

The AddictionBeater: a music serious game to "beat" your drive towards alcohol

No registrations found.

Ethical review	Positive opinion
Status	Recruitment stopped
Health condition type	-
Study type	Interventional

Summary

ID

NL-OMON23601

Source

NTR

Brief title

The AddictionBeater

Health condition

Alcohol; addiction; alcoholism; alcohol abuse; cognitive bias; approach bias; cue-specific response inhibition; implicit associations; treatment adherence

Sponsors and support

Primary sponsor: University of Amsterdam, NL

Salus Klinik Lindow, Germany

Technological University Delft, NL

Source(s) of monetary or material Support: Netherlands Organisation for Scientific Research (NWO): NextLevel grant 314-99-102

Intervention

Outcome measures

Primary outcome

- Alcohol related approach bias, as measured with a key-press version of the Approach Avoidance Task (Wiers et al., 2011);
- Alcohol approach-avoidance and positive implicit associations, as measures with two Single Category Implicit Association Tests;
- Relapse rate at one-year follow-up

Secondary outcome

- Subjective experience with the training program as assessed with the User Experience Questionnaire;
- Training adherence as indicated by drop-out rate across conditions and amount of completed training trials per module;
- Engagement with the training application, as indicated by time-on-task metrics (i.e., frequency and duration of use), number of completed training trials, performance scores (the gamified version of the training records also level achievements, high-scores and combos);

Study description

Background summary

In the past years, a new family of computerised interventions collectively called Cognitive Bias Modification (CBM), has been developed to adjust the balance between maladaptive, drug-evoked automatic cognitive processes (i.e., cognitive biases), such as the tendency to approach motivationally-relevant alcohol cues in the environment, and cognitive control over them, by training alternative automatic responses towards drug-related stimuli. CBM training programs normally involve completing several hundreds of training trials divided over multiple sessions spaced along a few weeks, thus requiring regular and repeated practice. Although showing promising clinical effects, the repetitive features of CBM trainings may hinder treatment compliance, especially when motivation to train is scarce or unstable and when deploying the intervention over the internet.

This randomised clinical trial will test the motivational properties and effectiveness of a gamified version of a CBM program, the AddictionBeater, as an add-on training intervention to standard treatment for alcohol addiction. The gamified CBM program includes three consecutive training modules and is based on a music rhythm concept to enrich the CBM training experience, which involves performing the training tasks on the music beat. Alcohol dependent inpatients are randomised over three experimental conditions: the gamified CBM program, a non-gamified version of the same CBM program and a non-gamified placebo version of the CBM training. Participants are free to train whenever and for how long they want during three weeks, completing one module per week. Before and at conclusion of the three weeks of “free training”, participants’ automatic approach bias towards alcohol, alcohol

craving and, at post-training only, experience with the training program are evaluated. One year after discharge, alcohol abstinence and time to first relapse are also assessed. Training adherence will be also objectively tested by examining time-on-task metrics (i.e., frequency and duration of use of the training application, amount of completed training trials per module) and drop-out rate across conditions.

Study objective

a) What are the effects of the AddictionBeater on alcohol-related approach bias and implicit associations?

Participants completing the AddictionBeater and the non-gamified real CBM training would show a greater reduction in alcohol-related approach bias and affective and approach-avoidance implicit memory associations at post-test, compared to participants assigned to the non-gamified sham training condition.

b) What is the effect of the AddictionBeater on alcohol abstinence? Participants assigned to the AddictionBeater and to the non-gamified real CBM training conditions would show a greater abstinence rate at the one-year follow-up, compared to those completing the non-gamified sham training version.

c) What are the effects of the AddictionBeater on user experience, motivation to train and treatment adherence? Participants assigned to the AddictionBeater training condition would train more often and longer, have a better experience with the training and drop out less from the training program, compared to participants assigned to the non-gamified training conditions.

Study design

1) Baseline assessment: about 5 weeks before discharge from the clinic participants complete an assessment session including the Alcohol Dependence Scale, the Obsessive Compulsive Drinking Scale (OCDS), the Readiness to Change Questionnaire (RCQ), the Approach Avoidance Task and the two Single-Category Implicit Association Tests (SC-IATs).

2) Training period: participants can start training right after the baseline assessment. the training period lasts three weeks.

3) Post-training assessment: at the end of the three weeks and before discharge (last week of treatment period at the clinic) participants complete a second assessment including the OCDS, the RCQ, the AAT, the two SC-IATs and a User Experience Questionnaire.

4) Follow-up: One year after discharge participants are sent a follow-up questionnaire by mail asking about their drinking behaviour in the past 12 months. If not returning the questionnaire participants are sent a briefer version of the questionnaire and, if still not responding, eventually contacted by phone.

Intervention

Gamified real CBM training (Addiction Beater)

Through a user-centred and iterative design process, the Addiction Beater gamification was developed based on a music rhythm game concept and a step-learning training process. The general rules of the gamification are that stimuli of alcoholic and non-alcoholic drinks slide from the right edge to the centre of the screen based on the music beat and participants respond according to the task instructions. The training modular idea concerned with designing three consecutive training modules according to a relatively implicit learning process. The three modules train three alternative stimulus-response associations towards alcohol cues, by also giving the user the feeling of progression along the training program.

- Module 1 (i.e., Go/No-Go training – Houben et al., 2012): Participants are instructed to press the space bar whenever a picture appears (“go” response) but withhold the response when an X cue is present on the picture (“no-go” response). Non-alcohol pictures appear in “go” format in 75% of the non-alcohol trials and in “no-go” format in the remaining 25%, whereas alcohol pictures appear in “no-go” format only. Goal of the task is to train alcohol-specific response inhibition by practicing an automatic “stopping” response towards alcohol stimuli (Houben et al., 2012; Verbruggen & Logan, 2008).

- Module 2 (Irrelevant-feature approach bias training – Wiers et al., 2011): An arrow pointing upwards or downwards will randomly appear on top of alcoholic and non-alcoholic pictures. Participants are instructed to respond to the direction of the arrow with the up/down arrow keys on the keyboard. Push and pull responses are disambiguated by a zooming effect to give the visual feeling of avoidance and approach (up/push/alcohol => pictures zoom out; down/pull/non-alcohol => pictures zoom in). Alcohol pictures are always paired with an avoidance response, while non-alcoholic pictures with an approach response. Goal of the task is to learn and automatise an “implicit” avoidance response towards alcohol stimuli.

- Module 3 (Relevant-feature approach bias training): Participants are instructed to react directly to the content of the stimuli, by pushing away (avoid) alcohol stimuli and pulling closer (approach) non-alcohol stimuli, pressing the up and down arrow keys (up/avoid and down/approach). Similarly to Module 2, push and pull responses are disambiguated by a zooming effect to give the visual feeling of avoidance and approach (up/push/alcohol => pictures zoom out; down/pull/non-alcohol => pictures zoom in). Goal of the task is to rehearse and further internalise an “explicit” avoidance response towards alcohol stimuli.

Participants are free to train as much and as often as they want along three weeks, by completing one module per week. Each module has a weekly goal of 1600 trials, which is spread along 5 levels for each module. Upon completing all 5 levels before the end of the week, participants can unlock new bonus songs with the points accumulated while playing (e.g., the more accurate the responses, the more points and combos) and are free to keep on playing until the next module unlocks. If the participants do not reach the goal in time, they still move to the next module but need to achieve also the weekly goal of the previous module in order to unlock new bonus songs. At the start of each game round, participants can choose a song to play from a music menu, listing multiple playlists covering a wide range of music genres. At the end of each song, participants receive a brief feedback on their performance and scores. The gamification also provides a user profile page to be consulted anytime, where participants can check their progression along the training program, their

performance improvement (accuracy and response time) and accumulated points and bonuses with which they can unlock new songs within each module, and the list of stimuli they encountered so far in the training, together with their "worst enemies" (alcohol pictures with the greatest amount of incorrect responses) and "best friends" (non-alcohol pictures with the greatest amount of correct responses).

Non-gamified modular CBM training

The non-gamified training program is structured in three modules like the gamified version, except for the full exclusion of all game elements: weekly goal, user profile, progression and performance feedback, rewards, collectibles, and all other soft-game elements are removed except for the background graphics. Given the absence of songs providing the playing rhythm, each module is structured in blocks, which will follow one after the other with a between-block page break and include roughly the same amount of trials presented on average during one song in the gamified version (about 230 trials). Each module lasts for one week and participants can freely complete as many training blocks as they wish. The training task in each module has the regular task features as in standard CBM studies and the same stimulus-response contingencies as in the AddictionBeater.

Control condition: Non-gamified modular sham training

The placebo version of the training program features the same structural and graphical elements of the non-gamified CBM training version but differs in the stimulus-response contingency within the first two modules, as to provide a sham version of the training tasks.

- Module 1 (i.e., Go/No-Go training – Houben et al., 2012): alcohol and non-alcohol pictures appear equally often in both “go” and “no-go” formats (Houben et al., 2012).
- Module 2 (Irrelevant-feature approach bias training – Wiers et al., 2011): Alcohol and non-alcohol pictures are paired equally often with up/push and down/pull arrow probes.
- Module 3 (Relevant-feature approach bias training): Given the impossibility of instructing participants to actively approach alcohol stimuli and avoid non-alcohol stimuli, this module maintains the active training contingency. This also ensures that participants allocated to the placebo condition complete the real version of at least one of the training modules.

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Eligibility criteria

Inclusion criteria

Adult alcohol-dependent inpatients, undergoing a three-month inpatient treatment at the Salus Klinik in Lindow, Germany and who are deemed eligible to participation, are recruited in the first two weeks after intake at the clinic.

Inclusion criteria:

- Aged between 18 and 65
- Primary diagnosis of alcohol dependence, assessed at intake in the clinic with the computerized version of the Composite International Diagnostic Interview (CIDI Robins et al., 1988) and through a diagnostic interview based on the German manual for documentation in addiction help (Fachverband Sucht e.V., 2014). Both the CIDI and the interview are the basis for the final diagnosis, done during the routine diagnostic interview by clinical psychologists working at the clinic.
- Sufficient proficiency in German

Exclusion criteria

- Occurrence of a neurological disorder, including epilepsy, detected by the physician
- Acute suicidality (checked at intake)
- Past or current psychotic episodes (checked at intake)
- Less than 8 years of schooling

- Visual or hand-motoric handicaps

Study design

Design

Study type:	Interventional
Intervention model:	Parallel
Allocation:	Randomized controlled trial
Masking:	Single blinded (masking used)
Control:	Active

Recruitment

NL	
Recruitment status:	Recruitment stopped
Start date (anticipated):	15-10-2016
Enrollment:	150
Type:	Actual

IPD sharing statement

Plan to share IPD: No

Ethics review

Positive opinion	
Date:	29-04-2017
Application type:	First submission

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

Other (possibly less up-to-date) registrations in this register

No registrations found.

In other registers

Register ID

NTR-new NL6149

NTR-old NTR6280

Other Ethics Committee Deutsche Rentenversicherung : 10-R-35.08.32.000

Study results