Appendix 1: ‘Principles for Self-Regulation Interventions’

- Explore risk perception, the perceived cost/benefit of intervention targets, perception of support from important others, and the individual's perceived competence to carry out recommended actions regarding health behavior change or self-management targets (realistic outcome expectancies).
- Explore and eventually change the individual's representation of the health problem or illness (identity, time-line, cause, consequences, and cure or control) as well as the way in which these representations are organized by the individual (illness representations).
- Encourage the individual to set personal goals. These goals should be specific, important to the individual, not too easy or too difficult to carry out, and attainable in a restricted time frame (goal ownership).
- Help the individual to observe or monitor his or her current problem behavior, its antecedents, and its emotional consequences (self-monitoring).
- Assist the individual in building an action plan by asking when, where, how, and how long the patient will act in relation to his or her goal (planning).
- Ask the individual to build a "goal ladder" in order to define steps towards goal attainment. Help the individual in developing a standard for assessing progress. Provide feedback to evaluate goal progress.
- Encourage the individual to ask for support from health professionals and relatives or friends (facilitate social support).
- Increase the individual's self-efficacy via modeling and verbal persuasion (goal efficacy).
- Encourage the individual to use self-incentives when progress is made (self-reinforcement).
- Teach the individual the skills to control distracting information or negative mood during goal pursuit (attention control and emotion control).
- Ask the individual to report and discuss conflicting or competing goals and to try to align these competing goals (control over competing goals).
- Reassure the individual that relapse is not failure, but an opportunity for learning (anticipatory coping).
- Teach the individual how to cope with relapse (relapse prevention).
- Inform individuals that they should feel free to reformulate a goal in a more manageable way if their goal is too difficult to attain.
Appendix 2: Formulas used in meta-analysis

Formula 1 and 2 were used to compute the standardized mean differences between the treatment group (T) and control group (C) of the change in weight or HbA1c from pretest to posttest. Formula 1 was applied if a study reported raw pretest and posttest means of the two groups, denoted with \( M_{\text{pre}T}, M_{\text{post}T}, M_{\text{pre}C}, M_{\text{post}C} \), and raw pretest and posttest standard deviations, denoted with \( S_{\text{pre}T}, S_{\text{post}T}, S_{\text{pre}C}, S_{\text{post}C} \). The sample sizes are denoted with \( n_T \) and \( n_C \).

Formula 1: \[
d_{\text{change}} = \frac{(M_{\text{pre}T} - M_{\text{post}T}) - (M_{\text{pre}C} - M_{\text{post}C})}{S_{\text{post-pooled}}}
\]

The standardization was done by the pooled post score standard deviation, where

\[
S_{\text{post-pooled}} = \sqrt{\frac{(n_T - 1)S_{\text{post}T}^2 + (n_C - 1)S_{\text{post}C}^2}{n_T + n_C - 2}}.
\]

Formula 2 was applied if a study reported only change scores from pretest to posttest for the treatment and control group, denoted with \( M_{\text{change}T}, M_{\text{change}C} \), and the standard deviations of the change, denoted with \( S_{\text{change}T}, S_{\text{change}C} \).

Formula 2: \[
d_{\text{change}} = \frac{M_{\text{change}T} - M_{\text{change}C}}{S_{\text{post-pooled}}}
\]

To compute the pooled post score standard deviation, we assumed a pre-posttest correlation of 0.50. In this case, the posttest standard deviations are equal to the change score standard deviations:

\[
S_{\text{post}T} = \frac{S_{\text{change}T}}{\sqrt{2(1 - r_{\text{prepost}})}} = \frac{S_{\text{change}T}}{\sqrt{2*0.50}} = S_{\text{change}T}
\]

The standard error (SE) of \( d_{\text{change}} \) is

\[
\text{SE of } d_{\text{change}} = \sqrt{\left(\frac{1}{n_T} + \frac{1}{n_C} + \frac{d_{\text{change}}^2}{2(n_T + n_C)}\right)}.
\]
## Appendix 3: ‘Correlation Table with Self-Regulation Correlations’

### Correlations between SR-Variables at three months after baseline (T2) (N = 68)

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<td>.555(**)</td>
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<td>.264(*)</td>
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<td>.004</td>
<td>-.007</td>
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<td>.462(**)</td>
<td>.263(*)</td>
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<td>self-reward (8)</td>
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<td>attention control (9)</td>
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<td>.477(**)</td>
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** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).
Appendix 4: ‘The development of the Self-Regulation Skills Battery (SRSB)’
(De Gucht, Maes)

In 2001 the Leiden Health Psychology Group developed the GAPI (Goals and Processes Inventory) that measured goal related cognitions, such as goal ownership and goal support. Goal cognitions were found important determinants of goal selection, goal pursuit and goal attainment. In function of interventions it was decided to develop an additional questionnaire that measured goal related skills. This resulted in the development of the Self-Regulation Skills Scale. The Self-Regulation Skills Scale was based on a literature review of Maes and Karoly that described fourteen important principles in the development of self-regulation interventions (see appendix 1). Of these fourteen principles, the following fourteen self-regulatory skills were derived: social comparison, self-monitoring, planning, self-criticism, self-reward, goal efficacy, goal communicative actions, coping with problems, attention control, emotion control, persistence, disengagement, self-determination and outcome expectancies. Data on these fourteen self-regulation skills were collected in a general population (N = 161). Principal component analysis with VARIMAX rotation revealed nine subscales that measured: commitment and persistence (12 items, \( \alpha = .97 \)), goal efficacy (4 items, \( \alpha = .95 \)), social comparison (4 items, \( \alpha = .90 \)), goal communicative actions (4 items, \( \alpha = .86 \)), self-criticism (4 items, \( \alpha = .95 \)), self-determination (4 items, \( \alpha = .89 \)), self-reward (4 items, \( \alpha = .95 \)), emotion control (4 items, \( \alpha = .95 \)), coping with problems (4 items, \( \alpha = .93 \)).

Subsequently, the Self-Regulation Skills Scale and the Goal Systems Assessment Battery (GSAB) were integrated. This integration resulted in the Self-Regulation Skills Battery consisting of 13 subscales: goal ownership (5 items), goal efficacy (4 items), need for feedback (4 items), help seeking (4 items), social comparison (4 items), planning (4 items), self-monitoring (6 items), self-criticism (5 items), self-reward (5 items), attention/stimulus control (4 items), coping with problems (5 items), self-efficacy enhancement (4 items), emotion control (4 items). Data on the Self-Regulation Skills Battery were collected in a sample of 156 patients with rheumatoid arthritis. Principal Component Analysis resulted in 13 subscales, measuring:

- Goal ownership (2 items; \( \alpha = .89 \))
- External regulation (2 items; \( \alpha = .82 \))
- Goal efficacy (4 items; \( \alpha = .82 \))
- Planning (4 items; \( \alpha = .74 \))
- Self-monitoring (3 items; \( \alpha = .78 \))
- Attention control (2 items; α .76)
- Emotion control (4 items α .85)
- Social comparison (4 items α .91)
- Self-reward (5 items; α .89)
- Self-criticism (5 items; α .85)
- Help seeking (4 items; α .75)
- Feedback (5 items; α .86)
- Coping with problems (5 items; α .76)

Since the development of the Self-Regulation Skills Battery occurred parallel to the data collection for this thesis, the studies in this thesis did not include the latest version of the Self-Regulation Skills Battery that distinguished between ‘Goal Ownership’ and ‘External Regulation’. Neither did the version of the Self-Regulation Skills Battery that was included in these studies include the subscale ‘Feedback’. Furthermore, the Self-Regulation Skills Battery that was used in the studies that were described in this thesis was similar to the above mentioned data about the components of the Self-Regulation Skills Battery (2006).

References