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**Use of D-Cycloserine in Women with Bulimia Nervosa and OSFED**
(project no. 45-15)

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**Introduction**
Mirror confrontation is an intervention that aims at a reduction of body-related fears and body dissatisfaction in eating disorders (e.g., Hildebrandt, Loeb, Troupe, & Delinsky, 2012). Fear reduction in exposure-based therapy is similar to extinction learning and evidence suggests that extinction learning can be facilitated with DCycloserine (DCS) (Hofmann et al., 2006), a partial agonist at the glycine recognition site of the NMDA receptor in the amygdala.

**Objective**
This project looked at augmentative effects of DCS in mirror exposure treatment in women affected by eating disorders.

**Methods**
We examined DCS vs placebo treatment in combination with four sessions of mirror exposure in a randomized, double-blind, placebo-controlled trial. Outcome variables included body dissatisfaction and body image avoidance at baseline, the end of treatment and in a 4-weeks follow-up as well as body-related cognitions and emotions from session to session. A group of 26 participants with BN or subthreshold BN was recruited at the Mount Sinai Hospital (New York).

**Results**
***Body Dissatisfaction***
Results from a Group (DCS vs Placebo) x Time (Baseline vs Post vs Follow-up) repeated measures analysis of variance (ANOVA) on body dissatisfaction as measured by the Body Shape Questionnaire (BSQ; Cooper, Taylor, Cooper, & Fairburn, 1987) yielded a significant main effect of Time, $F(2, 48)=35.20$, $p<.001$, $\eta p2=.595$. Post-hoc dependent t-tests suggest that mirror exposure therapy led to a significant decrease of body dissatisfaction from baseline to post-therapy, $t(25)=5.36$, $p<.001$, and from post-therapy to follow-up, $t(25)=3.89$, $p=.001$. Results from a repeated measures Group x Time ANOVA analyzing the BSQ change from session to session yielded a trend for a significant Group x Time interaction, $F(2, 44)=2.78$, $p=.075$, $\eta p2=.112$. To follow up on this trend, BSQ difference scores between sessions were computed. Results from t-tests suggest a

significant greater improvement of body dissatisfaction between session 2 and session 3 in the DCS compared to the placebo group, t(22)=-2.15, p=.042.

***Body Image Avoidance***

Results from a Group (DCS vs Placebo) x Time (Baseline vs Post vs Follow-up) repeated measures ANOVA on body image avoidance as measured by the Body Image Avoidance Questionnaire (BIAQ, Rosen, Srebnik, Saltzberg, & Wendt, 1991) yielded a significant main effect of Time, F(2, 48)=23.11, p<.001, ηp2=.491. Follow-up dependent t-tests showed a significant decrease of bodyrelated avoidance behavior from baseline to post-therapy, t(25)=-4.40, p<.001, and from post-therapy to follow-up, t(25)=-2.32, p=.029. Results from a repeated measures Group x Time ANOVA analyzing the BIAQ change from session to session demonstrated a significant Group x Time interaction, F(2, 44)=5.31, p=.011, ηp2=.194. BIAQ difference scores between sessions were calculated. Results from t-tests suggest a significant greater decrease of body image avoidance between session 2 and session 3 in the DCS compared to the placebo group, t(22)=-2.12, p=.045.

To determine whether the DCS effect on body dissatisfaction was mediated by body image avoidance, a mediator analysis was performed with the BSQ/BIAQ difference scores using the Bootstrap Sample Method (m=5000) via the PROCESS Macro for SPSS (Hayes, 2013). Results suggest that decrease of body-related avoidance acts as a mediator for the greater improvement of body dissatisfaction between session 2 and 3 in the DCS compared to the placebo group, CI95-=0.01, CI95+=23.61.

***Negative Body-Related Cognitions and Emotions***

Results from a Group (DCS vs Placebo) x Time (Session 1 vs Session 2 vs Session 3 vs Session 4) repeated measures ANOVA on negative thoughts during mirror exposure as measured by the Thoughts Checklist (TCL, Cooper & Fairburn, 1992) yielded a significant main effect of Time, F(3, 66)=8.72, p<.001, ηp2=.284. Post-hoc t-tests suggest that negative bodyrelated cognitions significantly decreased from session 2 to session 3, t(24)=4.31, p<.001. No other significant effects for TCL were found, p>.338.

Results from a Group (DCS vs Placebo) x Time (Session 1 vs Session 2 vs Session 3 vs Session 4) repeated measures ANOVA on negative emotions during mirror exposure as measured by 100mm visual analogue scales (VAS) showed a significant main effect of Time, F(3, 66)=14.67, p<.001, ηp2=.400. Post-hoc t-tests revealed a significant decrease of negative emotions during mirror exposure from session 1 to session 2, t(24)=3.03, p=.006, as well as session 3 to session 4, t(24)=2.38, p=.026. No other significant effects for the negative emotions VAS occurred, p>.118.

## Conclusion

Mirror exposure therapy led to a significant reduction of body dissatisfaction, body image avoidance behavior as well as negative cognitions and emotions during mirror exposure sessions. Hypotheses regarding the learning-promoting effect of DCS were only partially confirmed. The results indicate that the outcome effect of mirror exposure therapy cannot be further increased by the intake of DCS relative to placebo. However, comparisons of individual exposure sessions show a trend that the use of DCS slightly accelerates the improvement of body dissatisfaction. In accordance with the hypotheses and the theoretical model of Hofmann et al. (2006), this effect seems to be mediated by the

decrease of body image avoidance. Further research will be necessary to explore the efficacy of DCS in the context of eating disorder treatments.

**References**


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