The efficacy of habit reversal therapy for tics, habit disorders, and stuttering: a meta-analytic review

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CRD summary
This review concluded that there was substantial support for the efficacy of habit reversal therapy for the disorders it was commonly used to treat. Given the uncertainties surrounding the review process, the small number of participants, and the apparently poor quality of the studies and substantial variability across them, the authors' conclusions seem overly strong and their applicability uncertain.

Authors' objectives
To determine the effectiveness of habit reversal therapy on maladaptive repetitive behaviours including stuttering, tics, nail biting, temporomandibular disorder, thumb sucking, and mixed repetitive oral-digital habits.

Searching
PubMed, PsycINFO, Cambridge Scientific Abstracts, and ProQuest were searched up to July 2009; search terms were reported. Citations of relevant reviews and Google Scholar were also searched. Authors with multiple relevant publications were contacted for unpublished research.

Study selection
Randomised controlled studies that evaluated habit reversal therapy for the treatment of maladaptive repetitive behaviours (including stuttering, tics, nail biting, temporomandibular disorder, thumb sucking, and mixed repetitive oral-digital habits) were eligible. To be included, the protocol for habit reversal therapy had to include awareness training and competing behaviour training, and not include any significant treatment procedure that was not part of habit reversal therapy (as described by Azrin and Nunn, 1973).

Across the included studies, recruited participants were of both genders. Most studies recruited adults, with some also recruiting children; a minority of studies were restricted to recruiting children. The disorder being treated varied across the studies; over 50% included participants with a variety of oral habits, with other disorders including hair pulling, Tourette's syndrome, and stuttering. The duration of individual treatments ranged from 120 to 1,920 minutes. The study period ranged from one to 13 months (where reported). Comparison treatments were massed practice, bitter substitute, waiting list, differential reinforcement, supportive psychotherapy, splints, nail care, attention placebo, self-record, discussion, or exposure with response prevention.

The authors did not state how many reviewers selected studies for the review.

Assessment of study quality
Study quality was assessed for the use of a treatment manual or written protocol, therapists specifically trained to provide habit reversal therapy, the checking of treatment integrity and observation or interview schedule by an assessor blinded to the patients' condition, and the determination of effect size. The maximum score was four.

The authors did not state how many reviewers assessed study quality.

Data extraction
Data were extracted to calculate mean differences with 95% confidence intervals. Where multiple time-points were reported, data from the longest follow-up period was extracted. Where attrition resulted in a lack of data for all conditions, the longest period at which 75% of the data was available was included in the meta-analysis.

The authors did not state how many reviewers extracted data.

Methods of synthesis
The standardised mean difference Cohen's d was calculated using a random-effects inverse variance model; a
standardised mean difference of 0.8 or more was considered a large effect. Heterogeneity was assessed using the Q statistic. The effect sizes for the outcome variables across all studies were examined for univariate outliers. Moderator testing was conducted to investigate potential sources of heterogeneity using meta-analysis statistics analogous to ANOVA, and continuous variables were analysed using multiple regression analyses. The fail-safe N was calculated, which was the number of zero-effect-size studies needed to reduce d to 0.20, and considered too small to have importance.

Results of the review
Eighteen studies (19 comparisons) met the inclusion criteria (575 participants, range 8 to 126). One study met all four quality criteria, one study met three (failed on blinding) and the other studies met only one criterion.

The overall effect of habit reversal therapy was considered large (Cohen's d=0.80, 95% CI 0.53 to 1.07; fail-safe N=57). There was statistically significant heterogeneity across the studies. None of the moderators investigated produced statistically significant effects.

Authors' conclusions
The findings provided substantial support for the efficacy of habit reversal therapy for disorders that it was commonly used to treat. The findings were consistent with recent arguments for the classification of habit reversal therapy as a well-established treatment for tic and habit disorders.

CRD commentary
The review addressed a clear question, with reproducible inclusion criteria. Several relevant sources were searched and attempts were made to locate unpublished studies. It was unclear whether language restrictions were applied during the searches. The authors did not report whether the review process was conducted in duplicate, so the potential for error and bias could not be assessed.

Study quality was assessed, but this was limited and the results were not fully reported. Given the heterogeneity across studies, the production of a standardised effect measure was appropriate. However, the combining of a such a wide range of different habit disorders, interventions and comparators made the generalisability of the overall pooled estimate uncertain. Given the uncertainties concerning the reliability of the review process, the small number of participants, and the apparently poor quality of the studies available, the authors' conclusions seem overly strong.

Implications of the review for practice and research
Practice: The authors did not state any implications for practice.

Research: The authors stated that future research on habit reversal therapy would be best concentrated on evaluating its efficacy when delivered with minimal or no therapist contact. They also stated that it may be useful to examine the causes of treatment failure (when that occurred). Research findings would be most useful if high-quality research designs were used and reporting included: the length of treatment sessions, information about the format of therapy (such as individual versus group), a clear statement of the timing of the follow-up, therapist training for specific the therapy, whether a treatment manual was used, to what extent the treatment manual was followed, and a specific between-groups effect size, preferably Cohen's d.

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Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.