

# Does behaviour matter: What works in self-regulation interventions?

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## Are different interventions differentially effective for different behaviours?

- Interventions are made up of many components e.g.
  - review of behavioural interventions targeting low income groups:  
4-19 techniques within 13 interventions  
Michie et al, King's Fund report, 2008
- Behaviours vary along several dimensions e.g.
  - Categorical vs continuous
    - Smoking vs physical activity
  - Frequent vs infrequent
    - Eating vs health screening
  - Increase (energise) vs decrease (inhibit)
    - Physical activity vs alcohol consumption

## To answer this question, we need ...

- A theoretical understanding of
  - Interventions
  - Behaviour
- A method of classifying and analysing
  - Interventions
  - Behaviour

## This study: a systematic review ...

- Question:
  - What is effect of self-regulation interventions on behaviour?
- Rather than looking at overall effect of heterogeneous interventions, we
  - apply a method of
    - classifying component techniques
  - analyse effect by
    - Individual techniques
    - Theoretically derived combinations of techniques

## Compares effect on two behaviours

- **Physical activity**
  - The need is to energise behaviour ... “get it going”
- **Healthy eating**
  - The need is to inhibit unhealthy food consumption ... “keep behaviour on track”



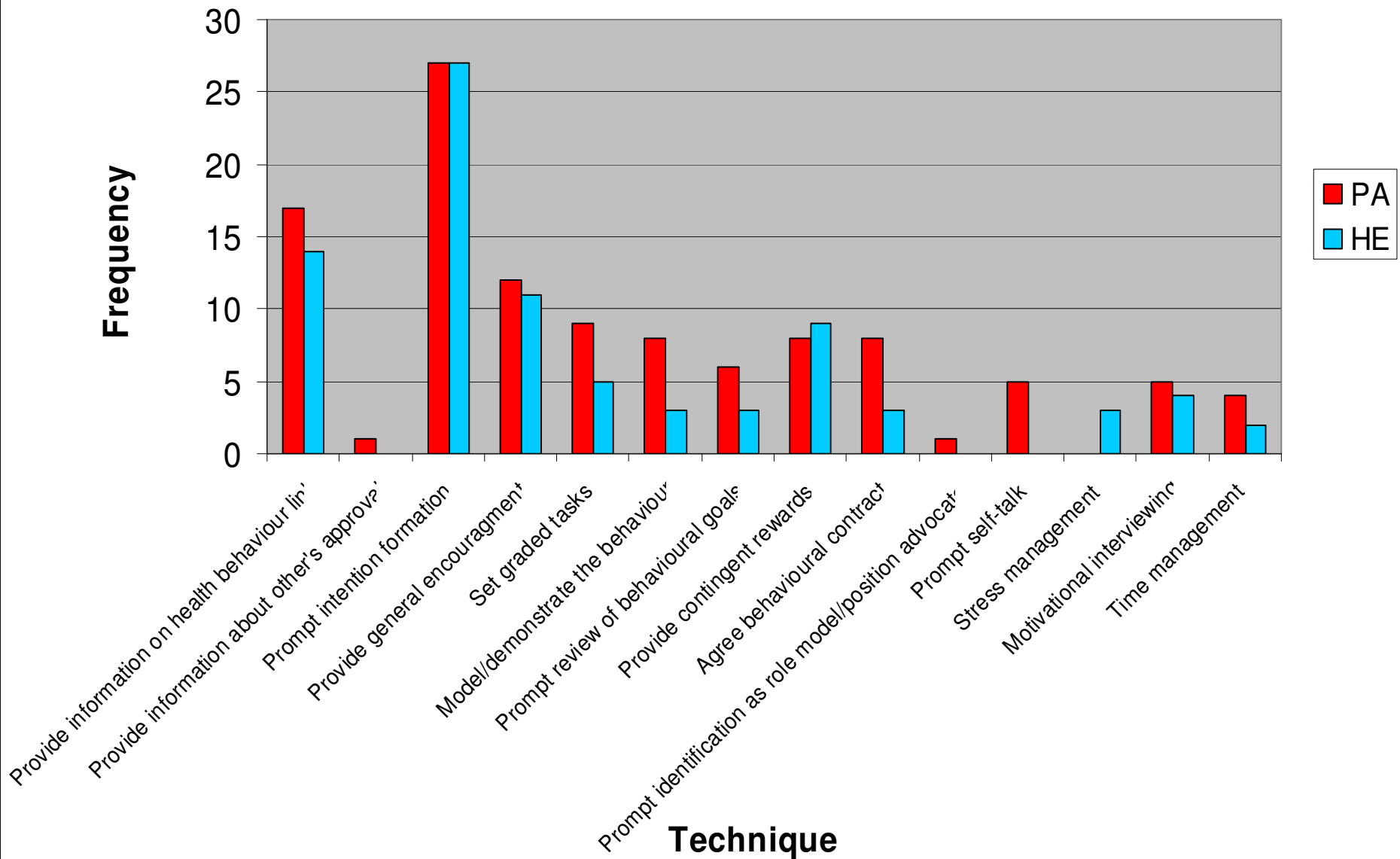
## Method

- Inclusion criteria
  - Interventions using behavioural and/or cognitive techniques
  - to increase physical activity and healthy eating
  - in adults
  - designs experimental or quasi-experimental
  - outcome measures objective or validated self-report.
- 6 electronic databases, 1990-2007
- Intervention content analysed using
  - a reliable taxonomy of 26 techniques (Abraham & Michie, 2008)
  - a theoretically derived combination of techniques
- Random effects meta-analysis and meta-regression

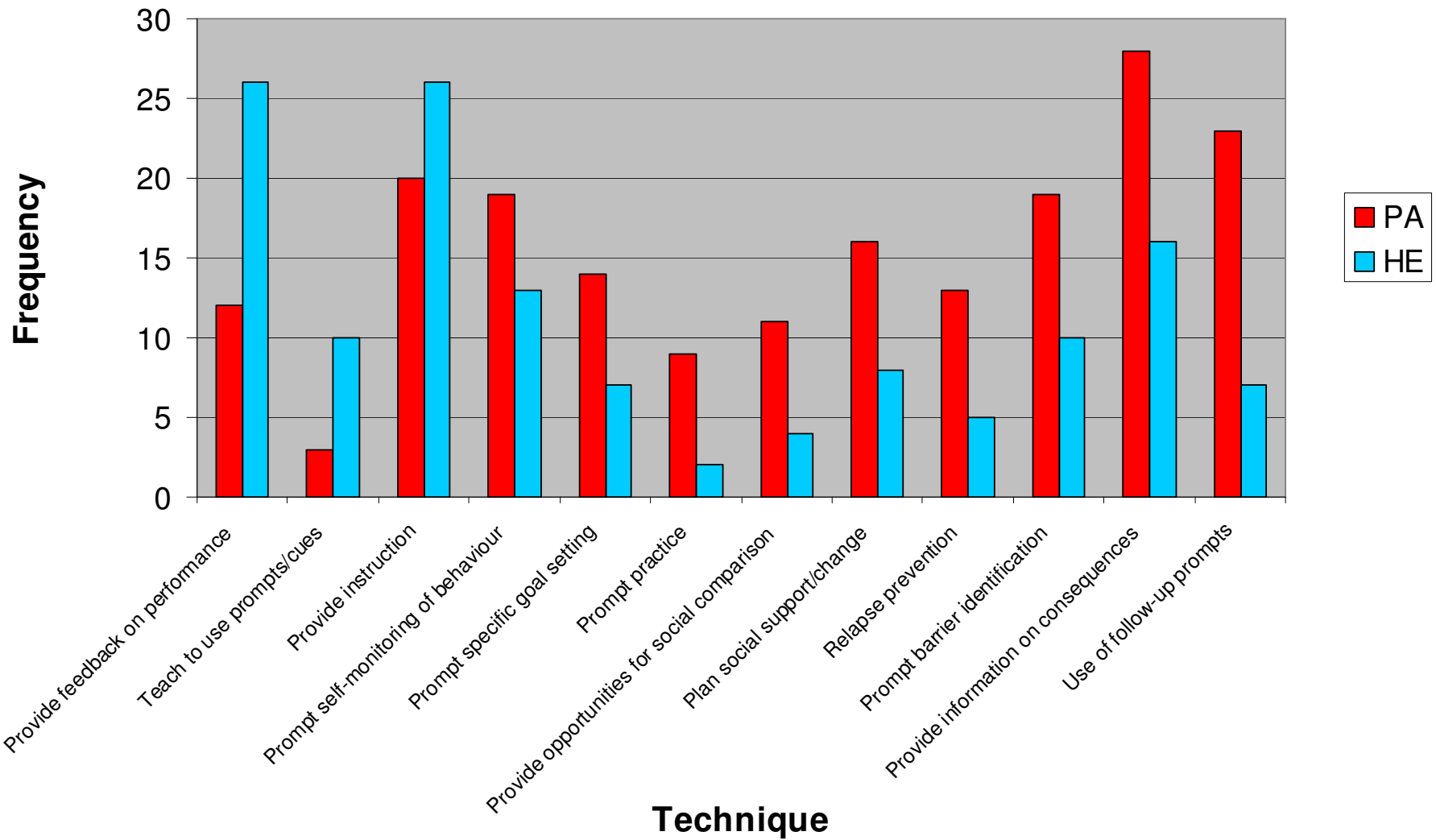
## The interventions

- 84 interventions (n=28,838)
- Average 6 techniques (range 1-14)
- Target behaviour
  - Physical activity only: 30
  - Healthy eating only: 27
  - Both physical activity and healthy eating: 14
  - Additional behaviours in a health promotion program: 3

## Frequency of techniques in interventions - least difference



### Frequency of techniques in interventions - greatest difference



## Effect on behaviour

- Controlled for intervention content of control groups
  - mean no. techniques = 0.9
- All interventions
  - Effect  $d=0.37$ , 95% CI 0.29-0.54
  - Considerable between-study heterogeneity:  $I^2=79\%$
  - Heterogeneity not explained by 10 moderators examined e.g.
    - Setting, population, intervention characteristics, **target behaviour**
- 44 comparisons targeting physical activity
- 40 comparisons targeting healthy eating
  - Similar effect and heterogeneity as combined interventions
  - No evidence of separate moderators

## Differences between interventions according to behaviour

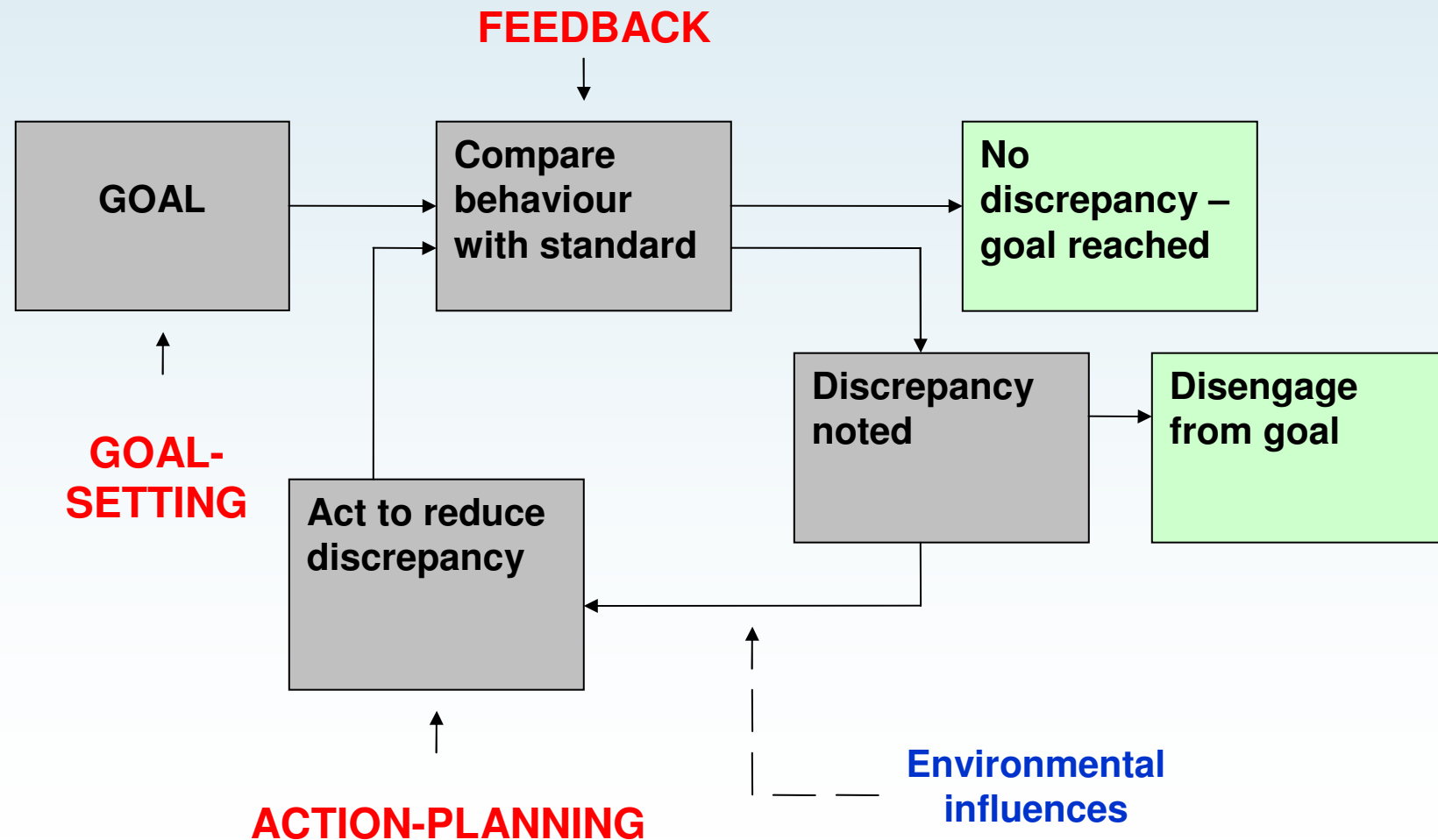
- Physical Activity interventions ....
  - more often used multi-sessions
    - 90% vs 72.5%
  - used on average more techniques
    - 6.8 vs 5.6
  - used different techniques
    - More use of follow up prompts: 52% vs 18%
    - Less use of feedback on performance: 27% vs 65%
- Therefore, difficult to disentangle
  - Type of intervention
  - Type of behaviour

## Analysis by individual techniques and technique combinations

- One technique, **self-monitoring**, had a significant effect univariately
  - $d=0.57$ , 14.6% variance
- Control Theory (Carver & Scheier, 1982) used as basis for identifying other techniques expected to increase intervention efficacy
- Core self regulatory processes include
  - setting goals
  - specifying action plans
  - self-monitoring of behaviour
  - feedback on performance
  - reviewing goals

# A relevant theory of behaviour change

## Self-regulation (control) Theory: *Carver & Scheier, 82*



## Core self regulatory processes include ..

- setting goals
- specifying action plans
- self-monitoring of behaviour
- feedback on performance
- reviewing goals

## Findings

- Interventions that combined self-monitoring with at least one other “self-regulatory” techniques (n=28)

compared with

- the other interventions (n=56)
- were **twice as effective**
- $d=0.60$  vs  $d=0.26$

## Conclusion

- Analysing interventions into
  - component techniques and
  - theoretically derived technique combinations
- revealed **effect sizes 2x as large**
  - as those resulting from traditional meta-analytic analysis
- No difference according to type of behaviour
- Why?

## Future work ...

- A theoretical understanding of
  - Interventions
  - Behaviour
- A method of classifying and analysing
  - Interventions
  - Behaviour