Understanding & Replicating

"Citation bias and selective focus on positive findings in the literature on the serotonin transporter gene (5-HTTLPR), life stress and depression"

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What makes this paper interesting to us

- Study on citation bias
- "exemplifies how evidence-base-distorting mechanisms undermine the authenticity of research findings."
- 73 primary studies

De Vries, Y., Roest, A., Franzen, M., Munafò, M., & Bastiaansen, J. (2016). Citation bias and selective focus on positive findings in the literature on the serotonin transporter gene (5-HTTLPR), life stress and depression. *Psychological Medicine, 46*(14), 2971-2979. doi:10.1017/S0033291716000805

Goals of the Paper

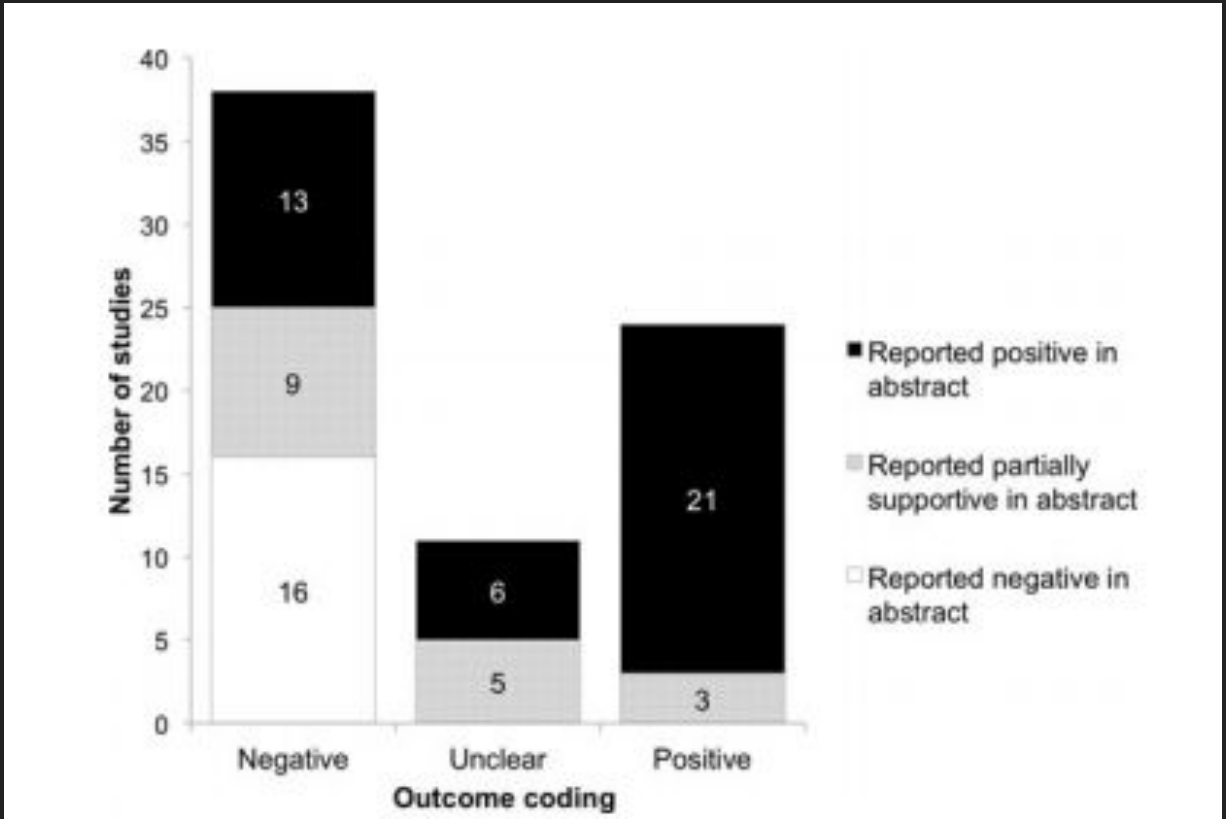
- CLAIM: The specific gene (5-HTTLPR) may moderate the relationship between life stress and depression
- Still controversial
- Are citation bias and selective focus on positive findings present in literature on 5-HTTLPR, life stress and depression?

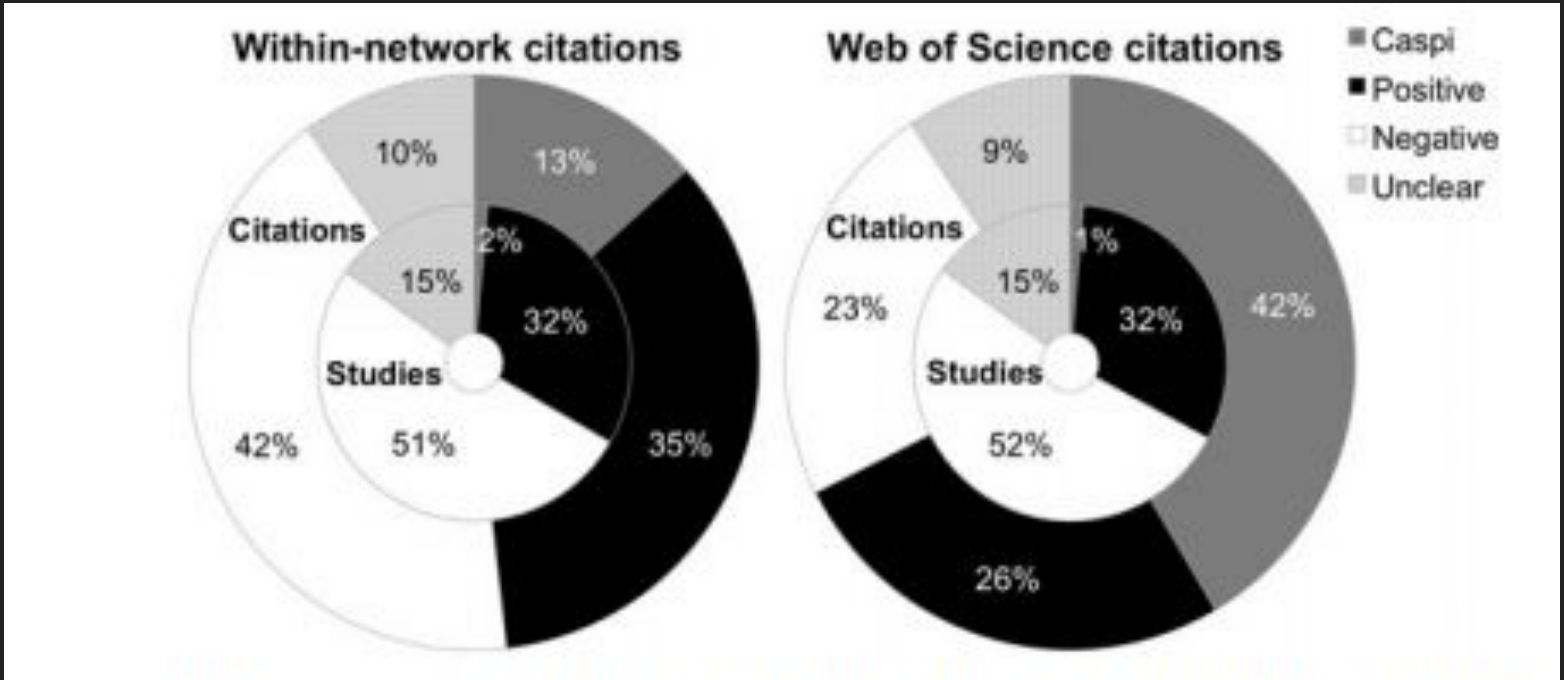
Overview of Methods

- Select studies related to this outcome from the most recent meta-analysis
- Code study outcomes and abstracts
  - Articles coded as positive, negative, or unclear based on p-value
  - Abstracts coded as positive, partially positive, or negative based on conclusion/results section
- Citations in the selected studies and in the broader network were studied
  - Within network citations: A citation grid/matrix was used to see how often each study was cited by the other articles within the network
  - Out of network citations: Citation counts were looked up on Web of Science
- (Main) Analysis
  - Total number of citations and the percentage of all citations per study type determined
  - Examined number of negative studies with a negative abstract, a partially supportive abstract, or a positive abstract
  - Calculated percentage of all citations to negative studies received by each type of negative study
  - Also examined whether positive studies were more likely to cite other positive studies and negative studies more likely to cite other negative studies
- Sensitivity Analysis

Results

- Coding results: 73 papers included
  - Studies: 24 positive, 38 negative, 11 unclear
  - Abstracts: 40 positive, 16 negative, 17 partially supportive
- Citations by study outcome (averages):
  - Within network citations: negative studies received 5.5, unclear 4.3, positive 9.8
  - Web of Science: negative studies received 55.7, unclear 78.4, and positive 257.9
- Presence of positive focus in abstracts:
  - Of the 24 positive studies, 21 abstracts were positive, 3 abstracts were partially supportive
  - Of the 11 unclear studies, 5 abstracts were partially supportive, six abstracts were positive
  - Of the 38 negative studies, 16 were negative, 9 were partially supportive, 13 were positive
- Effect of focus on citation (averages)
  - Within network citations: a negative study without a positive focus received 6.1 citations, a study with a partially positive focus received 3.1 citations, a study with a positive focus received 6.7 citations
  - Web of Science: a study without a positive focus received 42.4 citations, a study with a partially positive focus received 40.8 citations, a study with a positive focus received 82.2 citations


40
35
30
25
20
15
10
5
0
Number of studies
13
9
16
6
5
21
3
Negative
Unclear
Positive
Outcome coding
Reported positive in abstract
Reported partially supportive in abstract
Reported negative in abstract


Within-network citations
Citations
Studies
10%
13%
2%
15%
32%
42%
51%
35%
Web of Science citations
Citations
Studies
9%
15%
23%
32%
42%
52%
26%
Caspi
Positive
Negative
Unclear

Data & Data Availability

- We have a list of the primary studies used
- All data and supplementary materials are available:
  - All figures used
  - Flow chart
  - List of all studies used
  - Pivotal sentences from studies with a negative outcome and a positive focus

Next Steps

- Prepare data
  - Reconstruct the citation matrix
- Rerun the main analysis:
  - Do we see the bias?
    - Do positive articles get more citations than negative articles? Or vice versa?
  - Do "like" articles get a preference?
    - Do positive articles cite positive articles more often than negative articles?
    - Do negative articles cite negative articles more often than positive articles?
- Dig deeper into this:
  - Does it matter where we get citation counts from?
  - Does it matter if we take publication year into account?
  - What else could we take into account?
  - How can we check for selective citation in a general set of papers (that haven't been pre-selected by experts)