The Effect of Non-specific Response Inhibition Training on Alcohol Consumption: An Intervention

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T e number of sessions and the presentation of stop-signals vary greatly across

consisted of 60 trials in which participants responded to the colours of strings of symbols (i.e., &&&&, ====, %%%%, and ####) in order to familiarise themselves with the key that corresponded to each colour [3,31]. The test block consisted of 180 trials (60 congruent: 60 incongruent: 60 neutral).

Alcohol consumption

A measure of weekly alcohol consumption was obtained with an adapted version of the timeline follow-back questionnaire [33,34]. On the timeline follow-back questionnaire, participants were instructed to estimate the number of standard drinks they consumed on each day during the previous week, and these values were summed to calculate the total number of standard drinks consumed over the past week (one standard drink is equivalent to 10 g. alcohol/12.5 ml of pure alcohol). Participants were given a definition and an illustration of a standard alcoholic drink with each question.

Procedure

All parts of the study were completed online. Participants were randomly assigned to either the inhibition or the active control condition using a random number generator. They were informed via e-mail that they were participating in a study on self-regulation and alcohol behaviour and directed to the URL for the pre-test measures: the alcohol consumption questionnaire, the Stroop task and the SST with 25% stop-signals (pre-test).

In both conditions, participants were asked to complete one SST per day over four days. Participants in the inhibition condition completed the SST with 50% stop-signals and were instructed to refrain from responding at the sound of the stop-signal. Participants in the active control condition completed the SST with 25% stop-signals but were instructed to ignore the stop-signals and always respond to the visual stimuli [18,19].

After the four days, all participants were directed to complete the post-test measures: the alcohol consumption questionnaire, the Stroop task and the SST with 25% stop-signals (post-test). Four weeks later, participants were asked to complete the alcohol consumption questionnaire (follow-up). The pre-test, post-test and follow-up questionnaires were sent on Fridays. Friday was chosen as the day for completing the pre-test, post-test and follow-up questionnaires in order to measure alcohol consumption consistently and because more alcohol may be consumed on weekends. Participants completed one training task a day, for four consecutive days starting Monday. All participants were sent the links containing the training tasks on the same days. Because the post-test was completed on Friday and participants reported their alcohol consumption for the past seven days, the pre- and post-test measures of alcohol consumption did not overlap. Participants were granted standard course credit as an incentive for participating in the study (90 min., 1.5 credit points). The study was conducted according to the protocol approved by the University's Human Research Ethics Committee.

Data cleaning

Data cleaning for the SST was performed as recommended [29]. Participants who did not complete the SST accurately at either pre- or post-test were not included in the analysis. Individuals were excluded from analyses if their probability of responding given a signal was significantly

SSRT

A2 (pre-test vs. post-test) by 2 (inhibition vs. active control) mixed ANOVA was performed to examine the efect of the intervention on SSRT. Tere was a marginally signifcant main efect of condition, $F(1,64) = 4.386$, $p = 0.040$, $\eta^2 = 0.064$, such that averaged across both time points, the control condition appeared to perform better on the SST, MD=28.746ms, SE=13.726, $p = 0.040$. Tere was no main efect of time point, $F(1,64) = 0.409$, $p = 0.525$, $\eta^2 = 0.006$, on SSRT. Te interaction between time and condition was not signifcant, $F(1,64) = 0.729$, $p = 0.396$, $\eta^2 = 0.011$; see Table 1 for SSRT means at each time point in each condition.

Stroop interference

A2 (pre-test vs. post-test) by 2 (inhibition vs. active control) mixed ANOVA was performed to examine the efect of the intervention on interference. Tere was no signifcant main efect of condition, $F(1,121) = 0.036$, $p = 0.849$, $\eta^2 < 0.001$; or time point, $F(1,121) = 1.664$, $p = 0.199$, $\eta^2 = 0.014$, on Stroop interference scoree~

[45]. Finally, this was the first non-specific response inhibition training to be conducted entirely online and care should be taken when making comparisons to previous research using a different format. Although it is possible that the online format may have influenced the efficacy of the training, it is unlikely because participants who did not adhere to the task instructions were removed from the analysis. Since this study was conducted more research has been published on web-based cognitive trainings showing that non-specific response inhibition training is unsuccessful and the study results corroborate these findings [46,47]. The potential benefits of online trainings (greater reach and cost-effectiveness in dissemination) make it important to determine their efficacy and further research is warranted.

Conclusion

The present intervention contributes to the existing body of literature by showing that this particular non-specific response inhibition training paradigm had no significant effect on alcohol

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