Authors' objectives
To examine the effectiveness of self-regulatory components in the treatment of adult behaviour problems.

Searching
PsycLIT and Psychological Abstracts were searched, whilst references from relevant articles and books were reviewed. The search terms and dates were not stated. Only published studies, which presented quantifiable data that could be transformed to a common measure, were included.

Study selection
Study designs of evaluations included in the review
Only between-patient designs were included in the review.

Controlled studies were included if they compared interventions based on a self-regulatory model to no-treatment, wait-list, and minimal contact/attention controls to other self-regulatory components.

Specific interventions included in the review
Self-regulatory treatment involving self-monitoring (SM), self-reflection or self-evaluation (including goal-setting and feedback) and self-reaction or self-reinforcement (SR). The control groups consisted of no treatment, minimal contact or wait-list control.

Participants included in the review
The participants were adults with habit disturbances, affective and anxiety problems, and health-related problems. Eighty-five per cent of the studies used non-clinical populations.

Outcomes assessed in the review
Changes in adults exhibiting behaviour problems. It was unclear what measurement tools were used to measure the outcomes, but all quantifiable outcomes were transformed to a common measure.

How were decisions on the relevance of primary studies made?
The authors do not state how the papers were selected for the review, or how many of the authors performed the selection.

Assessment of study quality
The authors assessed the internal validity, which included the type of control group, level of psychopathology and length of treatment. They also assessed the external validity, including the type of behavioural disturbance and treatment modality. The authors do not state how the papers were assessed for validity, or how many of the authors performed the validity assessment.

Data extraction
A 50-variable coding system was developed that provided information on study, patient, methodological, and intervention characteristics. Ten studies were randomly chosen for coding by an independent rater in order to establish reliability. The percentage agreement and kappa estimates of agreement were computed for each of the categorical variables utilised. Sixteen of the 21 variables presented had kappa-values of 1.0; the remaining 5 variables had kappa-values ranging from 0.32 to 0.87.
The effect sizes (ESs) were calculated for each study from the r, t- and F-statistics, or from the raw means, standard deviations and Ns using a computer program by Mullen (see Other Publications of Related Interest no.1).

The drop-out rates were examined for each group using a relatively conservative non-parametric procedure that compares proportional differences.

**Methods of synthesis**

How were the studies combined?
The individual ESs were combined to form the overall ES. The procedure used to perform this calculation was not stated.

How were differences between studies investigated?
Heterogeneity was tested using chi-squared tests. The sources of heterogeneity were investigated. To examine the variability within self-regulatory interventions, compared with controls, the dataset was divided into the followings sub-datasets.

1. SM alone compared with controls.
2. Interventions using SM plus any other self-regulatory components (SM plus), compared with controls.
3. SM plus and SM alone, compared with controls.

To examine the effects of adding specific self-regulatory components to SM alone, the following analyses were conducted.

1. SM plus goal-setting compared with SM alone.
2. SM plus feedback compared with SM alone.
3. SM plus SR compared with SM alone.

Subgroup (internal validity) analyses were performed for the following:

type of control group (no treatment, wait-list and minimum contact or attention controls),
promise of treatment (control groups in which treatment was promised versus control groups in which it wasn't promised),
level of psychopathology (e.g. out-patient versus college),
type of assessment (self-report versus behavioural), and
length of treatment (1 to 4 weeks, 5 to 8 weeks, and greater than 8 weeks).

Subgroup (external validity) analyses were performed separately for:
target behaviours, such as habit disturbances, depression, anxiety, and health-related behaviours; and
treatment modality, i.e. therapist-assisted versus self-administered and interventions utilising individual, group and mail-contact only formats.

**Results of the review**

Twenty studies were included in the review. The total sample size was not given. Thirteen studies, comprising 385 participants, were used to examine differences due to the control groups.
Effectiveness of interventions based on self-regulation theory: there was significant heterogeneity in the magnitude of the self-regulatory intervention ESs (chi-squared 23.56, d.f.=12, p<0.02). Thirteen studies yielded an average ES of 0.25 (z=2.59, p<0.005). The ES comparing interventions using SM plus was 0.42 (z=3.78, p<0.001) at post-treatment. Significant heterogeneity was found in the magnitude of SM plus effect sizes for these 10 studies (chi-squared 17.8, d.f.=9, p<0.03).

The possible factors accounting for significant variability within self-regulatory interventions compared with controls, and within SM plus compared with SM alone, were explored.

Examination of variability within self-regulatory interventions compared with controls: the post-treatment effectiveness of SM alone, compared with controls, yielded an average ES of 0.29 (N=10, z=1.71, p<0.05) at post-treatment. No heterogeneity was found across these ESs. The post-treatment effectiveness of SM plus, compared with controls, yielded an average ES of 0.37 (N=7, z=2.70, p<0.05). Significant heterogeneity of variance was found across these ES estimates (chi-squared 19.81, d.f.=6, p<0.002). The post-treatment effectiveness of studies combining SM plus interventions and SM alone yielded an average ES of 0.45 (N=4, z=3.22, p<0.0001). Significant heterogeneity was found across these ES estimates (chi-squared 8.85, d.f.=3, p<0.03). Between-group tests comparing the above three sub-datasets (SM alone versus controls, SM plus versus controls, SM plus and SM alone versus controls) were non significant.

Examination of variability within SM plus compared with SM alone: the post-treatment effectiveness of SM plus goal-setting yielded an average ES of 0.60 (N=3, z=3.61, p<0.0002). There was significant heterogeneity across these ES estimates (chi-squared 7.87, d.f.=2, p=0.01). The post-treatment effectiveness of SM plus feedback yielded an average ES of 0.80 (N=2, z=2.29, p<0.01). No heterogeneity was present. The post-treatment effectiveness of SM plus SR yielded a non significant average ES of 0.15 (N=5, z=0.83, p=0.20) with no heterogeneity present.

Between-group tests comparing the above three sub-datasets revealed that interventions combining SM and goal-setting were significantly more effective than those combining SM and SR (z=1.68, p<0.05).

Treatment of drop-out: the drop-out rates for treatment groups and controls were 16.6 and 9.5%, respectively; this difference was not significant.

Follow-up: no significant decrease in the ES emerged between the end-of-treatment and follow-up (1 to 8 weeks) for self-regulatory interventions and SM plus interventions.

An examination of the discrepancy in the overall ES estimates between self-regulatory interventions compared with controls, and SM plus compared with SM alone, was also performed. Factors affecting SM, effects of motivational variables, goals and feedback were also explored.

Internal validity analysis: there were no differences among the studies due to the control groups, instillation of hope to control groups, and treatment length. In terms of the level of pathology, the between-group tests revealed that studies utilising out-patient samples had a significantly larger ES than those utilising college samples (z=1.64, p<0.05). For the assessment method, studies utilising behavioural measures had a larger ES than those utilising self-report measures (z=1.66, p<0.05).

External validity analyses: no differences emerged for target behaviour. For treatment format, studies utilising individual treatment formats had a significantly larger ES than those utilising group treatment formats (z=2.12, p<0.02).

**Authors’ conclusions**

Compared with no intervention at all, the ES for self-regulatory interventions was significant but small (0.25). However, significant variability existed for self-regulatory interventions relative to controls, complicating the interpretation of this finding.

The finding suggest that the more self-regulatory components are present in an intervention, the more effective the self-regulatory intervention is, compared with no intervention at all.
The authors noted several limitations to the present review. First, most of the studies (12 of the 20) targeted habit disturbances, making it difficult to compare studies across target behaviours or generalise the results of the review. Second, most of the studies contained relatively small sample sizes, with 95% of the studies containing less than 15 patients per group and only 55% of the studies containing at least 10 patients per group. Third, only 85% of the studies used non-clinical populations. Finally, there were inconsistencies in how the self-regulation components were utilised and defined in studies. For example, some studies purporting to use SM as the sole intervention also included explicit feedback and goal-setting.

CRD commentary
The review focused on a well-defined question. The inclusion and exclusion criteria were appropriate. The primary studies were combined appropriately.

The search terms and dates of the databases searched were not provided. In addition, only published studies were included, leading to a potential publication bias. An analysis of the internal and external validity was performed, but quality criteria such as blinding of randomisation and concealment of randomisation were not assessed. Some details of the primary studies were provided, but only those which compared self-regulatory interventions with control groups were included. Details such as the age, gender, level of psychopathology, length of treatment, follow-up times, type of assessment, target behaviours, and treatment modality were not provided. In addition, the authors did not state what measurement tools were used to measure changes in the participants’ problem behaviours.

The conclusions follow from the results, but should be interpreted with caution due to the limitations noted by the authors (see ‘Author's Conclusions’) and those stated here.

Implications of the review for practice and research
The authors state that there is a need to conduct large-scale controlled studies of the effectiveness of self-regulatory interventions on clinical populations, and to assess their impact. Such research should systematically assemble and disassemble interventions in which self-regulatory components are the primary interventions.

Bibliographic details

PubMedID
9543623

Other publications of related interest

Indexing Status
Subject indexing assigned by NLM

MeSH
Adult; Anxiety Disorders /therapy; Depression /therapy; Female; Health Status; Humans; Male; Mental Disorders /therapy; Self Care /psychology; Self-Assessment; Treatment Outcome

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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.