), and in extreme cases have fostered unhygienic menstrual practises resulting from restrictions imposed by men (Rajak, 2015). For example, in Malawi, men in the homesteads do not see the need for sanitary wear, creating a predicament when young girls request money to buy sanitary products (Bhartiya, 2013).

The majority of instruments developed to measure attitudes towards menstruation, such as the Adolescent Menstrual Attitude Questionnaire (AMAQ) and the Beliefs and Attitudes Towards Menstruation Questionnaire (BATM), have been developed internationally (Harachi et al., 2006; van Gesselleen, 2013). However; due to the influence of context on an instrument's development the applicability of a specific tool, to a cultural context other than the one it was developed for, remains uncertain.

2.2. Importance of assessing the psychometric properties of an instrument

There exists an increasing movement within international arena for researchers to take a more critical approach to cross-cultural validation of instruments used in their studies (Harachi et al., 2006, Poortinga, 2016; de Klerk, n.d). Poortinga (2016) maintains that there has been an increased wave of awareness around the fact that the body of knowledge, as it exists in Western universities, is greatly culture bound to the time and context in which it was developed. Similarly, research instruments developed in certain contexts possess the conceptions of a particular era, cultural group and socio-political epoch which may not be applicable to other contexts. Sinha (1997) maintains that items in questionnaires and instruments tend to be embedded in a local context and carry a local meaning that may not easily travel well to other cultures, languages or countries. As a result, items within the instrument tend to be biased and the interpretation of responses in other contexts may not be an accurate reflection of the construct being assessed. Moreover, Sinha (1997) states that cross cultural differences in response styles tend to differ. For example, cultural values toward acquiescence or toward social desirability are likely to impact on the manner in which responses are made, therefore impacting on validity of measures. In addition, certain concepts in psychology are rooted within Western ideologies and traditions. One illustration of this is described in Poortinga's (2016) writings where the US developed Big Five dimensions of the five factor model of personality were explored in terms of tool replication in a large number of societies. Findings suggested that in non-Western countries, such as China, certain dimensions of the five factor model were not relevant to the local population; requiring researchers to develop a local personality inventory.

In addition, the attitudes towards certain constructs, such as menstruation, may differ across groups. Research involving different demographic or cultural groups cannot assume a universality of meaning across groups as certain constructs may carry varied meanings and various instruments may function differently when applied to different groups (Harkness, Mohler, & Van de Vijver, 2003). Moreover, the concept of equivalence is understood differently by different authors. For instance, Hui and Triandis (1985) understand equivalence as a concept that can be divided into conceptual, scalar, functional and item aspects. Conceptual and functional equivalence pertains to the meaning of the target construct, while item and scalar equivalence refers specifically to the properties of instruments used to assess the particular construct.

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According to Harachi et al. (2006), conceptual equivalence can be defined as the extent to which the construct has the same meaning across groups and is a prerequisite to conducting any type of comparative study across groups. Functional equivalence can be described as the extent to which constructs share the same or similar nomological networks across groups. For instance, when certain behaviours are employed across different groups to reach a similar outcome, the behaviour is thought to be functionally equivalent (Hui & Triandis, 1985). Item equivalence is based on empirical evidence and assumes that a construct has the same meaning across groups via a specific instrument. This type of equivalence assumes that all prior forms of equivalence have been met. Finally, scalar equivalence assumes that a particular score on an instrument represents the same magnitude, degree or intensity of a particular construct across groups. This type of equivalence is particularly important in diagnostic tools where the tool should reflect the same level of severity across groups (Hui & Triandis, 1985). Harachi et al. (2006) affirm that these four forms of equivalence form the foundation needed for any comparative research.

As the notion of globalisation escalates and as behaviour continues to be a focus of research all over the world, psychometric instruments are increasingly being applied to varied contexts internationally. Therefore it is essential that measurement equivalence, validity and reliability across cultures become an increasingly important focus of research (Campbell & Koutsoulis, 2004).

2.2.1. Assessment in South Africa

Research in South Africa necessitates instruments which are sensitive to context and culture (Padmanabhanunni, 2017). At present, the field of test use, development and adaption in South Africa faces many challenges. At the forefront of these challenges is the dire need for culturally appropriate tests, which meet stringent psychometric standards in order to succeed at employing just test practices (Foxcroft, Roodt, & Abrahams, 2001).

Historically, the use of psychometric tools for assessment in South Africa has developed in an environment characterised by unequal distribution of resources established on racial categories. Therefore, testing and research in the South African context cannot be divorced from the country's economic, political and social history (Classen, 1997). Even before the Apartheid regime, the earliest measures developed in South Africa were only standardised for white populations.

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These measures were largely driven by political ideologies attempting to draw distinctions between racial groupings, in an attempt to justify superiority of one group over another (Foxcroft & Roodt, 2006). Psychometrics and assessment have therefore played a controversial role in the country's previous dispensation; therefore an urgent need arises for research and practice in the field to redress the negative effects of these research practices (Laher & Cockcroft, 2013).

Similarly, results from comparable studies suggest that it remains dangerous to administer scales developed outside of South Africa to South African populations without revalidating the instrument (De Klerk et al., 2009). With specific reference to instrument use in research, the heterogeneous nature of the South African population has proven to further complicate existing challenges with measure generalisation (De Klerk et al., 2009). Some research has shown that scales developed in other countries demonstrate acceptable internal consistency when applied to a South African sample, but only when they are applied to native Afrikaans or English speaking groups of people (Abrahams & Mauer, 1999). Therefore language ability, translation equivalence and varied interpretation of words have a significant impact on scale validity (Peters & Passchier, 2006; Van Eeden & Mantsha, 2007).

These equivalence and validity problems surface due to the fact that people perceive their social environment through a largely subjective cultural milieu. The cultural milieu greatly informs and discourages certain behaviours of individuals, which in turn impacts on how people interpret and respond to questions in research instruments (Marsella, Dubanoski, Hamada, & Morse, 2000; Prinsloo & Ebersohn, 2002). Since testing and assessment continue to play a crucial role in research internationally, Laher and Cockcroft (2013) suggest that focus should be placed on the valid and reliable use of assessment measures within multicultural and multilingual societies.

2.3. The Menstrual Attitude Questionnaire (MAQ)

The Menstrual Attitude Questionnaire (MAQ) was developed in 1980 by Brooks-Gunn and Ruble in the United States to examine attitudes towards menstruation (Brooks-Gun and Ruble, 1980). Brooks-Gun and Ruble (1980) initially developed the instrument to explore the relationship of menstrual attitudes and other aspects of behaviour on undergraduate, female students (N=191).

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Research into the field of menstruation has traditionally relied heavily on attitude related questionnaires, of which one of the widest used instrument being the MAQ (Bramwell, Biswas & Anderson, 2002). Neşe Sahin Ozdemir (2013) evaluated the attitudes towards menstruation among female collegiate athletes in Turkey with the use of the MAQ.

The study found that college athletes had an overall positive attitude towards menstruation, believing that menstruation did not have a resounding negative impact on their sport performance. However, an overall negative attitude toward menstruation was still common among their non-athlete counterparts. A similar study was conducted by Fitzgerald in 1990, which utilised the MAQ to assess the menstrual attitudes of female university students in New Zealand. Fitzgerald's (1990) study found that menstrual attitudes were largely multidimensional, with each participant having a range of negative, neutral and positive attitudes. It was also found that these attitudes were significantly impacted by social norms and expectations (Fitzgerald, 1990). The MAQ has also been used to evaluate attitudes and beliefs around menstruation among school-aged girls in Jordan (Jarrah & Kamel, 2012). This study found that the proportion of girls who were not prepared for menstruation had both low attitude and low menstruation-related practice scores (Jarrah & Kamel, 2012). Furthermore, poor attitudes toward menstruation and low menstrual practices were significantly associated with inadequate premenstrual preparation. In another study conducted by Boyle and Grant (1992), the MAQ was used to support the assessment of prospective versus retrospective self-reports of menstrual cycle symptoms in users and non-users of oral contraceptives in Australia. It was found that women using oral contraceptives had more positive attitudes toward menstruation than those of non-users (Boyle & Grant, 1992).

The MAQ has additionally been applied to vulnerable populations, such as in Liang et al's (2013) study, where the MAQ was used to assess attitudes towards menstruation amongst a sample of Taiwanese women diagnosed with schizophrenia. The study found that patients with Schizophrenia (both irregular and regular groups) had more negative attitudes toward menstruation than the control group. Moreover, regular menstrual cycles during antipsychotic treatment and fewer menstrual distress symptoms were the two main predictors for more positive attitudes toward menstruation in the patient group (Liang et al., 2013).

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In South Africa, the MAQ has been applied among a sample of undergraduate female students with the aim to investigate their attitudes and experiences regarding menstruation (Padmanabhanunni & Fennie, 2017). It was found that menstruation was perceived by women as impacting on participation and performance in higher education, suggesting that the provision of tertiary education for previously disadvantaged groups needs to consider the needs of women who experience difficulty managing menstruation.

The literature suggests that the MAQ has predominantly been used to assess the attitudes of women towards menstruation (e.g. Neşe Şahin Ozdemir 2013; Fitzgerald, 1990, Jarrah & Kamel, 2012); however, the first study to employ the use of the MAQ on a male sample was documented by Brooks-Gun and Ruble (1986). This study found that males believed that women experienced more severe menstrual symptoms, such as mood swings; than women thought they did (Brooks-Gun and Ruble; 1986). Subsequently, other studies focusing on male attitudes towards menstruation using elements of the MAQ emerged. For example, Marván, Cortés-Iniestra, and González (2005) investigated attitudes towards menstruation among Mexican men. These authors found that men were more likely to perceive menstruation to be disabling and obtrusive, rather than viewing it as an important, positive biological process. Men also believed that women were more irritable and angry during menstruation. Wong et al.'s (2013) study looking at attitudes towards menstruation of undergraduate males in Hong Kong showed similar findings.

It is evident that the MAQ has been widely used in a variety of different contexts and cultural settings. While a large body of research has used the MAQ in a variety of cultural contexts, only a few studies have attempted to assess the factor structure of the instrument. Chandra and Chaturvedi (1992) replicated the original factor structure of the MAQ among an Indian sample. The researchers modified the MAQ, although one factor was removed, the overall factor structure was maintained. Chandra and Chaturvedi (1992) computed mean item scores for each of the MAQ factors and compared these across the four factors, as well as with Brooks-Gunn and Ruble's original data. Despite making a number of changes to the wording of the items of the MAQ, as well as removing an entire factor, these authors accepted the original factor structure of the instrument (Bramwell et al., 2002).

Bramwell et al. (2002) argues that the descriptive data presented in Chandra and Chaturvedi's (1992) study would suggest that items within the same "factor" actually did produce very different attitudes within this Indian sample.

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For example, while 54% strongly agreed that "Women are more tired than usual when they are menstruating", only 4% strongly agreed with the subsequent item in that factor, "I expect extra consideration from my friends and relatives when I am menstruating". Therefore based on this type of attitude variation, and taking into consideration the varied demographics within samples; further consideration in cross-cultural comparisons is required (Bramwell et al., 2002).

In response to Chandra and Chaturvedi's (1992) study, Bramwell et al. (2002) conducted research with the aim of using the MAQ on two diverse groups of participants, one from Britain and the other from India, in order to compare the different attitudes towards menstruation. The main aim of the study was to assess the factor structure of the MAQ among these two groups. Through the use of Confirmatory Factor Analysis (CFA), the aim of the study was to not only consider the spread of the responses to various items, but also to explore the dimensionality of attitudes, based on the Brooks-Gunn and Ruble (1980) factor structure. The results of the study indicated important differences in aspects of attitudes to menstruation between Indian and British students. The CFA indicated that there were cultural differences which extend beyond the agreement of individual attitudinal statements. The original factor structure confirmed on United States students was not confirmed on a similar British sample and appeared to be even less applicable to the Indian student sample (Bramwell et al., 2002).

In a later study, Firat and colleagues (2009) assessed the factor structure of the MAQ among a sample of high school and undergraduate Turkish students. These authors were the first to use Exploratory Factor Analysis (EFA) on the MAQ, when the original factor structure was not confirmed through the use of CFA. Firat et al's (2009) analysis found that the factor structure derived from Brooks-Gunn and Ruble's original United States sample was not confirmed on the two Turkish samples. However, the EFA analysis did produce a model with five distinct dimensions of menstrual attitudes in the Turkish sample, very similar to the original one, which may suggest that each factor should be considered individually when scoring the MAQ. Based on these findings, the Turkish version of the modified MAQ factor structure appeared to show satisfactory psychometric properties when applied to the Turkish population. Although the Cronbach's alpha results (range 0.61 - 0.75) for each subscale was lower than those reported in previous research with US samples (Brooks-Gunn & Ruble, 1980), they remained in an acceptable range (Firat et al, 2009).

In comparison with Firat et al.'s (2009) findings on psychometric properties of the MAQ, the South African study, conducted by Padmanabhanunni and Fennie (2017), showed less satisfactory psychometric properties when applying the MAQ. The coefficient alpha reliabilities noted for the MAQ subscales in this study were as follows: Debilitating 0.66; Natural event 0:68; Bothersome 0.50; Denial 0.56; and Anticipation 0.54 (Padmanabhanunni & Fennie, 2017). These scores indicate borderline acceptable reliability which further indicates that this tool shows some inconsistencies when applied to a South African sample.

It is evident that the majority of studies that have assessed the factor structure of the original MAQ, have found the instrument to demonstrate inconsistencies when applied to populations outside of the US (Bramwell et al, 2002; Firat et al., 2009). Moreover, it is also evident that few studies have applied the MAQ to samples in developing countries.

2.4. Significance of the study

Cross-cultural researchers have emphasized the necessity of examining the internal structure of an instrument if meaningful cross-cultural comparisons and conclusions are to be drawn (Davidov, Meuleman, Cieciuch, Schmidt, & Billiet, 2014; Harachi, Choi, Abbott, Catalano, & Bliesner, 2006; Kankaraš & Moors, 2010). This is particularly the case for attributes such as values, beliefs and attitudes (Gregorich, 2006). For the MAQ to be meaningfully used in developing countries like South Africa, it is first necessary to ensure that constructs are equivalent. Hence the aim of the current study.

3. Aim of the study

The current study initially aimed to evaluate the attitudes of men towards menstruation using the MAQ. Following analysis of the data, it was found that the scale had low internal consistency reliabilities when used among the current sample and accurate interpretations could not be made. The low internal consistency reliabilities underscored the need to assess the psychometric properties of the instrument among the current sample. This led to the current aim of the study which involved investigating the psychometric properties of the MAQ as used on a South African sample of young men.

4. Methodology

4.1. Research design

This quantitative research study employed a cross-sectional research design. A cross-sectional survey collects data to make inferences about a population of interest at one point in time. It is described as a snapshot of the population about which one gathers data (Roller & Lavrakas, 2013).

4.2. Participants

Participants (n= 163) for the study were young men enrolled for undergraduate studies at UWC. Undergraduate students are typically in the period of emerging adulthood (i.e. between 18-25 years of age). The participants for this study were selected through purposive sampling, as the particular group is selected on the basis of gender and age. A total of 163 undergraduate males participated in the study.

Approximately 66% of the sample was males between the ages of 18 and 20 years; 24% of the sample was between the ages of 20 and 22years; 7% of the sample was between the ages of 22 and 24 years; and the remaining 3% of the sample was older than 26 years. With regards to race, the majority of the sample identified as coloured (46%), while the rest identified as black (42%), white (9%), and Indian (2%). A significant portion of the sample identified as Christian (70%) while the remainder was divided between Judaism (2%), Muslim (12%), and no religious affiliation (16%). Moreover, over half (65%) of the participants were first year students, while 26% were second year students and remainder (8%) were third year students.

4.3. Instruments

Two self-report measures will be used to collect data:

The MAQ (Brooks-Gunn & Ruble, 1980): (Appendix D): This 33 item questionnaire measures attitudes towards menstruation. Items are scored on a 7-point Likert scale, where high scores indicate robust validation of the items on each scale (1 = strongly disagree; 7 = strongly agree). The MAQ contains five subscales: (1) menstruation is a natural event ("menstruation gives women a way to keep in touch with their bodies"), (2) menstruation is a debilitating event ("women are more tired than usual when they are menstruating"), (3) menstruation is a predictable event ("women learn to anticipate their menstrual period by the mood changes that precede it"), (4) menstruation is a bothersome event ("menstruation is

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something women just have to put up with"), and (5) denial of any effects ("women who complain of menstrual distress are just using that as an excuse").

This measure was developed by Brook-Gunn and Ruble, and is thought to be the golden standard measurement in the field of menstruation, with a reported Cronbach's alpha coefficient of 0.95 to 0.97 (Neşe Şahin Ozdemir, 2013). Overall the MAQ is thought to be a validated questionnaire which shows sound reliability in assessing attitudes towards menstruation (Bargiota et al., 2016). It has been used in a variety of different contexts and among both men and women (Neşe Şahin Ozdemir, 2013; Bargiota et al., 2016; Jarrah & Kamel, 2011).

A demographic questionnaire: (Appendix C): A demographic survey was used to collect demographic information pertaining to: age, race, religion, year/level of study and household composition.

4.4. Procedure

Participants were recruited through advertisement of the study. The nature and aims of the research were shared: (i) on undergraduate student notice boards and (ii) with undergraduate students attending lectures with the prior consent of the lecturer concerned and the relevant department. Data collection took place on campus, in lecture venues. All measures were administered in English, in paper format as UWC is an English medium university (The University of the Western Cape, 2013). Administering questionnaires in one language also enhances standardisation of data (Terre Blanche & Durrheim, 2006).

Students were not required to provide any identifying information on the questionnaires and therefore all participants remained anonymous. Moreover, on the information sheet provided to each participant, it clearly stated that only the researcher and her supervisor would have access to the raw data, further confirming confidentiality. The researcher collected the questionnaires and securely stored them.

4.5. Data analysis

The data collected for this study was analysed using SPSS version 25 (IBM, 2016). Descriptive and inferential statistics were generated. Exploratory Factor Analysis (EFA) was used to analyse the factor structure of the MAQ. EFA is a broadly applied and widely used statistical technique, used in research to identify viable factor structures (Firat et al., 2009).

Firat and colleagues (2009) go on to describe EFA as a type of structural equation modelling technique which is used to establish the evaluate ways to improve the model by exploring which items which had been fixed might be freed (Firat et al., 2009). Thus, EFA is a powerful tool most commonly used in the second phase of research, when there is an existing model established.

4.6. Validity and Reliability

Both the integrity of the researcher and the testability of the paper greatly depend on the validity and reliability of the study. The stipulated procedures described in the above sections were closely followed by the researcher to ensure the utmost reliability and validity of the research. When research procedures are adhered to, it improves the ability for the study to be replicated, which positively impacts on reliability and validity of procedures. Furthermore, all information sheets and questionnaires were standardised to ensure equal participation opportunity for all participants (Terre Blanche & Durrheim, 2006).

5. Ethics

The ethical standards upheld by UWC were strictly adhered to throughout the proceedings of this study. Once ethical clearance from Humanities and Social Sciences Research Ethics Committee (HSSREC) was obtained, approval was sought from the registrar's office to enlist male undergraduate students from the university. Participation in the project was entirely voluntary and participants had the option to cease participation at any time they felt the need to withdraw. It was made known to them that leaving the study would bear no consequences. It is possible that completing the MAQ may evoke some discomfort for participants. To mitigate this, the content of the questionnaire was explained to potential participants beforehand so as to prepare them. In addition, they were advised about the availability of counselling services at the university. Each participant was provided with an information sheet (Appendix A) in which the aims and objectives of the study; the nature of their involvement in the study; how the information from the study will be used; and who will have access to the data collected is clearly explicated. Each participant was also required to sign a consent form (Appendix B) which informed them of their anonymity and confidentiality of participation. Students were not required to provide any identifying information on the questionnaires and therefore all participants remained anonymous. Special care was taken in keeping the information and identities of the participants confidential; as collected data was securely stored in a locked filing cabinet at the researcher's home where she resides alone. In addition, all processed data was kept on the researcher's personal laptop, which is not used by anyone other than the researcher, and is protected by a password.

6. Results

The current study originally aimed to investigate the attitudes of undergraduate males towards menstruation. However, upon analysis it was found that the instrument exhibited poor internal consistency.

The means, standard deviations and reliabilities (coefficient alpha) for the various subscales of the MAQ are reported in Table 1 below:

Table 1: Means, standard deviations and reliabilities of the MAQ

MAQ Subscales	Mean	Standard Deviation	Cronbach's Alpha
Subscale 1: Debilitation	2.7566	.53372	.613
Subscale 2: Bothersome Event	2.4118	.63922	.386
Subscale 3: Natural Event	2.5776	.54399	.379
Subscale 4: Anticipation Event	2.3706	.52955	.387
Subscale 5: Denial	3.4123	.80010	.782

From Table 1, it is evident that the internal consistency of the MAQ was low suggesting that the items within the instrument may not be measuring the same underlying construct.

For interest and in line with the original aim of the study, multivariate analysis was conducted to investigate the association between demographic factors and the subscales of the MAQ. These results are presented below.

Dependent Variable: Debilitation

Table 2: Association between demographics and the Debilitation subscale

Source	Mean Square	F	Sig.
Corrected Model	.365	1.429	.074
Intercept	305.884	1197.190	.000
Age	.232	.908	.406
Race	.398	1.557	.215

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Religion	.376	1.470	.227
Year Level	.036	.140	.869

For the Debilitation subscale, all of the demographics were not significant (i.e. less than 0.05).

Dependent Variable: Bothersome Event

Table 3: Association between demographics and the Bothersome Event subscale

Source	Mean Square	F	Sig.
Corrected Model	.336	.745	.855
Intercept	239.692	531.673	.000
Age	.437	.970	.382
Race	.861	1.911	.153
Religion	.415	.921	.433
Year Level	.143	.318	.728

For the Bothersome subscale, all of the demographics were not significant (i.e. less than 0.05).

Dependent Variable: Natural Event

Table 4: Association between demographics and Natural Event subscale

Source	Mean Square	F	Sig.
Corrected Model	.265	.845	.724
Intercept	225.039	717.007	.000
Age	.137	.435	.648
Race	.027	.086	.917
Religion	.166	.530	.663
Year Level	.968	3.084	.050

For the Natural Event subscale, all of the demographics were not significant (i.e. less than 0.05).

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Dependent Variable: Anticipation

Table 5: Association between demographics and Anticipation subscale

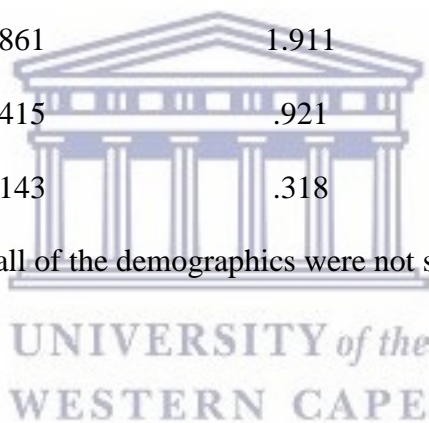| Source	Mean Square	F	Sig.
Corrected Model	.254	.844	.726
Intercept	215.170	715.045	.000
Age	.430	1.430	.244
Race	.132	.440	.645
Religion	.064	.212	.888
Year Level	.023	.078	.925

For the Anticipation subscale, all of the demographic were not significant (i.e. less than 0.05).

Dependent Variable: Denial

Table 6: Association between demographics and Denial subscale

Source	Mean Square	F	Sig.
Corrected Model	.808	1.378	.101
Intercept	377.781	644.134	.000
Age	.398	.679	.509
Race	1.554	2.649	.075
Religion	.469	.800	.497
Year Level	.103	.175	.840

For the Denial subscale, all of the demographics were not significant (i.e. less than 0.05).

The findings from the multivariate analysis indicate that there was nothing significant when investigating the relationship between participant demographics and the MAQ.

Due to the low reliability of the MAQ, an EFA was conducted. EFA is used to group the factors that have the same characteristics together in order to identify which factors have the most impact and remain in the model, and which factors have little or no impact so can be eliminated from the model, and accordingly obtain a model of the most effective factors (Firat et al., 2009).

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Component Matrix[a]

Component

Table 7: Component Matrix for 11 factors

	1	2	3	4	5	6	7	8	9	10	11
Sporting activities	.339				.382	.439					
Have to put up with menstruation	.390				-.373						
Affirmation of womanhood	.304	.435						.375			
Physical signs approaching	.499						-.375				
Weight gain just before/after		.343		-.624							
More tired	.518	.335							-.397		
Expect extra consideration	.397	.384					.333				
Enjoy menstruation	.536						.351				
A way to keep women in touch with body					.371						
Anticipate menstruation through mood changes	.476				-.351						
Should not be critical when women get upset			.519				.425		.304		
Physiological effects of menstruation no greater than usual physical fluctuations			.458						.377		-.310
Men have an advantage of no monthly interruption	.304						-.487				
Women's mood not influenced by menstruation	.504								-.433		

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	1	2	3	4	5	6	7	8
Cramps only bothersome when attention is paid to them	-.515							
Negatively influence performance in sport				-.486	.378			
Feel as fit during menstruation as any other time	.482			.331	.443			
Hope that it will be possible to get menstruation over period of minutes	.427	.361				-.345	-.313	
Obvious example of rhythmicity that pervades life	.394						.488	
Irritability blamed on menstruation is psychologically disturbed	-.457	.554						
Barely notice minor effects on bodies	-.339	.350				-.304		
Don't allow menstruation to impact on normal activities			-.582	.430				
Menstruation does not impact on intellectual tasks			-.579					
Avoiding certain activities is wise during menstruation	.522			.425				
Good for knowing if one is pregnant		.404						-.351
Using menstruation as an excuse	-.556	.511						
Not as easily upset as at other times of month	.509							
Cannot expect as much from self during menstruation		.528		.415				

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Menstruation is an indication of general good health			.352			.373					
Pre-menstrual tension is all in the head	-.453	.582									
Accept that not able to perform well during menstruation		.473			.347		-.416				
Make too much of minor physiological effects during menstruation	-.459	.502								-.343	

Extraction Method: Principal Component Analysis.

a.   11 components extracted.

From Table 7 above, it is evident that the EFA extracted 11 factors that accounted for 65.41% of the variance. However, there were cross loadings and the factors did not appear meaningful. As a consequence, a forced five factor solution based on the expected subscales of the MAQ was performed.

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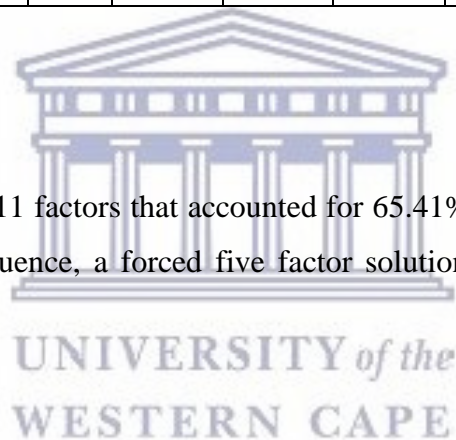
Component Matrix[a]

Table 8: Forced five factor solution Components

	1	2	3	4	5
Sporting activities	.339				.382
Have to put up with menstruation	.390				-.373
Affirmation of womanhood	.304	.435			
Physical signs approaching	.499				
Weight gain just before/after		.343		-.624	
More tired	.518	.335			
Expect extra consideration	.397	.384			
Enjoy menstruation	.536				
A way to keep women in touch with body					
Anticipate menstruation through mood changes	.476				-.351
Should not be critical when women get upset			.519		
Physiological effects of menstruation no greater than usual physical fluctuations			.458		
Men have an advantage of no monthly interruption	.304				
Women's mood not influenced by menstruation	.504				
Cramps only bothersome when attention is paid to them	-.515				
Negatively influence performance in sport				-.486	.378

	1	2	3	4	5
Feel as fit during menstruation as any other time	.482			.331	.443
Hope that it will be possible to get menstruation over period of minuets	.427	.361			
Obvious example of rhythmicity that pervades life	.394				
Irritability blamed on menstruation is psychologically disturbed	-.457	.554			
Barely notice minor effects on bodies	-.339	.350			
Don't allow menstruation to impact on normal activities			-.582	.430	
Menstruation does not impact on intellectual tasks			-.579		
Avoiding certain activities is wise during menstruation	.522				.425
Good for knowing if one is pregnant		.404			
Using menstruation as an excuse	-.556	.511			
Not as easily upset as at other times of month	.509				
Cannot expect as much from self during menstruation		.528		.415	
Menstruation is an indication of general good health			.352		
Pre-menstrual tension is all in the head	-.453	.582			
Accept that not able to perform well during menstruation		.473			.347
Make too much of minor physiological effects during menstruation	-.459	.502			

Extraction Method: Principal Component Analysis

a. 5 Components extracted

The forced five factor solution accounted for 42.4% of the variance. From Table 8 above, there are no meaningful patterns of factors. In the first instance, almost all items cross loads on more than one factor. Some of the items do not load on any of the five factors, for example, the item "menstruation provides a way for women to keep in touch with their bodies". Secondly, there is no meaningful pattern of loadings of items on factors. For example, the Anticipation items load on three different factors (1, 4 and 3). Also, several items on the Debilitation subscale load on factors 1 and 5. In summary, both the EFA as well as the forced factor solution did not produce a meaningful pattern of loadings.

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7. Discussion

This study aimed to investigate the psychometric properties of the MAQ as used among a South African sample of young men. To the researcher's knowledge, this is the first study to examine the factor structure of the MAQ in a sample of young, South African males at a university. These findings contribute to existing menstrual attitude literature by indicating the lack of suitability of the MAQ, a widely used tool used in international menstruation research, for use in the South African context; particularly among men.

The analysis used in this study comprised of Principal Component Analysis which is an EFA technique for identifying groups or clusters of variables (Howard, 2015). This technique has three main uses; to understand the structure of a set of variables; to construct a questionnaire to measure an underlying variable; and to reduce a data set to a more manageable size while retaining as much of the original information as possible (Howard, 2015). There are three assumptions which should be met before conducting Principal Component Analysis (PCA); namely, the assumption of adequate sample size, the assumption of correlation between variables, and the assumption of normality (Howard, 2015). Firat et al. (2009) maintain that EFA assists in exploring the latent variable structure and is a known data-drive method of analysis. Therefore the use of EFA should be strictly chosen in accordance with the aim of the research.

The results of this study indicate that items on the subscales of the MAQ load in an erroneous manner. In the initial Principal Component Analysis, the EFA extracted 11 factors that accounted for 65.41% of the variance. However, there was evidence of cross loadings and the factors did not appear meaningful. In order to further investigate, a forced five factor solution based on the expected subscales of the MAQ was performed. Once completed, the forced five factor solution accounted for 42.4% of the variance; however there were still no meaningful patterns of factors. In some instances, items cross load across more than one factor, while in other instances certain items did not load onto any of the existing factors. In principal the MAQ should measure one latent construct (i.e. Male attitudes toward menstruation); however, results showed that the instrument measures more than one latent construct. In addition, after reviewing the pattern matrix, it was found that four of the variables (Debilitation, Bothersome Event, Natural Event, Anticipation Event) measure the same thing, but that the Denial variable loads separately, indicating that it deviates with regards to construct when compared to the other four variables.

This factor could potentially be enhanced by additional questions and clarification of these problematic items. However, at present the tool shows a poor fit with the sample it has been applied to.

These findings are consistent with those from previous related studies. For example, in Chandra and Chaturvedi's (1992) study in which they replicated the original factor structure of the MAQ among an Indian sample; an entire factor needed to be removed as well as the wording in the MAQ needed to be changed to make the instrument applicable to an Indian population. In another instance, Bramwell et al. (2002) applied the MAQ to two diverse sample groups, one from Britain and one from India. Through the use of CFA, the authors were able to ascertain that the original factor structure of the MAQ, confirmed on the United States students, was not confirmed on a similar British sample and appeared to be even less applicable to the Indian student sample (Bramwell et al. 2002).

Future suggestions for the use of the MAQ on a South African population include the primary focus on a revised model. Once the model has been revised, confirmatory factor analysis should be conducted to investigate the goodness of fit. The rotated variance of the model and significance of the solution should be established, as well as the test-retest reliability should be evaluated. Thereafter, a series of construct validation studies should ensue. Sprang and Craig (2007) maintain that despite psychometric challenges relating to instruments, sampling issues also need to be taken into consideration. For instance, the manner in which respondents answer questions may be impacted on by selection bias. The authors further suggest that although self-report data is thought to be a valid and reliable information source, future research could examine whether collateral rater convergence would deliver increased confidence in the factors derived. It is plausible that the attitudes the sample report may reflect intention rather than actual behaviour or beliefs. Therefore a multi-method data collection protocol may enhance research practises and outcomes.

Furthermore, it remains important to not only investigate a construct in isolation, but also the correlates of particular constructs (Sechrest, 2005). This study included demographic variables as correlates to attitudes towards menstruation; however, due to the poor fit of the instrument to the sample, the demographic correlates proved insignificant. Future studies making use of reliable measures may want to do the same in order to retain the richness of their construct's context.

As discussed in earlier sections of this paper, the majority of research on menstruation has taken place in the United States and Europe (Beausang & Razor, 2002; Kissling, 1996; Cevirme et al., 2002), with a comparatively reduced focus on the topic in developing countries. Especially within South Africa, research in the field of menstruation is scant, with only a few studies focusing on female attitudes and experiences of menstruation to note (Padmanabhanunni & Fennie, 2017; Carver, 2007; Shefer; 2009). In a similar light, instrument development appears to be more prevalent in these first world countries, resulting in poor cross cultural applicability when applied to alternative populations or developing countries (Poortinga, 2016). This poses specific challenges in countries, such as South Africa, which have a sensitive social and political history related to psychometric enquiry; as well as a largely heterogeneous population (Laher & Cockcroft, 2013). Therefore, the lack of sensitivity around instrument validation needs to be redressed, instead of perpetuated.

In accordance with the recent wave of awareness regarding cross cultural instrument validation, this study emphasises that special care and substantial revision needs to be put in place if the MAQ is to be applied in the South African context.

8. Conclusion

Existing studies suggest that males often view menstruation in a more negative light, which have shown to promote sexism and negative attitudes towards women (Marvan, Vazquez-Toboada, & Chrisler, 2013). Literature suggests that the MAQ is a commonly utilised tool used to assess attitudes towards menstruation all over the world, but few validation studies have assessed it's applicability to varied contexts (Bramwell et al., 2002). Although the scale development and evaluation process consists of several steps, among the most important is identifying a theoretically and psychometrically sound factor structure. An investigation into the psychometric properties of the MAQ when applied to a sample of South African male university students was conducted. Results from this study found that the MAQ's factor structure when applied to a sample of South African men does not show meaningful factor loadings, and suggests a poor fit between the MAQ and this population.

9. Limitations

This study has some notable methodological limitations. Firstly, the study made use of a relatively small sample from a prescribed population (males at university). Futures studies may need to be conducted on other populations in order to determine if the similar findings occur in relation to the MAQ. In addition, the lack of prior research on the psychometric properties of the MAQ, especially in the South African context, posed significant challenges for adequately substantiating the research problem with existing literature. However; it must be noted that this research therefore aids in filling an important gap in existing literature regarding the MAQ and its applicability in both a local and international context.

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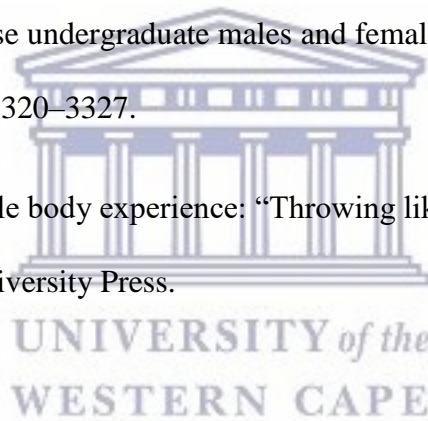
Appendix A: Information Sheet

UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa

Tel: +27 959 2283

Email: 3714342@myuwc.ac.za

[*This information sheet provides a brief description of the project you will be a part of. If you have any further questions, please contact Karen Roos on the contact details provided below*]

Project Title: An investigation into the attitudes of male undergraduate students towards menstruation: The psychometric properties of the Menstrual Attitude Questionnaire.

What is this study about?

This is a research project being conducted by Karen Roos at the University of the Western Cape. We are inviting you to participate in this research project because as a male, your attitudes towards menstruation could be of great value to this study. The purpose of this research project is to investigate the attitudes of undergraduate, male UWC students towards menstruation and to understand how you have acquired information about menstruation. This research project will also look at the relationship between demographic factors and attitudes towards menstruation. This knowledge is being sought due to an absence of literature in this area of study in South Africa.

What will I be asked to do if I agree to participate?

You will be asked to complete three questionnaires. The first questionnaire will look at your attitudes towards menstruation. The second questionnaire will investigate your knowledge on menstruation. The third questionnaire will ask you to fill out your demographic related information.

Would my participation in this study be kept confidential?

We will do our best to keep your personal information confidential. To help protect your confidentiality and identity, you will not be asked to write your name or any other identifiable information on any of the questionnaires provided. The completed questionnaires will also be kept in a locked cabinet which that will only be accessible to myself and my supervisor. Your name will not be used in the transcriptions, or in any parts of the research project. Your identity will be protected to the highest degree possible if a report or article is written from the findings of this study.

What are the risks of this research?

Due to the personal nature of menstruation, you may experience feelings of embarrassment or discomfort.

What are the benefits of this research?

Your participation will help the researcher learn more about the area of study. We hope that in future, other people might benefit from this study through improved understanding of male attitudes towards menstruation. One such benefit may be that education on menstruation can be improved for boys at home and in schools.

Do I have to be in this research and may I stop participating at any time?

Your participation in this research is completely voluntary. You may choose not to take part at all. If you decide to participate in this research, you may stop participating at any time. If you decide not to participate in this study or if you stop participating at any time, there will be no negative consequences for doing so, you will not be penalised, or lose any benefits to which you otherwise qualify. You are not obligated to reply to any question should you be uncomfortable.

Is any assistance available if I am negatively affected by participating in this study?

If the content of the questionnaires makes you feel uncomfortable or elicit negative feelings, appropriate debriefing will be provided.

What if I have questions?

This research is being conducted by Karen Roos (Department of Psychology) at the University of the Western Cape. If you have any questions about the research study itself, please contact Karen Roos at the M. Psych room in the Psychology Department. Alternatively, you can send an email to 3714342@myuwc.ac.za.

Should you have any questions regarding this study and your rights as a research participant or if you wish to report any problems you have experienced related to the study, please contact:

Deputy Head of Department: Mario Smith   (mrsmith@uwc.ac.za)

Dean of the Faculty of Community and Health Sciences: Prof. J. Frantz
(jfrantz@uwc.ac.za / 021 959 2163)

University of the Western Cape

Private Bag X17

Bellville 7535

This research has been approved by the University of the Western Cape's Senate Research Committee and Ethics Committee.

Appendix B: Consent Form

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UNIVERSITY OF THE WESTERN CAPE

Private Bag X 17, Bellville 7535, South Africa

Tel: +27 959 2283

Email: 3714342@myuwc.ac.za

</div>

Title of Research Project: An investigation into the attitudes of male undergraduate students towards menstruation: The psychometric properties of the Menstrual Attitude Questionnaire.

The study has been described to me in language that I understand and I freely and voluntarily agree to participate. My questions about the study have been answered. I understand that my identity will not be disclosed and that I may withdraw from the study without giving a reason at any time and this will not negatively affect me in any way.

Participant's name & surname………………………………………………………

Participant's signature……………………………..

Witness……………………………..

Date………………………
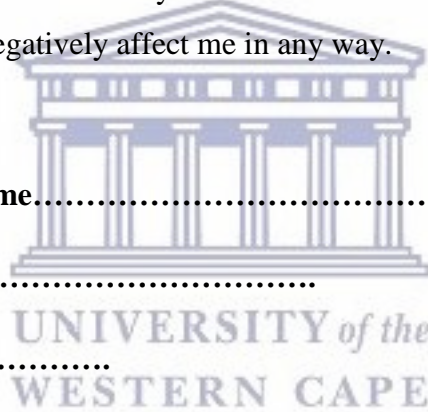
Should you have any questions regarding this study or wish to report any problems you have experienced related to the study, please contact the study coordinator:

Study Coordinator's Name: Karen Roos

University of the Western Cape

Private Bag X17, Belville 7535

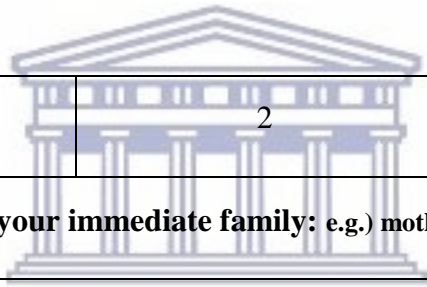**Telephone: (021) 959 2283**

Email: 3714342@myuwc.ac.za

<div align="center">

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Appendix C: Demographic Survey

If you do not wish to be a part of this study due to your cultural beliefs, please tick the box below:

☐ I decline to take part in this study due my cultural beliefs.

Please complete the below demographic survey by either placing a cross over the chosen response or filling in the open blocks where specified:

Age (years)				
Race	Black	Coloured	White	Indian	Other (please specify):
Religion				
Level /Year	1		2		3

Please comment on who constitutes your immediate family: e.g.) mother, father and 2 two sisters

Are there any women in the home where you grew up?

Mother	Sister	Other (please specify)

WHERE did you get information about menstruation? (please tick the correct box below)

Parents	School	Friends	Media	Sister	Girlfriend	Other (please specify):

Appendix D: Menstrual Attitude Questionnaire (MAQ)

This questionnaire consists of 33-items that assess your attitudes towards menstruation. Please answer each question by placing an (X) in the appropriate column.

	Instructions: This questionnaire consists of 33-items that assess your attitudes towards menstruation. Please answer each question by placing an **(X)** in the appropriate column.					
	SA = Strongly agree; A = Agree; N = Neither agree or disagree; D = Disagree; SD = Strongly disagree					
1.	A woman's performance in sports is not affected negatively by menstruation.	SA	A	N	D	SD
2.	Menstruation is something women just have to put up with.	SA	A	N	D	SD
3.	Menstruation is a recurring affirmation of womanhood.	SA	A	N	D	SD
4.	Woman can tell that their period is approaching because of breast tenderness, backache, cramps, or other physical signs.	SA	A	N	D	SD
5.	Most women show a weight gain just before or during menstruation.	SA	A	N	D	SD
6.	Women are more tired than usual when they are menstruating.	SA	A	N	D	SD
7.	Women expect extra consideration from friends when they are menstruating.	SA	A	N	D	SD
8.	In some ways women enjoy menstrual periods.	SA	A	N	D	SD
9.	Menstruation provides a way for women to keep in touch with their body.	SA	A	N	D	SD
10.	Women have learned to anticipate their menstrual period by the mood changes which precede it.	SA	A	N	D	SD
11.	Other people should not be critical of a woman who is easily upset before or during her menstrual period.	SA	A	N	D	SD
12.	The physiological effects of menstruation are normally no greater than other usual fluctuations in physical state.	SA	A	N	D	SD
13.	Men have a real advantage in not having the monthly interruption of a menstrual period.	SA	A	N	D	SD
14.	A woman's own moods are not influenced in any major way by the phase of the menstrual cycle.	SA	A	N	D	SD
15.	Periods/Menstrual cramps are bothersome only if a woman pays attention to them.	SA	A	N	D	SD
16.	Menstruation can negatively affect women's performance in sports.	SA	A	N	D	SD
17.	Women feel as fit during menstruation as they do during any other time of the month.	SA	A	N	D	SD
18.	Women hope it will be possible someday to get a menstrual period over within a few minutes.	SA	A	N	D	SD
19.	Menstruation is an obvious example of the rhythmicity that pervades all of life.	SA	A	N	D	SD

20.	A woman who attributes her irritability to her approaching menstrual period is psychologically disturbed.	SA	A	N	D	SD
21.	Women barely notice the minor effects of their menstrual periods on their body.	SA	A	N	D	SD
22.	Women don't allow the fact that they are menstruating to interfere with their usual activities.	SA	A	N	D	SD
23.	Menstrual periods do not affect how well women do on intellectual tasks.	SA	A	N	D	SD
24.	Avoiding certain activities during menstruation is often very wise.	SA	A	N	D	SD
25.	The only thing menstruation is good for is to let a woman know that she is not pregnant.	SA	A	N	D	SD
26.	Women who complain of menstrual distress such as cramps are just using that as an excuse.	SA	A	N	D	SD
27.	Women are more easily upset during premenstrual or menstrual periods than at other times of the month.	SA	A	N	D	SD
28.	Women cannot expect as much of themselves during menstruation compared to the rest of the month.	SA	A	N	D	SD
29.	The recurrent monthly flow of menstruation is an external indication of a woman's general good health.	SA	A	N	D	SD
30.	Premenstrual tension/irritability is all in a woman's head.	SA	A	N	D	SD
31.	Women just have to accept the fact that they may not perform as well when they are menstruating.	SA	A	N	D	SD
32.	Most women make too much of the minor physiological effects of menstruation.	SA	A	N	D	SD

SA = Strongly agree; **A** = Agree; **N** = Neither agree or disagree; **D** = Disagree; **SD** = Strongly disagree