

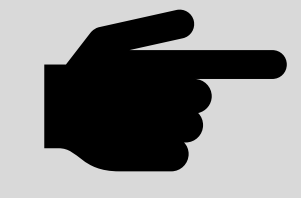
# Dynamic modeling of mediators of change during an online-intervention for social anxiety in adolescents



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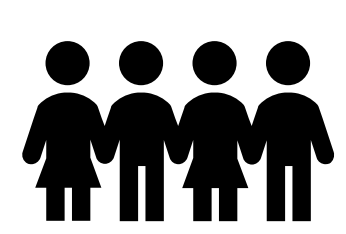


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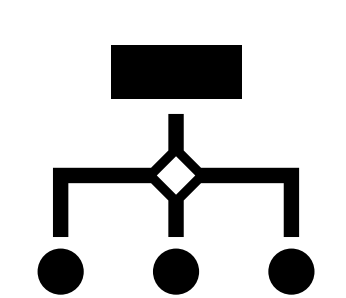
## Background

Social anxiety disorder (SAD) is characterized by an intense and unreasonable fear of social situations in which an individual is confronted with or could be judged by others (American Psychiatric Association, 2013). The burden of disease for subclinical social anxiety and SAD in adolescence is substantial: poor quality of life, low level of functioning in school, work, and interpersonal environments and the risk of developing further mental disorders (e.g., Asselmann et al., 2018, Beesdo et al., 2007, Cairney et al., 2007). Online-Interventions hold promise to reduce these negative effects and to reach more adolescents in need of care compared to face-to-face therapy. Thus, we developed the online-intervention SOPHIE based on the cognitive model of Clark and Wells (1995). In their model, the authors propose several factors that are crucial for maintaining SAD. So far, these factors have been investigated in correlational or experimental studies in adolescents, but not in an intervention study (Leigh & Clark, 2018). Applying Ecological Momentary Assessment (EMA) allows us to assess these factors throughout the intervention at multiple time-points and to model them as mediators of the relationship between the intervention and outcome (Schmidt & Schimmelmann, 2015). Thereby, we aim to understand the underlying mechanisms of change.

## Method

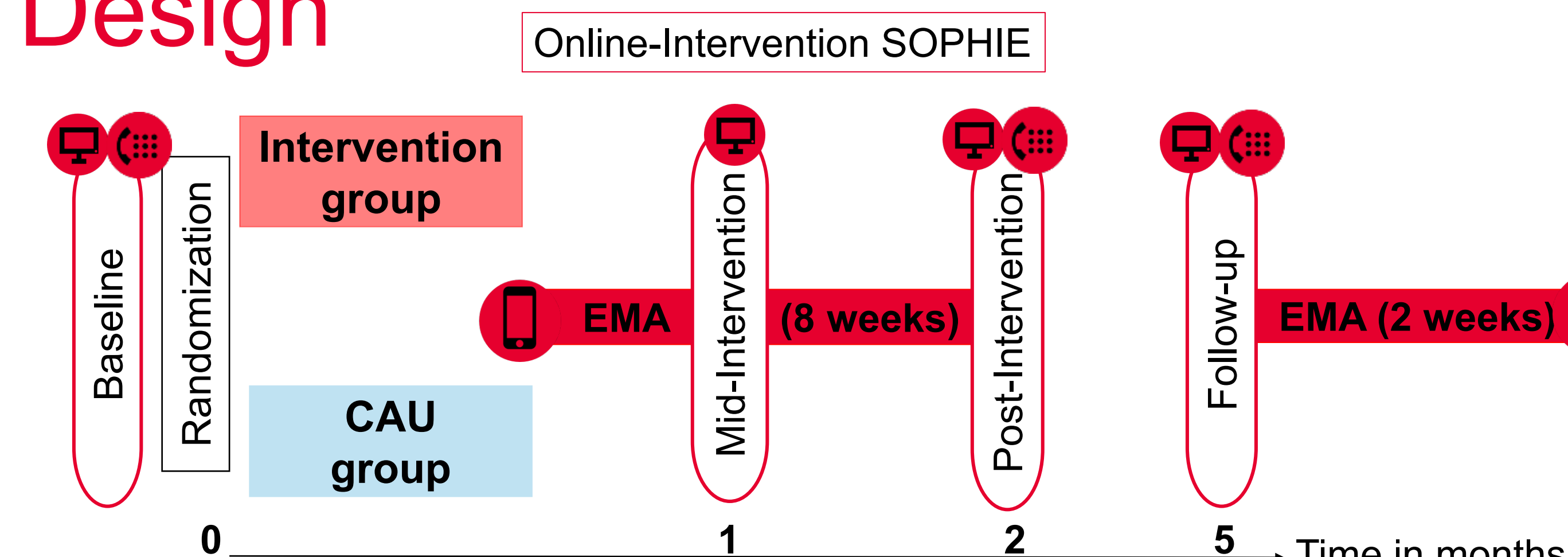


222 adolescents with sub-clinical social anxiety or SAD



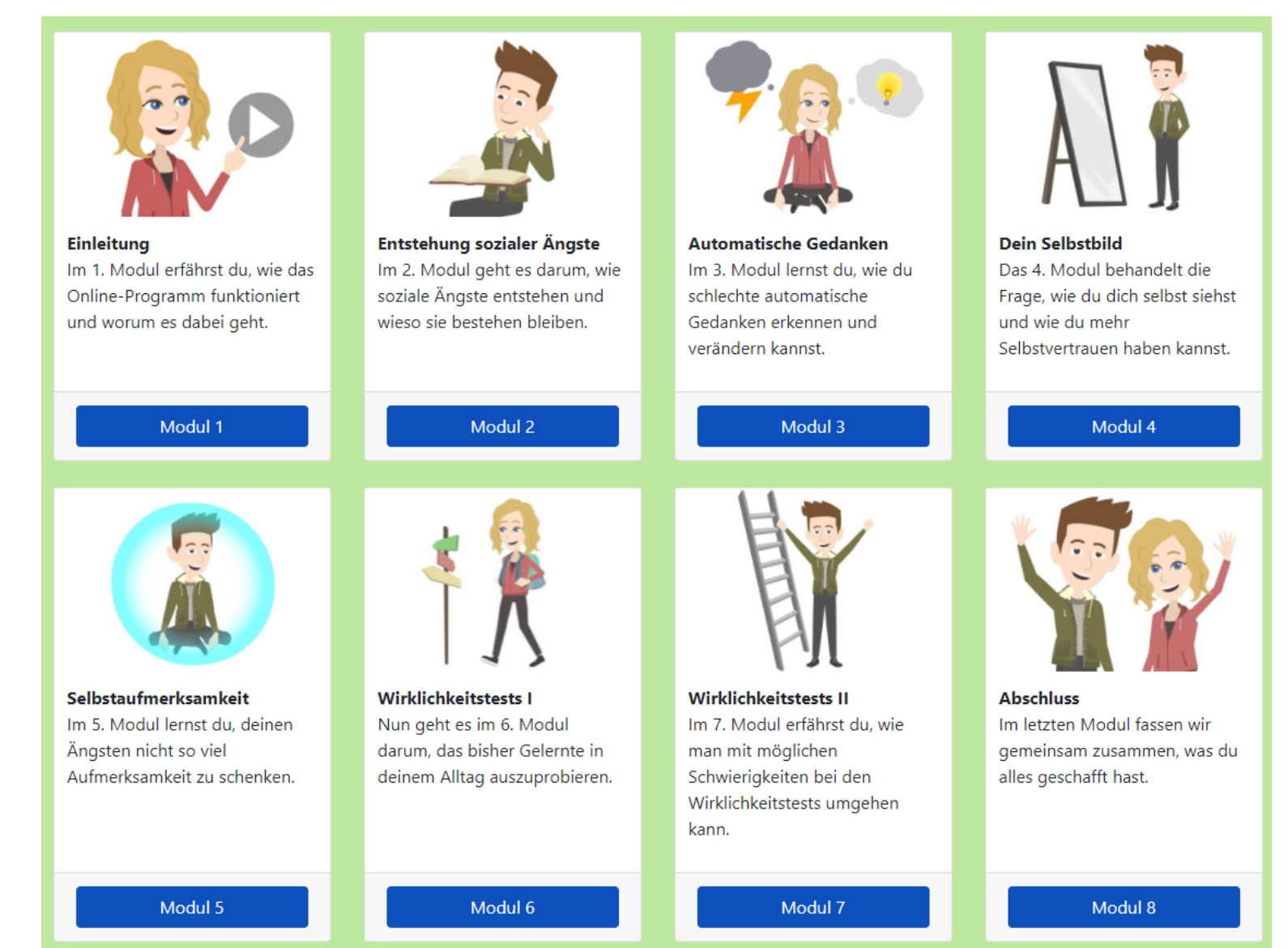
Block-randomization based on diagnostic status (SAD vs. subclinical social anxiety) in intervention group receiving SOPHIE or control group, i.e., care-as-usual (CAU)

## Design

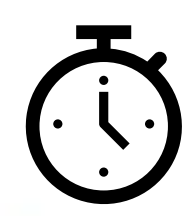


## Online-Intervention

The online-intervention SOPHIE consists of 8 modules each focusing on a maintaining factor of SAD according to the cognitive model of Clark and Wells (1995).



**EMA** All EMA-questions are based on established questionnaires or that have successfully been used in EMA-studies. Questions regarding the maintaining factors of SAD were adapted from the "Social Phobia Weekly Summary Scale" (Clark et al., 2013). This is a process measure intended to assess weekly changes in SAD symptoms. We changed the wording to match EMA formulations (e.g., "over the week" changed to "since the last prompt"). In addition, we created two more items on *Automatic Thoughts* and *Self-confidence*, other maintaining factors discussed in the literature (Leigh & Clark, 2018). To measure momentary affective states, we changed the wording from the "Positive and Negative Affective Schedule for Children" (PANAS-C) to match EMA formulation.



3 times a day: before school, after school, before bed

### Social Context

What social situation are you in now?

- 0 = Alone
- 1 = Family
- 2 = close friends
- 3 = boy-/girlfriend
- 4 = School, Work, Leisure friends
- 5 = Acquaintances
- 6 = Other / Unknown Person

Would you rather be alone / with someone right now?  
Yes / No

How comfortable do you feel about this situation?  
Seekbar 0-100 (not at all – extremely)

### Maintaining Factors of SAD: Social Phobia Weekly Summary Scale (Clark et al., 2003)

- Social Anxiety
- Avoidance
- Self-focused Attention
- Pre-event Processing
- Post-event Processing
- Automatic Thoughts
- Self-confidence

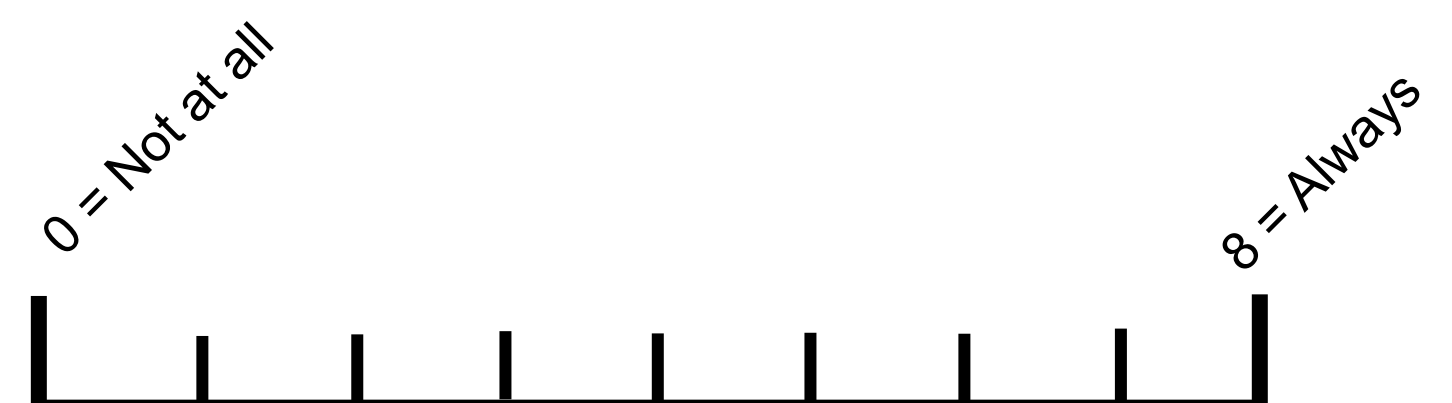
How often have you avoided difficult social situations since the last prompt?

Since the last prompt, how often have you thought about things that could go wrong in a social situation?

Since the last prompt, I have had a lot of negative automatic thoughts running through my head in social situations.

How strong has your social anxiety been since the last prompt?

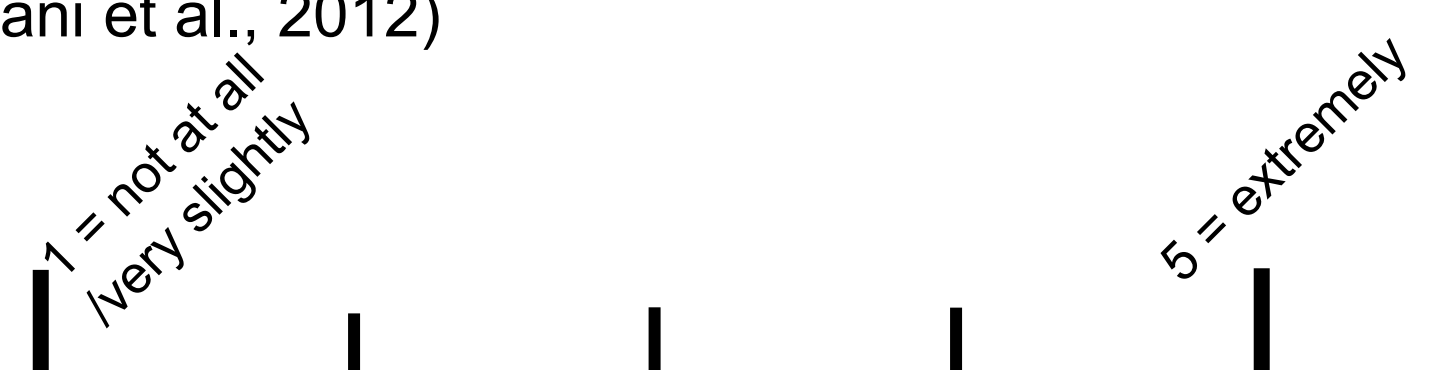
In social situations, has your attention been more focused on yourself or on the external situation since the last prompt?



### Affect: Positive and Negative Affective Schedule for Children (PANAS-C) (Ebesutani et al., 2012)

How ... do you feel at the moment?

- ➔ Positive Affect: happy, cheerful, proud, joyful, lively
- ➔ Negative Affect: sad, scared, miserable, afraid, mad



## Implications

The future results of this study may help to close the knowledge-gap on maintenance mechanisms of SAD and subclinical social anxiety in adolescents. By repeatedly measuring the maintaining factors throughout the intervention, we can dynamically model different inter- and intraindividual trajectories of change as well as examine the influence of each therapy component on these trajectories of change. In addition, measuring EMA in the adolescents' natural context tests the generalizability of these results to everyday life. Finally, targeting these mechanisms more directly in future interventions may help to optimize the effects of interventions for SAD and subclinical social anxiety in adolescents.

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