



Note. The black and green text is the original registration protocol. We edited the document to highlight deviations from the protocol:

✓ = registered and completed

BLUE TEXT = explanation

X = registered and not completed

RED TEXT = explanation

ORANGE TEXT = Steps we took that go beyond the registration protocol.

██████████ = blackened to conceal author identity

We will upload the original, unedited document next to this commented, edited version upon acceptance for publication.

Citation

██████████

Review question

Is there a gender-difference in human sex drive as indexed by frequency of sexual thoughts ✓, frequency of sexual desires ✓, frequency of masturbation ✓ (these three are now termed primary indicators/sex drive facets), and intensity of sexual desire ✓, and self-rated sex drive (these two are now termed secondary indicators)?

Is there a gender-difference in potentially biased responding as indexed by gender differences in sexual intercourse frequency, lifetime number of sex partners, lifetime number of one-night-stands, and number of sex partners in the past year (bias indicators)?

Do gender-differences vary across cultures ✓ (GDI, GII) and/or time ✓?

Are gender-differences dependent on sample characteristics like sexual orientation ✓, parental status ✓, number of children ✓ (insufficient data for testing), relationship status ✓, socio-economic status ✓, ethnicity ✓, age ✓, religiosity ✓, or use of hormonal contraception ✓ (insufficient data), average partnership duration, country-level sex ratio, participants being sexually active?

Are gender differences dependent on study characteristics like the sampling procedure ✓ (insufficient variability) (e.g. probability sampling versus convenience sampling), the survey characteristics (e.g. face-to-face interviews versus self-administered questionnaires, electronic versus paper-based data collection ✓, explicit assurance of anonymity ✓), or participant compensation ✓, or whether there was personal contact between the research team and participants, whether the study was advertised as a study on sexuality, or whether assessment took place in a group?

Are gender-differences dependent on characteristics of the psychometric measurement like the labels to describe the constructs (e.g. sexual desire versus urge) ✓ (item wording), the length of the time period referred to (e.g. frequency of masturbation over the past week versus past month) ✓ (aggregation span), labels of the scale poles X (e.g. 1 = rarely versus 1 = never), the size of the response scale ✓ (scale range) (e.g. five-point scale versus nine-point scale), or whether or not a working definition of the assessed construct was provided ✓ (insufficient variability, i.e. few studies reported including a definition), or situational context described in the items (item context), or type of response scale (open versus closed), or the object of sexual affect/sexual cognitions, e.g. sexual thoughts about one's partner (item content)?

Are gender-differences dependent on characteristics of the publication, like the gender composition of the research team ✓, or whether or not the paper had a focus on gender differences in general ✓ or gender differences in sex drive specifically ✓, or whether the study aimed to find a gender difference in sex drive, whether the study was unpublished, or whether the study was published in a sexuality journal?

Is there evidence for convergent validity of the included measures?

Searches

The search strategy consists of five parts.

First, we will retrieve relevant studies by conducting searches of three electronic data bases: EBSCO, ISI Web of Science, and PubMed. Abstracts, titles, and keywords will be searched for masturb*, sex* desire, desire for sex*, sex* urge*, urge* for sex*, erotic urge*, sex* impulse*, erotic impulse*, sex* crav*, crav* for sex*, erotic crav*, sex* drive*, sex* motiv*, motiv* for sex*, sex* thought*, erotic* thought*, thought* for sex*, sex* cognitio*, erotic* cognitio*, cognition* for sex*, sex* reverie*, erotic* reverie*, reverie* for sex*, sex* fanatas*, erotic* fanatas*, fantas* for sex*, sex* daydream*, erotic* daydream*, daydream* for sex*, sex* think*, erotic* think*, think* for sex*, sex* ruminat*, erotic* ruminat*, or ruminat* for sex*. ✓

Second, we will scan the Handbook of Sexuality-Related Measures (Fisher, Davis, Yarber, & Davis, 2013) for scales that contain relevant items. We will then conduct forward searches and screen all publications that cited relevant scales against our eligibility criteria. ✓

Third, we will ask all authors that we correspond with in the context of this project (e.g., in the context of asking for data not reported in eligible publications) for additional relevant published or unpublished data. ✓

Fourth, we will issue calls for unpublished data through listservs of professional societies for (social) psychology, sexuality research and medicine. ✓

Fifth, we will conduct reference harvesting for all studies meeting the eligibility criteria. X (this was too labor-intensive)

One member of the review team and two research assistants will each screen part of the results progressively on the title level; retrieve abstracts for promising publications and screen on abstract level; retrieve full-text articles for the remaining publications and check rigorously against eligibility criteria. ✓ (one research assistant joined the author team)

Screening will be divided between the review team member and the research assistants due to the large number of hits.

Types of study to be included

Studies are eligible for inclusion if they measured at least one of the primary ✓ or secondary outcomes without any prior experimental manipulation ✓ that may have affected the outcome variable(s). All types of studies will be included, including laboratory studies, online surveys, or face-to-face interviews at home ✓. Only studies published after 1996 will be included. Samples must include at least 20 men and 20 women

Condition or domain being studied

Sex drive, indexed by frequency of sexual thoughts, frequency of sexual desires, frequency of masturbation and intensity of sexual desire, and self-rated sex drive. The review will be confined to non-clinical contexts. As a consequence, clinical conditions like Hypoactive Sexual Desire Disorder will not be covered. Items were excluded if they framed sexuality in a negative or clinical way, or invoked perceived social norms.

Participants/population

Non-clinical men and women above the age of 14 ✓. Participants must not be residents in long-term care facilities ✓. Studies are excluded if the study is focused on pregnant females or females in the postpartum period ✓.

Intervention(s), exposure(s)

The review is not concerned with interventions or exposures.

Comparator(s)/control

The review will compare the strength of sex drive between men and women.

Main outcome(s)

Mean gender differences in a) frequency of sexual thoughts ✓ (cognitions, fantasies, daydreams); b) frequency ✓ and c) intensity ✓ of sexual desires (urges, craving, motivation, drives, impulses); and d) frequency of masturbation ✓, and e) self-rated sex drive.

Additional outcome(s)

In addition to mean differences in the constructs, we will analyse variances ✗ (space constraints), skewness ✗ (space constraints), and kurtosis ✗ (space constraints) of measurements for men and women.

Data extraction (selection and coding)

Screening of potentially relevant studies will be divided among one member of the research team and two research assistants ✓. The research assistants will be instructed to be inclusive and always include studies when in doubt. The final decision for or against inclusion will be made by one member of the research team. Study coding will also be done by one member of the research team. Additionally, a research assistant will code a random sample of studies ✓ (the assistant joined the author team). Agreement of the primary coder and the research assistant will be estimated using intraclass correlation for continuous measures and Cohen's kappa for categorical measures ✗ (resolving scale dependencies of these metrics proved overly complex. We instead judged agreement/disagreement on a case-to-case basis and computed overall percent agreement). Discrepancies will be resolved in discussion, potentially involving a second member of the research team. ✓

We will extract the following information:

Statistics: Means ✓, standard deviations ✓, skewness ✓, kurtosis ✓, and sample size ✓ separately for men and women for all primary ✓, secondary, and bias outcomes. There is considerable conceptual heterogeneity in sexuality research. We will thus try to attain item-level statistics ✓, so that we can only include items that fit our working definitions. On the level of primary studies, we removed outliers that deviated more than 3.5 standard deviations from the mean. Outliers on the level of effect sizes were determined using leave-one-out analyses. Outliers for moderation analyses were determined by visual inspection of the scatter plots.

Measurement characteristics: Exact wording of the items ✓, scale minimum ✓ and maximum ✓ for Likert scales, scale labels ✓. Additional coding of the items will be done when data extraction is completed. This is owed to the fact that it turned out difficult to anticipate all details of the measurements that researchers considered.

Study characteristics: Open-ended descriptions of the survey type ✓, whether participants responded in person to an interviewer ✓, what kind of personal information (what they look like, what their voice sounds like, what their home looks like) the participants had to reveal over the course of the study ✓, whether other people were present when participants gave their response ✓, whether participants were tested in groups, whether participants had personal contact with any representatives of the research team ✓, whether data collection was electronic ✓, whether data collection was web-based ✓, whether data collection was electronic, whether participants were explicitly assured that their responses were anonymous and treated confidentially ✓, whether only couples were included in the study ✓, whether there was any manipulation before the measurements ✓, what the manipulation was ✓, and what type of compensation the participants received in return for participation ✓, whether the study was a multipurpose panel-study.

Publication characteristics: Gender composition of the author team ✓, year the study was published ✓, year the study was conducted ✓, year the submission was received, what journal the study was published in ✓, whether the study was focused on gender differences ✓, and whether the study was focused on gender differences in sex drive ✓.

Sample characteristics: Whether a target population was defined ✓, what the target population was ✓, whether probability sampling was used ✓, whether full sampling was used ✓, whether stratified sampling was used ✓, what the response rate was ✓, any information regarding the socio-economic status of the

sample (It was difficult to anticipate what kind of comparable information would be available in the studies. We decided to openly code all information regarding SES and decide on the method of standardization when all data is extracted) ✓, what percentage of the males was single (defined as not having a steady sexual partner) ✓, what percentage of the females was single ✓, average duration of the relationships in months for the non-single participants ✓, what percentage of the females used hormonal contraception ✓, what nation the study was conducted in ✓, what percentage of the full sample had at least one child ✓, ethnicity of the sample ✓ (Categories: Black/African American, American Native, Hispanic/Latino/Mexican American, Pacific Islander, White/Caucasian, Middle Eastern, Asian, Multiethnic, Other), percentage of male heterosexuals ✓ (self-identified or inferred from relationships), percentage of female heterosexuals ✓, and age means and standard deviations separately for men and women ✓, and whether any participants reported their gender as non-binary, country-wise gender inequality, country-wise gender development, country-wise gender ratio.

Risk of bias (quality) assessment

We will conduct state-of-the-art statistical test for small study effects and publication bias ✓. Study quality will be further examined by comparing the results of studies with explicit sampling procedures (full sampling, probability sampling, stratified sampling) to studies with convenience sampling ✓ (insufficient variation). We will also test whether there is evidence for biased responding. To that end, we will examine whether the degree to which the responses were given privately and anonymously is related to the results ✓. Additionally, we will pay close attention to psychometric aspects ✓. We will test whether results are dependent on characteristics of the measurement, such as scale size and labelling ✓, working definitions provided for the participants ✓ (insufficient variation), or the time periods referred to in the items ✓. If the findings showed strong dependence on aspects of the measurement, caution may be in order when interpreting the results.

Strategy for data synthesis

Mean gender differences in sex drive will be converted to Hedges' g effect sizes ✓. Summary effects will be computed using intercept-only random effects models ✓. Dependence arising from the inclusion of multiple effect sizes per study will be accounted for using the Robust Variance Estimation (RVE) approach proposed by Hedges, Tipton, and Johnson (2010) ✓. Associations between effect size and potential moderators will be examined using mixed-effects RVE models ✓. In addition to the summary effects for the standardized mean difference effect sizes, we will estimate summary effects for variance ratios X (space constraints). Specifically, variances ratios will be analysed as log variance ratios X (space constraints). Finally, we will compute summary effects for kurtosis X (space constraints) and skewness separately X (space constraints) for men and women.

Reference:

Hedges, L. V., Tipton, E., & Johnson, M. C. (2010). Robust variance estimation in meta-regression with dependent effect size estimates. *Research Synthesis Methods*, 1, 39–65.

Analysis of subgroups or subsets

We will conduct moderation analysis for all continuous and categorical publication-, study-, sample-, and measurement characteristics, see section "26 Data extraction" X (we did not conduct moderation analyses for all extracted characteristics. The section "Review question" reports which analyses were versus were not conducted). All moderation analyses for sexual cognition frequency were statistically controlled for whether or not the item pertained to thoughts about an extra-pair partner.

Contact details for further information

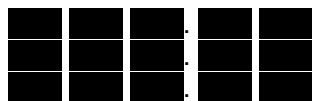
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Organisational affiliation of the review

■■■■
■■■■

Review team members and their organisational affiliations



Type and method of review

Epidemiologic, Meta-analysis, Systematic review

Anticipated or actual start date

01 January 2017

Anticipated completion date

01 December 2017

Funding sources/sponsors



Conflicts of interest

None known

Language

English

Country



Stage of review

Review Ongoing

Subject index terms status

Subject indexing assigned by CRD

Subject index terms

Drive, Humans, Sexual Behavior

Date of registration in PROSPERO

24 July 2017

Date of first submission

Stage of review at time of this submission

Stage	Started	Completed
Preliminary searches	Yes	Yes
Piloting of the study selection process	Yes	Yes
Formal screening of search results against eligibility criteria	Yes	No
Data extraction	Yes	No
Risk of bias (quality) assessment	No	No
Data analysis	No	No

Revision note

Corrected typo in the title

The record owner confirms that the information they have supplied for this submission is accurate and complete and they understand that deliberate provision of inaccurate information or omission of data may be construed as scientific misconduct.

The record owner confirms that they will update the status of the review when it is completed and will add publication details in due course.

Versions

24 July 2017

04 October 2017

PROSPERO

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