

## Description of Digital Apps

**Daylight (Anxiety):** Daylight is a fully automated digital worry and anxiety improvement program based on cognitive behavioural therapy (CBT) for Generalized Anxiety Disorder. While often initially triggered by a stressful life event, Generalized Anxiety Disorder is maintained by unhelpful behaviours and thoughts. Daylight targets these unhelpful behaviours and thoughts using evidence-based cognitive and behavioural interventions. Reducing these unhelpful behaviours and thoughts leads to a reduction in Generalized Anxiety Disorder symptoms.

Common behaviours maintaining Generalized Anxiety Disorder include avoiding situations and/or thoughts that are anxiety-provoking (e.g., procrastinating or trying not to think about a feared outcome), and/or engaging excessively in activities to try to reduce acute anxiety (e.g., seeking reassurance from others, “checking” things excessively, overplanning, etc.).

Psychoeducation about the impact of these behaviours on anxiety (i.e., that these unhelpful behaviors may seem helpful but can actually maintain or worsen anxiety) is provided in Daylight, as well as techniques to target unhelpful behaviours, such as stimulus control (i.e., limiting worrying to a specific time and place) and imaginal exposure (i.e., facing, or not avoiding, worrisome thoughts and fears).

GAD involves excessive worrying, often with unhelpful thinking patterns that can involve catastrophizing, overgeneralizing, all-or-nothing thinking, jumping to conclusions, and emotional reasoning. Daylight addresses unhelpful thinking patterns using a cognitive technique called cognitive restructuring (i.e., identifying and challenging unhelpful thoughts), as well as introducing a physiological technique (applied relaxation) to help reduce tension and focus mental attention which can in turn relax the mind.

**Digital CBTe (binge eating):** Digital CBTe is an entirely automated online self-help programme for adults with binge eating symptoms. Recurrent binge eating responds well to a specific psychological treatment, a form of cognitive behaviour therapy for eating disorders called enhanced cognitive behaviour therapy. This treatment has been converted into an online self-help programme called “Digital CBTe”. It consists of 12 sessions over 8 weeks. Each session takes approximately 20 minutes to complete. Users can complete these sessions wherever they want but need to be in a private place and where there is internet access. At the end of each Digital CBTe session there is a "To Do List" in which the action points from the session are summarised. In order to benefit from the programme, users are asked to complete the action points between sessions.

Users are initially asked to fill in questionnaires about the severity of their eating difficulty and mood. These questionnaires will be asked again at the end of Digital CBTe (after 8 weeks) and 6 months after completion, in order to review progress.

**Sleepio (sleep):** Sleepio is a fully automated digital sleep improvement program based on cognitive behavioural therapy for insomnia (CBT-I). While typically triggered by a stressful life event, insomnia is maintained by unhelpful behaviours and thoughts. Over the course of six sessions, your virtual sleep expert -- The Prof -- teaches you evidence-based cognitive and behavioural interventions, sleep hygiene education, and relaxation exercises to target these unhelpful behaviours and thoughts. Reducing these unhelpful behaviours and thoughts leads to a reduction in insomnia symptoms.

Common behaviours maintaining insomnia include spending an excessive amount of time awake in bed, sleeping in on the weekends, taking daytime naps, and drinking excessive caffeine. Sleep restriction (i.e., establishing a regular sleep window based on the actual amount of time spent asleep), stimulus control (i.e., reducing the amount of time awake in bed to reassociate the bed with sleep), and sleep hygiene (i.e., education about behaviors that interfere with sleep) are introduced in Sleepio to target unhelpful behaviours.

Common thoughts maintaining insomnia include excessive worries about sleep, dysfunctional beliefs about sleep, and bed-related tension and anxiety. Sleepio identifies, challenges, and addresses thoughts and worries that contribute to difficulty sleeping using cognitive therapy such as cognitive restructuring (i.e., identifying and challenging unhelpful thoughts) and paradoxical intention (i.e., instead of focusing on trying to sleep, focus on trying to stay awake). Relaxation techniques such as progressive muscle relaxation are also introduced to help reduce bed-related anxiety and tension.