

# Novel methods to help develop healthier eating habits in eating and weight disorders:

## A systematic review and meta-analysis



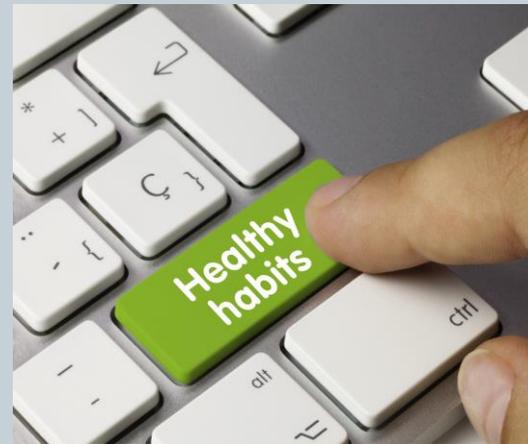
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# Outline



- Habit-theory and eating disorders
- Novel treatment enhancers:
  - Implementation intentions
  - Food-specific inhibition training
  - Attention bias modification
- The effectiveness of the different approaches
- Clinical populations





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## Review

# Novel methods to help develop healthier eating habits for eating and weight disorders: A systematic review and meta-analysis



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## ABSTRACT

This paper systematically reviews novel interventions developed and tested in healthy controls that may be able to change the over or under controlled eating behaviours in eating and weight disorders. Electronic databases were searched for interventions targeting habits related to eating behaviours (implementation intentions; food-specific inhibition training and attention bias modification). These were assessed in accordance with the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) guidelines. In healthy controls the implementation intention approach produces a small increase in healthy food intake and reduction in unhealthy food intake post-intervention. The size of these effects decreases over time and no change in weight was found. Unhealthy food intake was moderately reduced by food-specific inhibition training and attention bias modification post-intervention. This work may have important implications for the treatment of populations with eating and weight disorders. However, these findings are preliminary as there is a moderate to high level of heterogeneity in implementation intention studies and to date there are few food-specific inhibition training and attention bias modification studies.

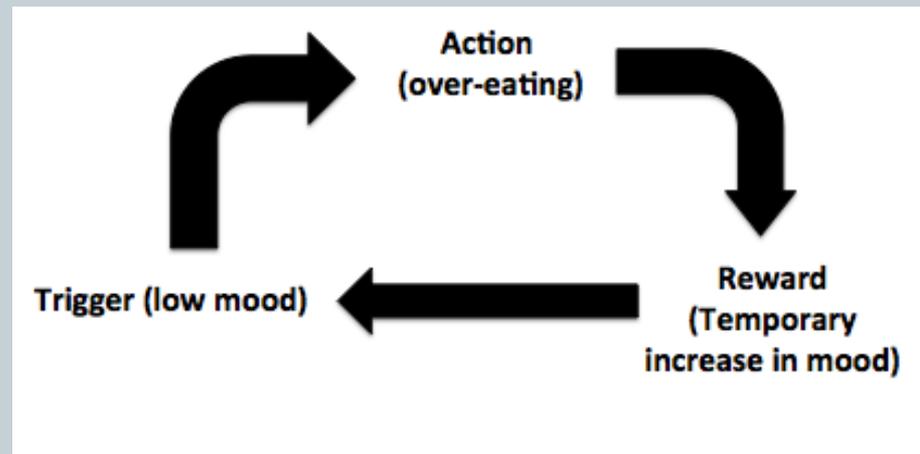
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# Habit formation



“A process by which a stimulus automatically generates an impulse towards action, based on learned stimulus-response associations”

(Gardner, 2015; p.280)



# Habit formation...



‘Most of the time, what we do, is what we do most of the time’

Townsend & Bever (2001)

Meta-analysis: Habit accounts for 18% of variance in dietary behaviour

Gardner, De Bruijn, & Lally (2011)



# Habit formation in EDs



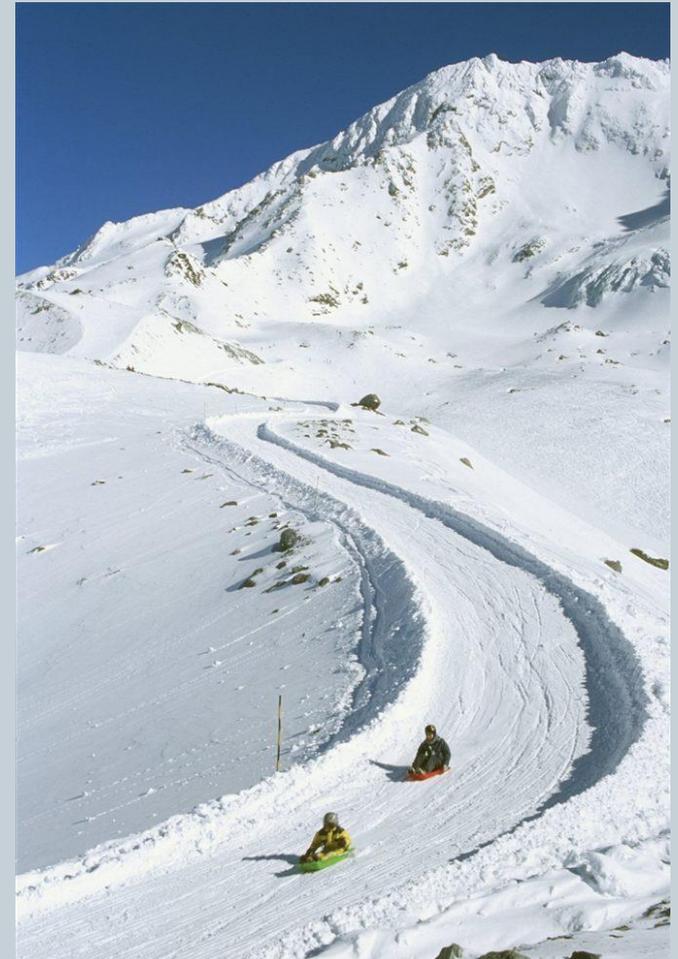
- Initially goal-directed/ impulsive actions.
- Positively rewarded (O'Hara et al. 2015).
- Shift from behaviours being initially rewarding to compulsive in their nature (Park, Godier & Cowdrey, 2014; Pearson, Wonderlich, & Smith, 2015).
- Maintenance mechanism in eating and weight disorders (Steinglass & Walsh, 2006; Walsh, 2013).



# A staging model of eating disorders



- Over time the illness may become more resistant to treatment.
- Prolonged illness duration can lead to social difficulties.
- Further reinforcing habits and the vicious cycle.
- Neuroadaptation.
- What fires together, wires together!



Treasure, Stein & Maguire (2014).

# Promoting healthier habit formation

Various novel interventions targeting:

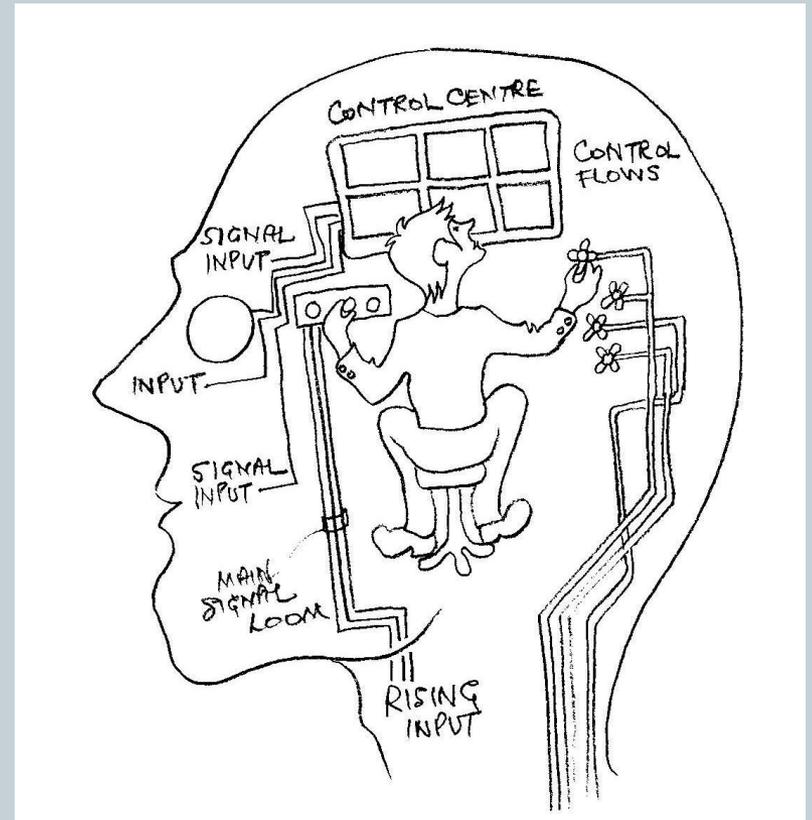
- Planning processes
- Impulsive/ attentional processes

Werthmann, Jansen & Roefs, 2015; van't Riet, Sijtsema, Dagevos, & De Bruijn, 2011;



# Treatment enhancers

- Drawn from other fields – anxiety, depression, substance use disorder
- Add on – used alongside existing psychological therapies



# Implementation intentions



**if** **this** **then** **that**

*trigger* *action*

# Food-specific inhibition training



## Welcome to this experiment

Your main task is to respond to the location of pictures that appear inside the rectangle

- If they appear on the left of the centre, press '**C**'
- If they appear on the right of the centre, press '**M**'

On some occasions the lines of the rectangle will become thicker (i.e. **BOLD**, see example below) when the picture appears. When this happens you **must not press any button** (i.e. withhold your response)

Rectangle with normal border.

With Bold border.

Press any key to start the session



# Attention bias modification



+



# Method

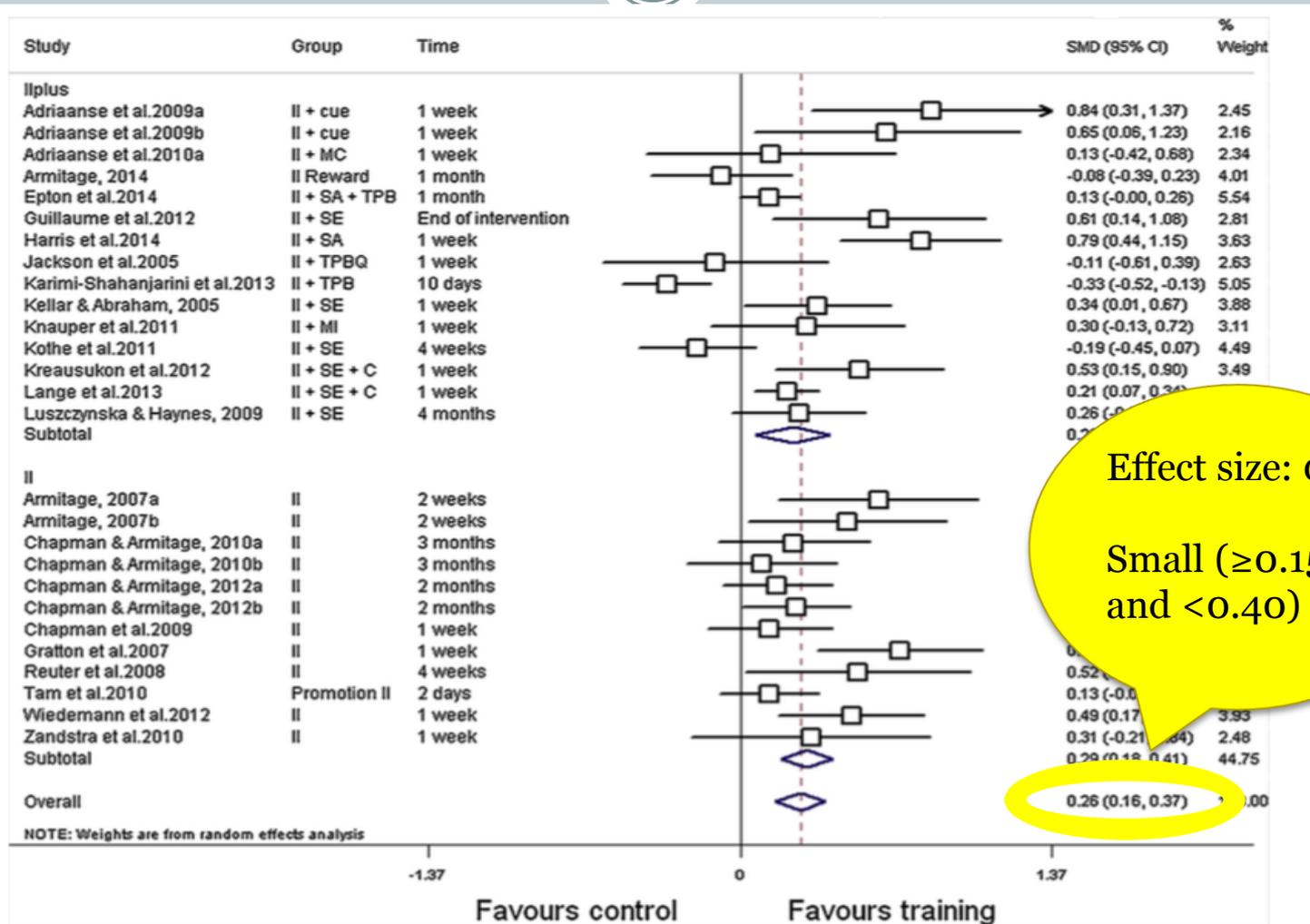


- Electronic databases and Scopus were searched for relevant articles.
- Assessed in accordance with the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) guidelines.
- Meta-analyses were completed for the different approaches.
- Cohen's effect sizes were interpreted as negligible ( $\geq -0.15$  and  $< 0.15$ ), small ( $\geq 0.15$  and  $< 0.40$ ), medium ( $\geq 0.40$  and  $< 0.75$ ), large ( $\geq 0.75$  and  $< 1.10$ ), very large ( $\geq 1.10$  and  $< 1.45$ ) and huge ( $\geq 1.45$ ).



# Results

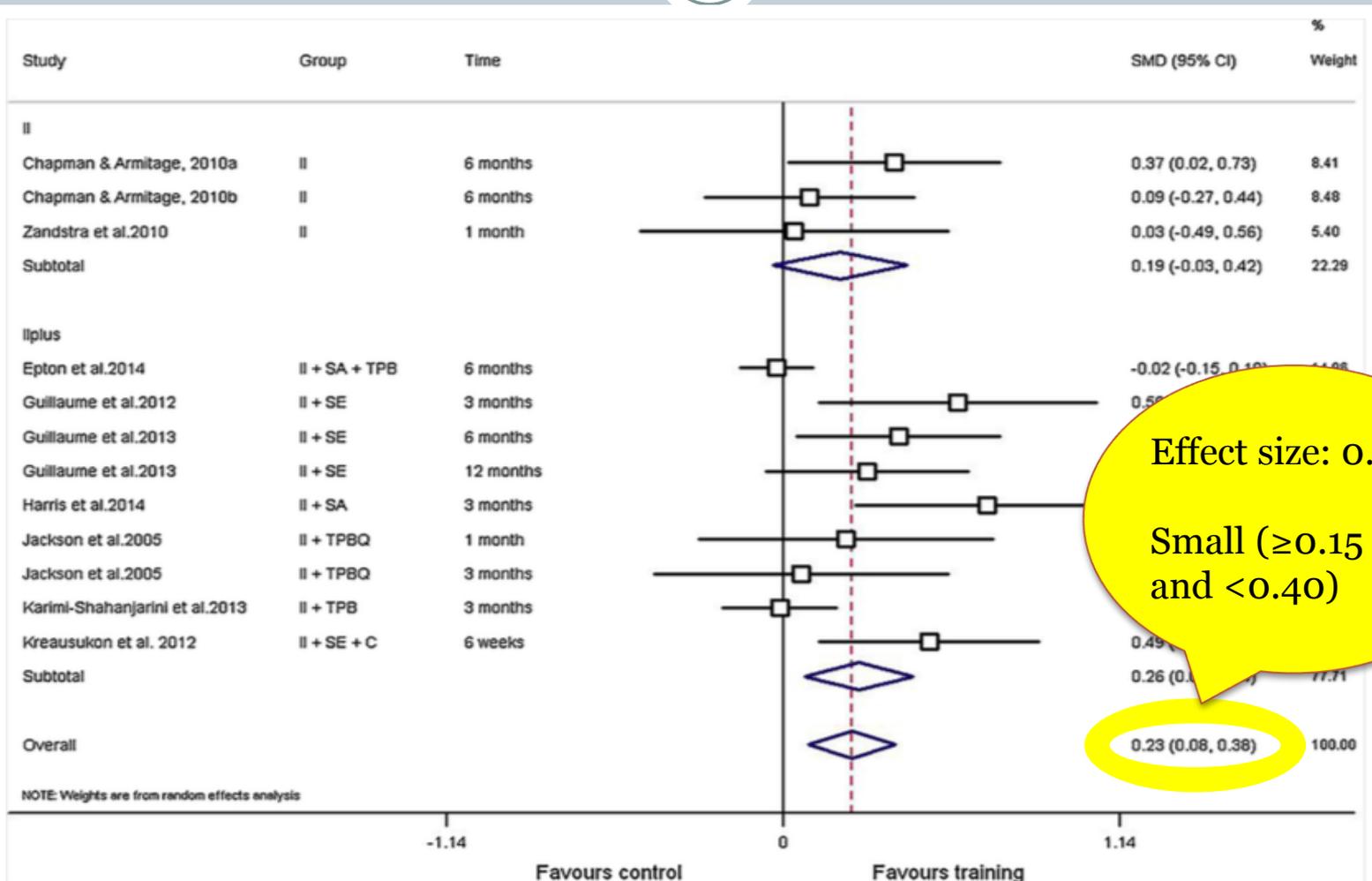
# Implementation intentions aimed at increasing healthy food intake



Effect size: 0.26

Small ( $\geq 0.15$  and  $< 0.40$ )

# Follow up: Implementation intentions aimed at increasing healthy food intake



Effect size: 0.23

Small ( $\geq 0.15$  and  $< 0.40$ )

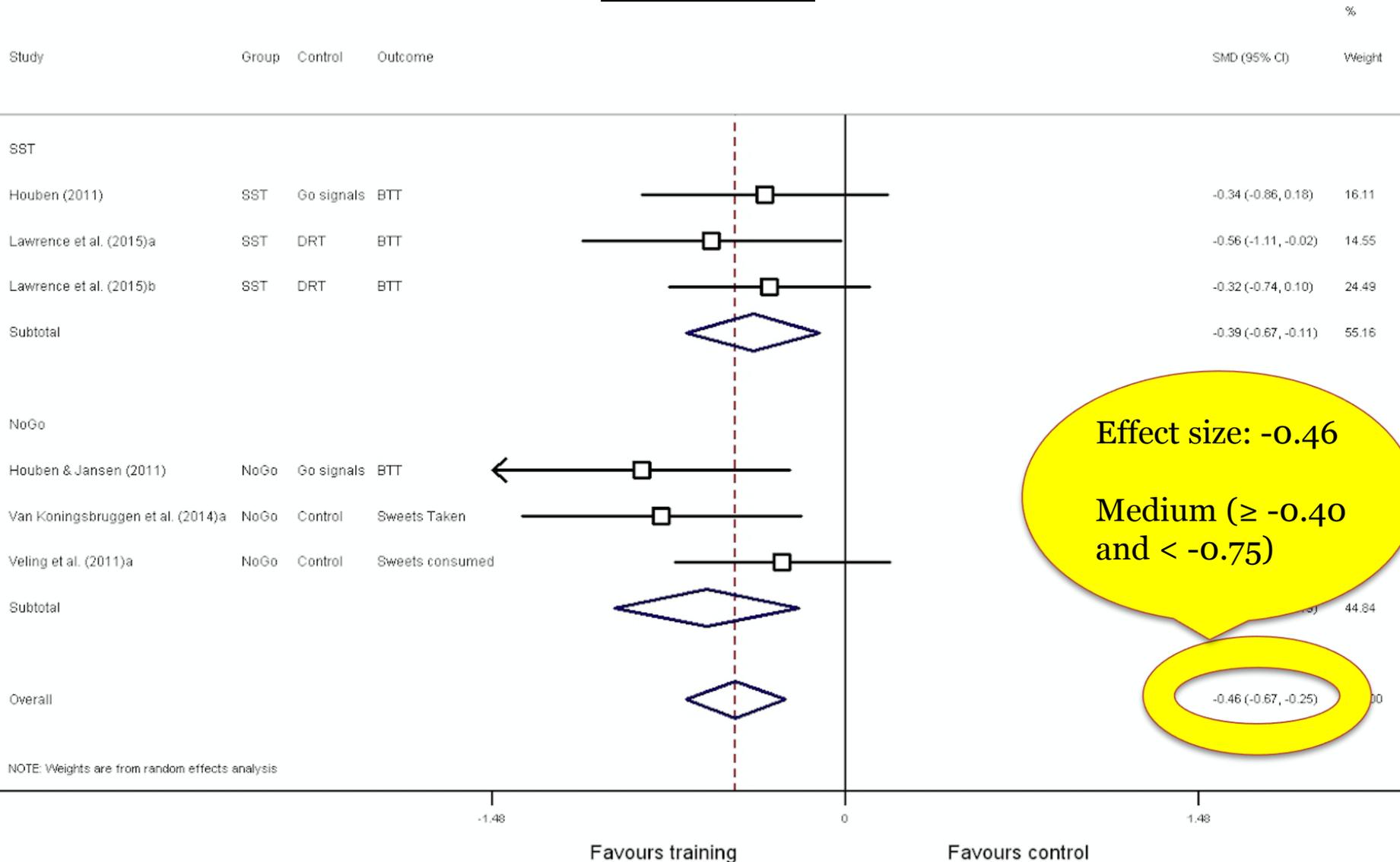
0.23 (0.08, 0.38)







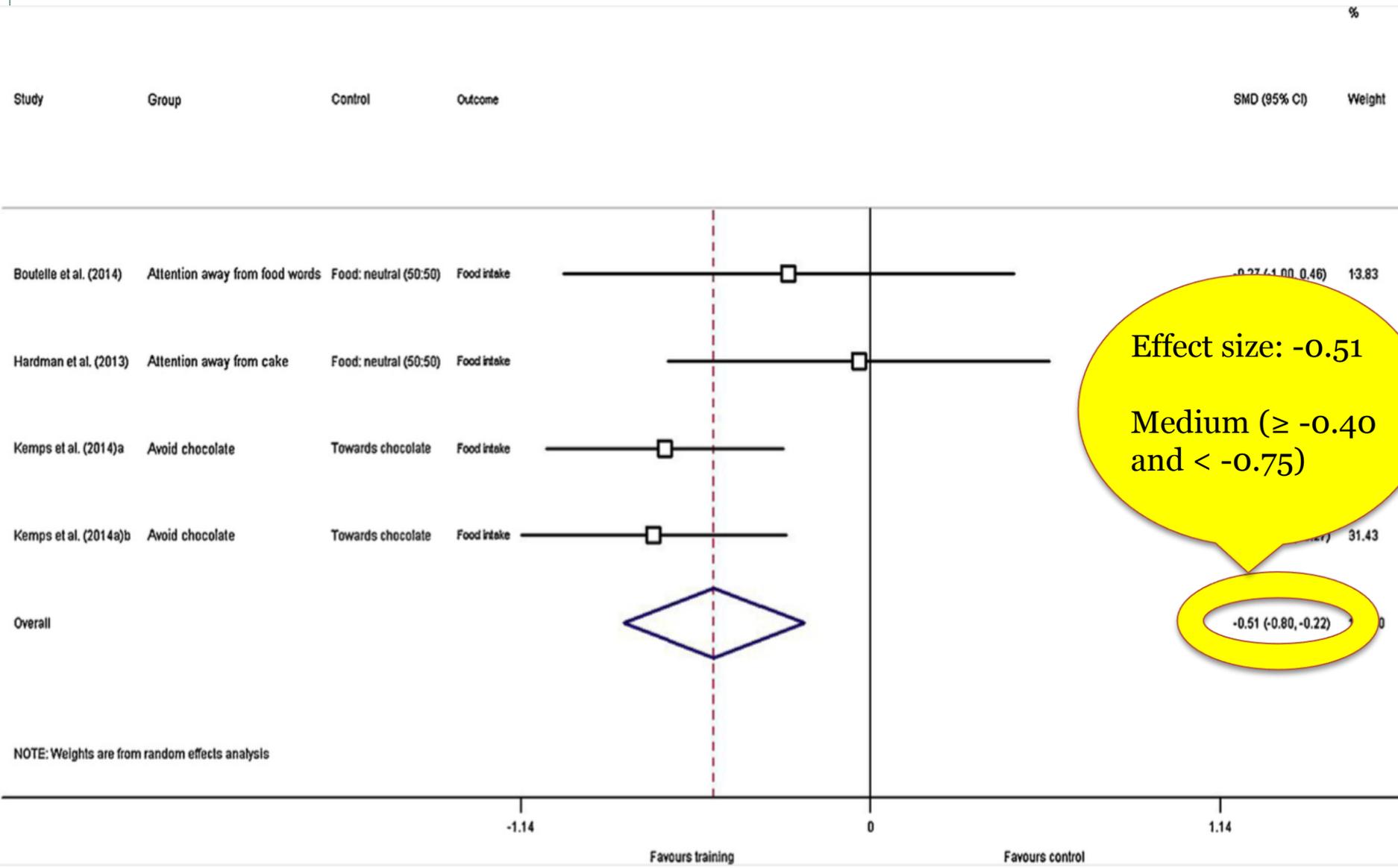
# The effect of food-specific inhibition training in reducing unhealthy food intake



Effect size: -0.46

Medium ( $\geq -0.40$  and  $< -0.75$ )

# Attention bias modification aimed at reducing unhealthy food intake



Effect size: -0.51  
 Medium ( $\geq -0.40$  and  $< -0.75$ )

-0.51 (-0.80, -0.22)

# Summary of the results



- The implementation intention approach has small effect sizes for increasing healthy food intake and reducing unhealthy food intake
- Negligible effects at long-term follow-up and in changing weight
- Medium effect sizes were found for food-specific inhibition training and attention bias modification
- Healthy populations and overweight/ obesity

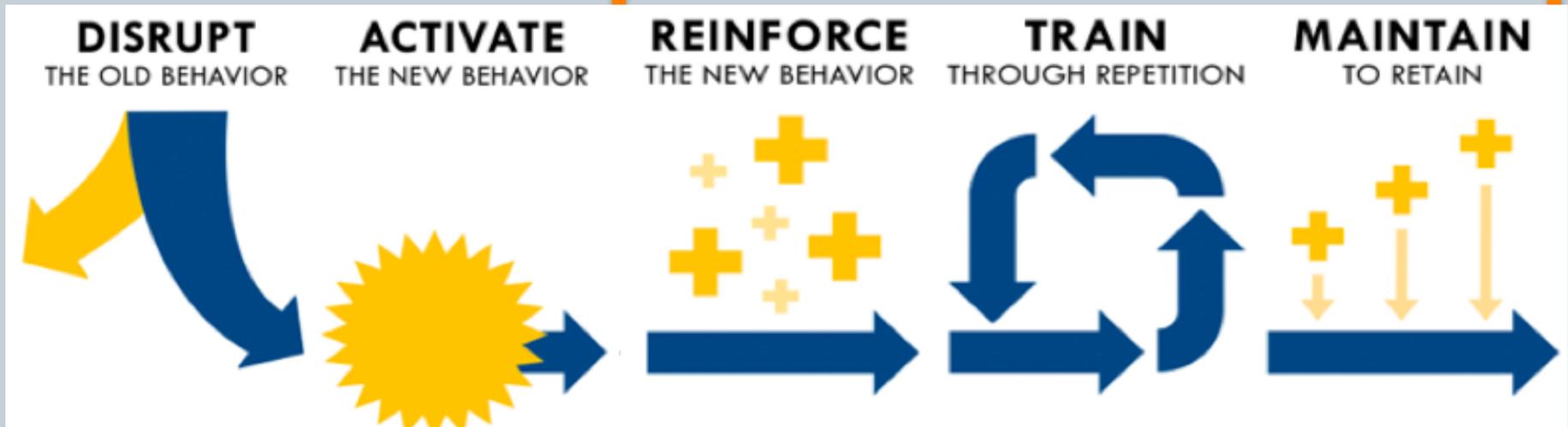
# Maintaining healthier eating habits



**Booster sessions**

**“Text message reminders” (Prestwich et al. 2008)**

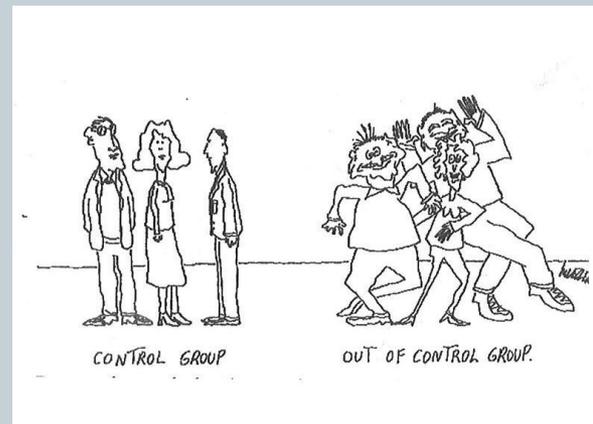
**Family and social support**



# Limitations



- High levels of heterogeneity in the data for implementation intentions.
- Limited number of studies for food-specific inhibition training and attention bias modification and at follow-up.
- Laboratory versus real life.
- Variation in the control groups used and groups/ populations surveyed.



# Future research...



- Proof of concept work in clinical populations.
- Potential for the development of widely disseminable and cost-effective treatment enhancers for eating disorders (Renwick et al. 2013).
- Other approaches...

Approach avoidance training; Disrupt craving imagery approaches.



# Clinical populations



- Tailoring the approaches to the individual.
- Stage of illness.
- Trials, e.g., the use of implementation intentions alongside motivational enhancement work (SHARED).
- Habit based interventions could be of benefit for other compulsive behaviours in eating disorders.

# Thank you!



*“You cannot change your future, but you can change your habits, and surely your habits will change your future”*

- Dr. Abdul Kalam

Sponsors:



# Discussion...



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Reference:

Turton, R., Bruidegom, K., Cardi, V., Treasure, J. (2015). Novel methods to develop healthier eating habits in eating and weight disorders: A systematic review and meta-analysis. *Neuroscience & Biobehavioral Reviews*, 61, 132-155.

