Systematic-review subject

**The research focus of the review paper/research question:**

* Exploring the relationship between metacognition and psychophysiology in the development of social anxiety in adolescence: A systematic review.
* The role of metacognition and HRV in social anxiety (literature search) 🡪 based on combined theoretical models to fit this information into a cognitive-affective model of social anxiety.

Understanding how metacognition and psychophysiology influence the development and maintenance of social anxiety in adolescence could lead to a more effective understanding of the disorder, as well as assessment and intervention. This prevents the eventual development of a chronic and difficult-to-cure disorder. The literature review will aim to evaluate evidence in the entirety of the literature of an association between metacognition, psychophysiology, and levels of social anxiety (or social anxiety disorder?).

**Structure of the review paper**

**Introduction**

1. Both affective and cognitive disturbances play an important role in social anxiety in adults. So we want to look at them (Specifically metacognition and HRV) in youth (children and adolescents). Briefly introduce both and why they play a large role in social anxiety.
2. Why do we look at these specific concepts? Briefly describe old solely CB models and that treatment options are not always working and fitting for this target group.
3. Why adolescence? Because we want to look at whether they are possible etiological mechanisms. Are they already there before the disorder develops? It is important for diagnosis and treatment implications 🡪 why current treatments do not have the best fit

**Possible paper subsections**

1. Physiology and social anxiety (Developmental perspective) - HRV
2. Metacognition and social anxiety (developmental perspective) – negative beliefs and cognitive confidence
3. Look at moderators such as age, gender, measurements of metacognitive beliefs, and heart rate variability
4. Clinical implications (diagnosis and treatment)

----- Add this information to make clear why we look at both in one review -----------

1. The combination of both (why do we think they can be related to each other in social anxiety?) (cognitive, neurocognitive models, stress-regulation, and the frontal lobe).
2. Dual framework in social anxiety – do the mechanisms and theories in adults also hold in children? E.g., neurovisceral model and preservative cognition hypothesis.

Search Metacognition and Physiology in Children and Youth with Social Anxiety

*Ruya Akdag, Milica Nikolic, (Mariska Kret), and Janneke Staaks*

**Research question:** a systematic review on the topic of metacognition and physiology in social anxiety (disorder)

**Databases (March 13, 2023) - Metacognition**

PsycINFO 171 results

Medline 90 results

EMBASE 157 results

Web of Science Core Collection 212 results

**Total 630 results**

**After duplication removal\* 344 results**

**After the first screening\*\* 107 (excluded 231)**

**After the second examiner\*\*\* 105 (excluded 2)**

**Databases (March 13, 2023) - Heart Rate Variability**

PsycINFO 238 results

Medline 151 results

EMBASE 269 results

Web of Science Core Collection 303 results

**Total 961 results**

**After duplication removal\* 530 results**

**After the first screening\*\* 182 results (excluded 347)**

**After the second examiner\*\*\* 180 results (excluded 2)**

**\*deduplication was performed first in Zotero and then in Rayyan**

**\*\*Papers that did not include a measure of heart rate variability, metacognition, and social anxiety were removed. Review papers, books, and commentary articles were also removed. Also, when social anxiety was not measured exclusively, we did not include the papers (so papers with comorbid disorders or that did not mention results specifically for social anxiety). This process was also performed in Rayyan**

**\*\*\*The second examiner screened 10% of the papers for HRV (53) and metacognition (34). Based on abstract and title only. This process was also performed in Rayyan.**

Search Terms - Versie Universiteit Leiden

**PsycINFO** (EBSCO)  
Key: SU = subject heading, TI = title, AB = abstract, KW = key concepts (other keywords added by PsycInfo indexers to supplement the subject headings), TM = tests & measures, Nn = word distance of maximum n words

**#1 social phobia**

SU("social phobia" OR "social anxiety") OR TI(("social\*" N2 ("anx\*" OR "phob\*" OR "fear\*")) OR "sociophob\*") OR AB(("social\*" N2 ("anx\*" OR "phob\*" OR "fear\*")) OR "sociophob\*") OR KW(("social\*" N2 ("anx\*" OR "phob\*" OR "fear\*")) OR "sociophob\*")

**#2 metacognition**

SU("metacognition") OR TI("meta cogn\*" OR "metacogn\*" OR "MCQ\*" OR "thinking about worr\*" OR "belief\* about worr\*" OR "belief\* about think\*" OR "negative belief\*") OR AB("meta cogn\*" OR "metacogn\*" OR "MCQ\*" OR "thinking about worr\*" OR "belief\* about worr\*" OR "belief\* about think\*" OR "negative belief\*") OR KW("meta cogn\*" OR "metacogn\*" OR "MCQ\*" OR "thinking about worr\*" OR "belief\* about worr\*" OR "belief\* about think\*" OR "negative belief\*") OR TM("meta cogn\*" OR "metacogn\*" OR "MCQ\*" OR "thinking about worr\*" OR "belief\* about worr\*" OR "belief\* about think\*" OR "negative belief\*")

**#3 heart rate variability**

SU("autonomic nervous system" OR "cardiovascular reactivity" OR "heart rate variability" OR "parasympathetic nervous system") OR TI(("autonom\*" N1 ("nervous" OR "function\*" OR "reactivity" OR "responsivity")) OR "parasympath\*" OR "cardiovascular reactivity" OR "cardio-vascular reactivity" OR "heart rate variability" OR "HRV" OR "respiratory\*" OR "RSA" OR "root mean square of successive differences" OR "RMSSD" OR "vagal") OR AB(("autonom\*" N1 ("nervous" OR "function\*" OR "reactivity" OR "responsivity")) OR "parasympath\*" OR "cardiovascular reactivity" OR "cardio-vascular reactivity" OR "heart rate variability" OR "HRV" OR "respiratory\*" OR "RSA" OR "root mean square of successive differences" OR "RMSSD" OR "vagal") OR KW(("autonom\*" N1 ("nervous" OR "function\*" OR "reactivity" OR "responsivity")) OR "parasympath\*" OR "cardiovascular reactivity" OR "cardio-vascular reactivity" OR "heart rate variability" OR "HRV" OR "respiratory\*" OR "RSA" OR "root mean square of successive differences" OR "RMSSD" OR "vagal")

**1 AND 2**

**1 AND 3**

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**Medline** (Ovid MEDLINE ALL, including Epub Ahead of Print, In-Process, In-Data-Review & Other Non-Indexed Citations and Daily, 1946 to March 6, 2023)  
Key: / = medical subject heading (MeSH), ti = title, ab = abstract, kf = author supplied keywords, ADJn = word distance of maximum n words

**#1 social phobia**

phobia, social/ OR ((social\* ADJ3 (anx\* OR phob\* OR fear\*)) OR sociophob\*).ti,ab,kf.

**#2 metacognition**

metacognition/ OR (meta cogn\* OR metacogn\* OR MCQ\* OR thinking about worr\* OR belief\* about worr\* OR belief\* about think\* OR negative belief\*).ti,ab,kf.

**#3 heart rate variability**

autonomic nervous system/ OR parasympathetic nervous system/ OR respiratory sinus arrhythmia/ OR (((autonom\* OR parasympathetic) ADJ2 (nervous OR function\* OR reactivity OR responsivity)) OR cardiovascular reactivity OR cardio-vascular reactivity OR heart rate variability OR HRV OR respiratory sinus arrhythmia OR RSA OR "root mean square of successive differences" OR RMSSD OR (vagal ADJ1 (control OR flexibility OR regulation OR tone))).ti,ab,kf.

**1 AND 2**

**1 AND 3**

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**EMBASE** (Ovid, Embase Classic+Embase 1947 to 2023 March 06)

Key: / = EMTREE subject heading, ti = title, ab = abstract, kf = author supplied keywords, ADJn = word

distance of maximum n words

**#1 social phobia**

social phobia/ OR social anxiety/ OR ((social\* ADJ3 (anx\* OR phob\* OR fear\*)) OR sociophob\*).ti,ab,kf.

**#2 metacognition**

metacognition/ OR metacognitive awareness/ or metacognitive control/ or metacognitive monitoring/ OR (meta cogn\* OR metacogn\* OR MCQ\* OR thinking about worr\* OR belief\* about worr\* OR belief\* about think\* OR negative belief\*).ti,ab,kf.

**#3 heart rate variability**

autonomic nervous system/ OR cardiovascular response/ OR heart rate variability/ OR (((autonom\* OR parasympathetic) ADJ2 (nervous OR function\* OR reactivity OR responsivity)) OR cardiovascular reactivity OR cardio-vascular reactivity OR heart rate variability OR HRV OR respiratory sinus arrhythmia OR RSA OR "root mean square of successive differences" OR RMSSD OR (vagal ADJ1 (control OR flexibility OR regulation OR tone))).ti,ab,kf.

**1 AND 2**

**1 AND 3**

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**Web of Science Core Collection** (Web of Science Core Collection Editions: Science Citation Index Expanded (SCI-EXPANDED), 1975 - present, Social Sciences Citation Index (SSCI), 1975 - present, Arts & Humanities Citation Index (A&HCI), 1975 - present, Emerging Sources Citation Index (ESCI), 2005 - present))  
Key: TS = topic, which includes title, abstract, author keywords and Web of Science Keywords Plus, NEAR/n = word distance of maximum n words

**#1 social phobia**

TS=((("social\*" NEAR/2 ("anx\*" OR "phob\*" OR "fear\*")) OR "sociophob\*")

**#2 metacognition**

TS=("meta cogn\*" OR "metacogn\*" OR "MCQ\*" OR "thinking about worr\*" OR "belief\* about worr\*" OR "belief\* about think\*" OR "negative belief\*")

**#3 heart rate variability**

TS=((("autonom\*" OR "parasympathetic") NEAR/1 ("nervous" OR "function\*" OR "reactivity" OR "responsivity")) OR "cardiovascular reactivity" OR "cardio-vascular reactivity" OR "heart rate variability" OR "HRV" OR "respiratory sinus arrhythmia" OR "RSA" OR "root mean square of successive differences" OR "RMSSD" OR ("vagal" NEAR/0 ("control" OR "flexibility" OR "regulation" OR "tone")))

**1 AND 2**

**1 AND 3**

Inclusion criteria for the first screening - abstract and titles

* Studies that have a socially anxious population (either clinical or sub-clinical)

1. Social anxiety should always be mentioned in the abstract.
2. **Exclusion:** do not include papers with comorbid disorders or where social anxiety is included but not looked at separately in the results section

* Papers that specifically state metacognition (measure metacognition)

1. Look for all the different instruments used to measure metacognition
2. Look for all the different definitions used linked to actually measuring metacognition

* Papers that specifically state HRV (measure HRV)

1. Look for all the different instruments used to measure HRV
2. Look for all the different definitions used linked to actually measuring HRV

* Include all ages until 24 (adolescence cut-off) and gender groups

1. Group all the different ages together
2. include ages of 24,6 months and 24,11 months as well
3. Group all the different genders together

* Articles are written in English and published in a peer-reviewed journal up to **XXXXXX**

# Systems to check credibility of the systematic review

A tool to assess the methodological quality of systematic reviews of interventions is AMSTAR 2 (A MeaSurement Tool to Assess systematic Reviews 2) (Shea 2007; Shea 2017). It contains 16 items for a broad assessment of the quality, including flaws related to poor conduct of the review (with unknown impact on findings). Recently, another instrument was developed to critically appraise systematic review. ROBIS (the Risk Of Bias In Systematic reviews) covers various types of research questions (including diagnostic, prognostic and etiologic). Although ROBIS focuses specifically on the risk of bias introduced by the conduct of the review (instead of the broad quality assessment by AMSTAR), there is overlap in the items considered by the two tools.

# Kappa inter-reliability

**Metacognition**

For the metacognitions papers 30 papers were cross examined between two raters who independently from each other rated the papers.

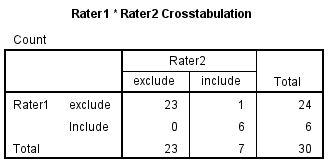
The kappa inter-reliability was calculates using SPSS 🡪 crosstabs 🡪 Kappa. For each kappa, the confidence interval was also calculated

Kappa value = .902

Confidence interval = 0,71384 to 1,09016

This means that the level of agreement in strong between the raters and that 60-80% of the data is reliable.

We only did not agree on 1. Decided to include the paper



|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Symmetric Measures** | | | | | |
|  | | Value | Asymptotic Standard Errora | Approximate Tb | Approximate Significance |
| Measure of Agreement | Kappa | ,902 | ,096 | 4,964 | ,000 |
| N of Valid Cases | | 30 |  |  |  |
| a. Not assuming the null hypothesis. | | | | | |
| b. Using the asymptotic standard error assuming the null hypothesis. | | | | | |

**Heart-rate variability**

For the HRV papers 50 papers were cross examined between two raters who independently from each other rated the papers.

The kappa inter-reliability was calculates using SPSS 🡪 crosstabs 🡪 Kappa. For each kappa, the confidence interval was also calculated

Kappa value = .913

Confidence interval = 0,74104 to 1,03896

This means that the level of agreement in strong between the raters and that 60-80% of the data is reliable.

We only did not agree on 2, but we decided to include the first and exclude the second because it is a review paper.

* [https://doi.org/10.1016/j.bpsc.2021.02.003](https://eur03.safelinks.protection.outlook.com/?url=https%3A%2F%2Fdoi.org%2F10.1016%2Fj.bpsc.2021.02.003&data=05%7C01%7Cr.akdag%40fsw.leidenuniv.nl%7C3da4cee10b4e4c2d337a08db4648ddf8%7Cca2a7f76dbd74ec091086b3d524fb7c8%7C0%7C0%7C638181051022074949%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=RMxeINENUI2ORhha05EsFZ7RkoYLwnJGplN%2B9e29z7w%3D&reserved=0). I excluded this one because I could not find a measure of HRV. Did you find an indication of HRV?
* [http://www.sciencedirect.com/science/journal/02785846](https://eur03.safelinks.protection.outlook.com/?url=http%3A%2F%2Fwww.sciencedirect.com%2Fscience%2Fjournal%2F02785846&data=05%7C01%7Cr.akdag%40fsw.leidenuniv.nl%7C3da4cee10b4e4c2d337a08db4648ddf8%7Cca2a7f76dbd74ec091086b3d524fb7c8%7C0%7C0%7C638181051022074949%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=ZRJpkYHTv4tBKbN%2BKn43OqOWar0rtpHDHR2x%2Fk9bFig%3D&reserved=0) I excluded this one because it is a review style/commentary paper rather than an empirical one.

