Wister et al. (2013)

If the study has a broad focus and this data extraction focuses on just one component of the study, please specify this here

☒ Not applicable (whole study is focus of data extraction)

Study aim(s) and rationale

Was the study informed by, or linked to, an existing body of empirical and/or theoretical research?

☒ Explicitly stated (please specify)

The study was informed by previous research on stereotype threat, particularly studies demonstrating its negative impact on cognitive ability tests among African Americans and women's performance on mathematics tests. It was also informed by research on menstrual attitudes and experiences, including studies showing persistent negative stereotypes about menstruation.

Do authors report how the study was funded?

☒ Not stated/unclear (please specify)

The authors do not report how the study was funded.

Study research question(s) and its policy or practice focus

What is/are the topic focus/foci of the study?

The study focuses on whether mentioning menstruation serves as a stereotype threat that diminishes women's cognitive performance, and whether positive priming about menstruation can counteract this threat or enhance cognition.

What is/are the population focus/foci of the study?

The population focus is undergraduate women.

What is the relevant age group?

☒ 17 - 20

☒ 21 and over

The participants ranged in age from 18 to 29 years old.

What is the sex of the population focus/foci?

☒ Female only

What is/are the educational setting(s) of the study?

☒ Higher education institution

In Which country or cuntries was the study carried out?

☒ Explicitly stated (please specify)

The study was carried out in the United States.

Please describe in more detail the specific phenomena, factors, services, or interventions with which the study is concerned

The study is concerned with: 1. Menstruation as a potential stereotype threat 2. The impact of mentioning menstruation on cognitive performance 3. The effect of positive priming about menstruation on cognitive performance 4. Women's attitudes towards menstruation as bothersome or debilitating 5. The relationship between closeness to menstruation and cognitive performance

What are the study reserach questions and/or hypotheses?

☒ Explicitly stated (please specify)

The study had four main hypotheses: 1. Participants in the Menstruation Threat conditions would perform more poorly on cognitive tasks than women in the No Menstruation Threat conditions. 2. Positive priming would counteract the influence of the Menstruation Threat. 3. Women who thought menstruation was bothersome and/or debilitating, and those who specifically endorsed the belief that menstruation negatively impacted their cognitive performance, would not do as well on cognitive tasks compared to women who did not hold these beliefs. 4. Women in the Menstruation Threat conditions would perform more poorly on cognitive tasks than women in the No Menstruation Threat conditions, the closer they were to menstruating.

Methods - Design

Which variables or concepts, if any, does the study aim to measure or examine?

☒ Explicitly stated (please specify)

The study aimed to measure: 1. Cognitive performance (using Stroop test and SAT-like math test) 2. Menstrual attitudes (using Menstrual Attitude Questionnaire) 3. Proximity to menstruation 4. Impact of menstruation threat and positive priming on cognitive performance

Study timing

☒ Cross-sectional

If the study is an evaluation, when were measurements of the variable(s) used for outcome made, in relation to the intervention?

☒ Only after

Cognitive performance was measured after the menstruation threat and/or positive prime interventions.

Methods - Groups

If comparisons are being made between two or more groups, please specify the basis of any divisions made for making these comparisons.

☒ Prospecitive allocation into more than one group (e.g. allocation to different interventions, or allocation to intervention and control groups)

Participants were randomly assigned to one of four conditions based on the order of materials presented.

How do the groups differ?

☒ Explicityly stated (please specify)

The groups differed in the order of materials presented: 1. Menstruation Threat/No Positive Prime 2. Menstruation Threat/Positive Prime 3. Positive Prime/No Menstruation Threat 4. No Positive Prime/No Menstruation Threat

Number of groups

☒ Four or more (please specify)

There were four groups.

Was the assignment of participants to interventions randomised?

☒ Random

Participants were randomly assigned to one of the four conditions.

Where there was prospective allocation to more than one group, was the allocation sequence concealed from participants and those enrolling them until after enrolment?

☒ Not stated/unclear (please specify)

The authors do not explicitly state whether the allocation sequence was concealed.

Apart from the experimental intervention, did each study group receive the same level of care (that is, were they treated equally)?

☒ Yes

All participants completed the same cognitive tasks and questionnaires, with only the order of presentation varying between groups.

Study design summary

This study used a 2 (Menstruation Threat/No Menstruation Threat) × 2 (Positive Prime/No Positive Prime) factorial design, yielding four conditions. Participants were randomly assigned to one of these conditions, which determined the order in which they received the menstruation history questionnaire (serving as the menstruation threat), positive prime information, and cognitive tasks. All participants completed the same cognitive tasks (Stroop test and SAT-like math test) and the Menstrual Attitudes Questionnaire.

Methods - Sampling strategy

Are the authors trying to produce findings that are representative of a given population?

☒ Implicit (please specify)

While not explicitly stated, the authors appear to be aiming for findings representative of undergraduate women, as they used a sample of undergraduate women from a small, urban university.

Which methods does the study use to identify people or groups of people to sample from and what is the sampling frame?

☒ Not stated/unclear (please specify)

The authors do not provide details on the sampling method or frame.

Which methods does the study use to select people or groups of people (from the sampling frame)?

☒ Not stated/unclear (please specify)

The specific selection method is not stated.

Planned sample size

☒ Not stated/unclear (please specify)

The planned sample size is not stated.

Methods - Recruitment and consent

Which methods are used to recruit people into the study?

☒ Not stated/unclear (please specify)

The recruitment methods are not specified.

Were any incentives provided to recruit people into the study?

☒ Not stated/unclear (please specify)

The authors do not mention whether any incentives were provided.

Was consent sought?

☒ Not stated/unclear (please specify)

The authors do not explicitly mention obtaining consent, though it is likely that consent was obtained as per standard research practices.

Are there any other details relevant to recruitment and consent?

☒ No

Methods - Actual sample

What was the total number of participants in the study (the actual sample)?

☒ Explicitly stated (please specify)

The actual sample was 92 undergraduate women, with 75 providing complete data for analysis.

What is the proportion of those selected for the study who actually participated in the study?

☒ Not stated/unclear (please specify)

This information is not provided.

Which country/countries are the individuals in the actual sample from?

☒ Explicitly stated (please specify)

The participants were from the United States.

What ages are covered by the actual sample?

☒ 17 to 20
☒ 21 and over

The participants ranged in age from 18 to 29 years old (M = 20.76, SD = 2.57).

What is the socio-economic status of the individuals within the actual sample?

☒ Not stated/unclear (please specify)

The socio-economic status of the participants is not reported.

What is the ethnicity of the individuals within the actual sample?

☒ Explicitly stated (please specify)

The sample was primarily European American (87%).

What is known about the special educational needs of individuals within the actual sample?

☒ Not stated/unclear (please specify)

No information is provided about special educational needs.

Is there any other useful information about the study participants?

☒ Explicitly stated (please specify no/s.)

50% of the participants reported taking oral contraceptives.

How representative was the achieved sample (as recruited at the start of the study) in relation to the aims of the sampling frame?

☒ Unclear (please specify)

The representativeness of the sample is unclear as the sampling frame is not described.

If the study involves studying samples prospectively over time, what proportion of the sample dropped out over the course of the study?

☒ Not applicable (not following samples prospectively over time)

For studies that involve following samples prospectively over time, do the authors provide any information on whether and/or how those who dropped out of the study differ from those who remained in the study?

☒ Not applicable (not following samples prospectively over time)

If the study involves following samples prospectively over time, do authors provide baseline values of key variables such as those being used as outcomes and relevant socio-demographic variables?

☒ Not applicable (not following samples prospectively over time)

Methods - Data collection

Please describe the main types of data collected and specify if they were used (a) to define the sample; (b) to measure aspects of the sample as findings of the study?

☒ Details

(a) To define the sample: Demographic information (age, ethnicity), use of oral contraceptives
(b) To measure aspects of the sample: Cognitive performance (Stroop test and SAT-like math test scores), menstrual attitudes (MAQ scores), proximity to menstruation

Which methods were used to collect the data?

☒ Self-completion questionnaire
☒ Psychological test

Details of data collection methods or tool(s).

☒ Explicitly stated (please specify)

1. Menstruation History/Threat: A 6-item survey developed by the researchers
2. Positive Prime: A short paragraph created by the researchers
3. Stroop test: 50 words printed in colors that do not match the word, 30 seconds to complete
4. SAT-like Math test: 15-item test developed by the authors, 15 minutes to complete
5. Menstrual Attitude Questionnaire (MAQ): 33-item questionnaire with 5 subscales (only 2 used in this study)

Who collected the data?

☒ Not stated/unclear

The authors do not specify who collected the data.

Do the authors describe any ways they addressed the reliability of their data collection tools/methods?

☒ Details

The authors report acceptable levels of internal reliability for the MAQ subscales used (Debilitation, α= 0.75; Bothersome, α = 0.75).

Do the authors describe any ways they have addressed the validity of their data collection tools/methods?

☒ Details

The authors do not explicitly address the validity of their data collection tools. However, they use established measures like the Stroop test and base their math test on the SAT, which are widely used and validated measures.

Was there concealment of study allocation or other key factors from those carrying out measurement of outcome – if relevant?

☒ Not stated/unclear (please specify)

The authors do not explicitly state whether there was concealment from those carrying out measurement of outcomes.

Where were the data collected?

☒ Unclear/not stated (please specify)

The specific location of data collection is not stated, though it was likely at the university where the study was conducted.

Are there other important features of data collection?

☒ Details

The order of materials presented varied according to the experimental condition, which was a key feature of the study design.

Methods - Data analysis

Which methods were used to analyse the data?

☒ Explicitly stated (please specify)

The authors used MANOVA, correlational analyses, and z-tests to compare correlations.

Which statistical methods, if any, were used in the analysis?

☒ Details

1. 2x2 MANOVA to examine effects of Menstruation Threat and Positive Prime on Stroop and mathematics performance
2. Correlational analyses to test relationships between MAQ subscales and cognitive performance
3. MANOVA to test for differences in MAQ subscale scores across conditions
4. Correlations between days since last menstrual period and cognitive performance for each condition
5. Z-tests to compare correlations between conditions

What rationale do the authors give for the methods of analysis for the study?

☒ Details

The authors do not provide an explicit rationale for their choice of analysis methods.

For evaluation studies that use prospective allocation, please specify the basis on which data analysis was carried out.

☒ Not applicable (not an evaluation study with prospective allocation)

Do the authors describe any ways they have addressed the reliability of data analysis?

☒ Details

The authors do not explicitly describe ways they addressed the reliability of data analysis.

Do the authors describe any ways they have addressed the validity of data analysis?

☒ Details

The authors do not explicitly describe ways they addressed the validity of data analysis.

Do the authors describe strategies used in the analysis to control for bias from confounding variables?

☒ Details

The authors conducted a Chi-Square analysis to ensure that women taking oral contraceptives were evenly distributed across all conditions.

Please describe any other important features of the analysis.

☒ Details

The authors analyzed the specific impact of proximity to menstruation on cognitive performance across different experimental conditions.

Please comment on any other analytic or statistical issues if relevant.

☒ Details

No other significant analytic or statistical issues were noted.

Results and Conclusions

How are the results of the study presented?

☒ Details

The results are presented in text form with statistical details, as well as in tables showing means and standard deviations for cognitive performance and menstrual attitude scores across conditions.

What are the results of the study as reported by authors?

☒ Details

1. Main effect of Menstruation Threat on Stroop performance: participants in Menstruation Threat conditions completed significantly fewer items correctly.
2. No effect of Menstruation Threat on math performance.
3. No effect of Positive Prime on cognitive performance.
4. Women in Menstruation Threat conditions viewed menstruation as less debilitating, less bothersome, and having less impact on intellectual tasks than those in No Menstruation Threat conditions.
5. In the Menstruation Threat/No Positive Prime condition, participants performed more poorly on the Stroop the closer they were to their next period.
6. In the No Menstruation Threat/Positive Prime condition, participants performed better on the Stroop the closer they were to their next period.

Was the precision of the estimate of the intervention or treatment effect reported?

- CONSIDER:
  - Were confidence intervals (CIs) reported?

☒ No
☐ Can't tell

Are there any obvious shortcomings in the reporting of the data?

☒ No

Do the authors report on all variables they aimed to study as specified in their aims/research questions?

☒ Yes (please specify)

The authors report on all variables specified in their research questions, including the effects of menstruation threat and positive priming on cognitive performance, menstrual attitudes, and the relationship between proximity to menstruation and cognitive performance.

Do the authors state where the full original data are stored?

☒ No

What do the author(s) conclude about the findings of the study?

☒ Details

The authors conclude that: 1. Mentioning menstruation can serve as a stereotype threat that diminishes cognitive performance, particularly on the Stroop test. 2. The positive prime used in this study did not counteract the effect of menstruation threat and may have intensified it. 3. Positive priming may moderate the relationship between closeness to menstruation and cognitive performance. 4. Further research is needed to investigate how negative assumptions about menstruation may influence women's functioning, attitudes, and experiences.

Quality of the study - Reporting

Is the context of the study adequately described?

☒ Yes (please specify)

The study context is adequately described, including the background of stereotype threat research, menstrual attitudes research, and the rationale for investigating menstruation as a potential stereotype threat.

Are the aims of the study clearly reported?

☒ Yes (please specify)

The aims of the study are clearly reported, with four specific hypotheses outlined.

Is there an adequate description of the sample used in the study and how the sample was identified and recruited?

☒ No (please specify)

While the authors provide some details about the sample (e.g., age range, ethnicity, use of oral contraceptives), there is limited information on how the sample was identified and recruited.

Is there an adequate description of the methods used in the study to collect data?

☒ Yes (please specify)

The authors provide adequate descriptions of the data collection methods, including details about the Menstruation History/Threat questionnaire, Positive Prime, Stroop test, SAT-like Math test, and Menstrual Attitude Questionnaire.

Is there an adequate description of the methods of data analysis?

☒ Yes (please specify)

The authors describe their data analysis methods, including the use of MANOVA, correlational analyses, and z-tests to compare correlations.

Is the study replicable from this report?

☒ No (please specify)

While many aspects of the study are well-described, some key details are missing (e.g., recruitment methods, specific content of the Positive Prime) that would make exact replication challenging.

Do the authors avoid selective reporting bias?

☒ Yes (please specify)

The authors report on all variables they aimed to study as specified in their research questions and hypotheses.

Quality of the study - Methods and data

Are there ethical concerns about the way the study was done?

☒ No concerns

There are no apparent ethical concerns about the way the study was conducted.

Were students and/or parents appropriately involved in the design or conduct of the study?

☒ No (please specify)

There is no indication that students or parents were involved in the design or conduct of the study beyond participation.

Is there sufficient justification for why the study was done the way it was?

☒ Yes (please specify)

The authors provide sufficient justification for their study design, linking it to previous research on stereotype threat and menstrual attitudes.

Was the choice of research design appropriate for addressing the research question(s) posed?

☒ Yes (please specify)

The 2x2 factorial design was appropriate for addressing the research questions about the effects of menstruation threat and positive priming on cognitive performance.

To what extent are the research design and methods employed able to rule out any other sources of error/bias which would lead to alternative explanations for the findings of the study?

☒ A little (please specify)

The randomized design helps control for some sources of bias, but there are potential confounds (e.g., individual differences in menstrual experiences, prior exposure to menstrual education) that are not fully addressed.

How generalisable are the study results?

☒ Details

The results may be generalizable to undergraduate women in the United States, but caution should be exercised in extending these findings to other populations or cultural contexts.

Weight of evidence - A: Taking account of all quality assessment issues, can the study findings be trusted in answering the study question(s)?

☒ Medium trustworthiness (please specify)

The study has a clear design and uses established measures, but lacks some details about recruitment and has limitations in sample representativeness.

Have sufficient attempts been made to justify the conclusions drawn from the findings so that the conclusions are trustworthy?

☒ Medium trustworthiness

The authors discuss their findings in relation to their hypotheses and previous research, but some conclusions may be drawn too strongly given the limitations of the study.

References

Wister, J. A., Stubbs, M. L., & Shipman, C. (2013). Mentioning menstruation: A stereotype threat that diminishes cognition? *Sex Roles*, *68*(1-2), 19–31. https://doi.org/10.1007/s11199-012-0156-0