Why worry? Key cognitive processes that maintain worry and Generalised Anxiety Disorder

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Overview

- Worry
- Generalised Anxiety Disorder
- Cognitive processes that maintain uncontrollable worry
- Clinical approaches to working with worry and GAD from a cognitive process perspective

Worry

Worry **(Borkovec et al 1983)**

'Worry is a chain of thoughts and images, negatively affect-laden and relatively uncontrollable'

- Streams of negative thoughts
- Multiple potential negative futures
- Uncontrollable

‘What if’ nature of worry?

- ‘What if…..’ verbal questions about anticipated threat or danger to self or others
  - What if I fail my exams?
  - What if I don’t get the promotion?

Problem solving process

- Identification of a specific problem
- Determine if problem within your control
- Identify potential solutions
- Select solution
- Enact solution

Worry is not problem solving

- Repetitive playing of multiple negative outcomes
- Worries often of future events that do not exist or are beyond the persons control
- **Worry does not lead to selection and enactment of solution**

Worry in general population (Tallis et al 1994)

- Frequency of worry
  - 38% worry every day at least once
  - 19% every 2-3 days
  - 15% once a month

71% thought worry makes things worse:

- Pessimism
- Problem exaggeration
- Performance disruption
- Emotional distress

Impact of worry

- Increased anxiety & depressed mood (Andrews & Borkovec, 1988)
- Increased negative thought intrusions (Borkovec et al 1983; York et al 1987)

Penn State Worry Questionnaire (PSWQ: Meyer et al 1990)

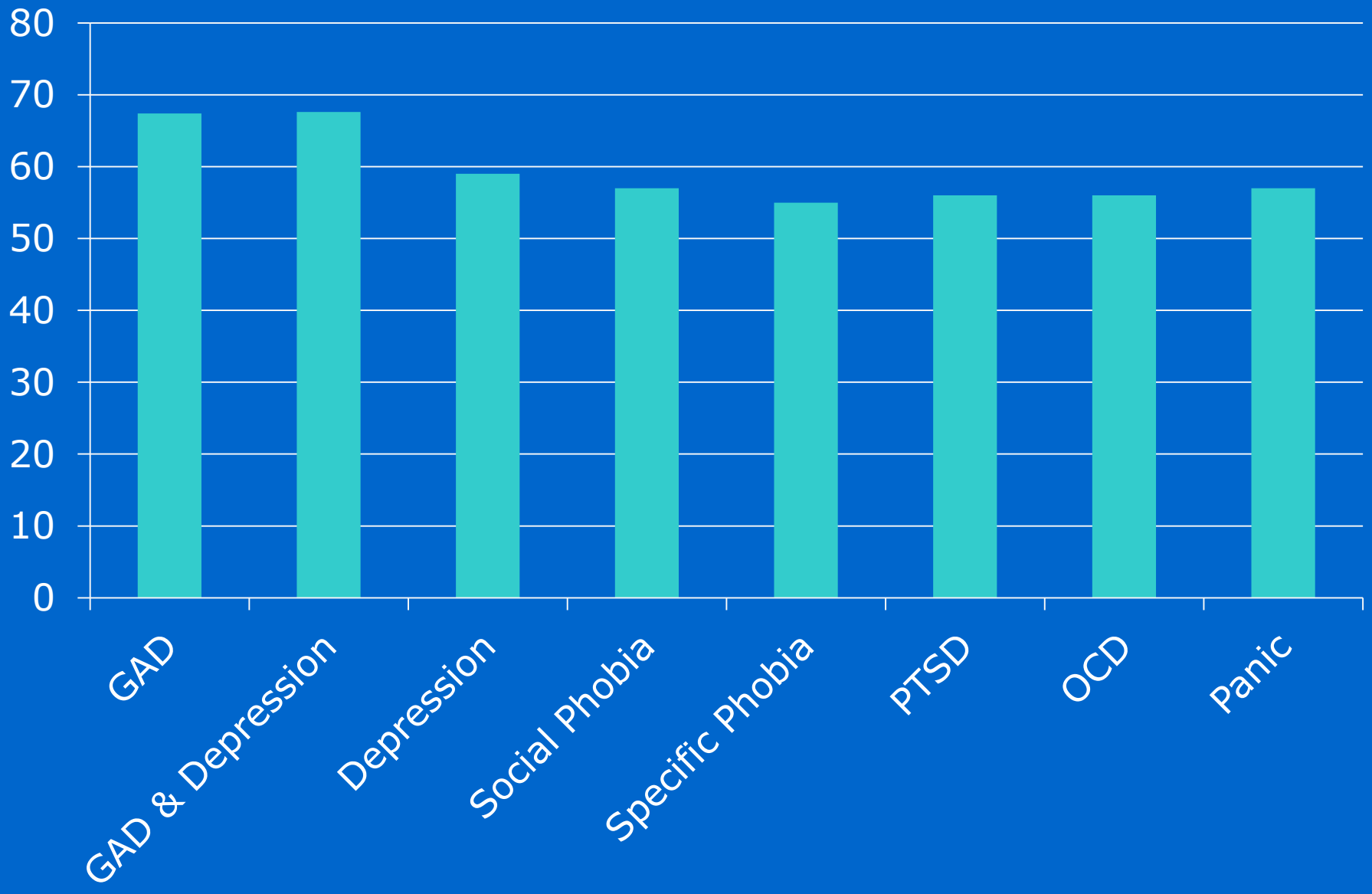
Self report trait worry questionnaire

- My worries overwhelm me
- I find it easy to dismiss worrisome thoughts (R)

General population mean 48 (Molina & Borkovec 1994)

High worriers 56 +

PSWQ Scores for Anxious & Depressed clients (Chelminski & Zimmerman, 2003)



Generalised Anxiety Disorder (GAD)

Generalised Anxiety Disorder (G.A.D.)

- Chronic, excessive & uncontrollable worry about multiple topics
- Uncontrollable – intrusive and can't stop
- What do people worry about in GAD?

Worry domains in GAD

Craske et al (1989)

- GAD and controls same domains as general populations

  Health; Social; Relationships; Finance; Work

- GAD perceive less control

More worry domains at any one time (Hirsch et al 2013)

Is worry objectively more uncontrollable and negative in GAD?

Uncontrollability of worry

- Borkovec et al. (1983)
- Ruscio & Borkovec (2004)

- Is worry objectively more uncontrollable and negative in GAD compared to high worriers?

- How do people with GAD in community who are not seeking treatment compare to clients with GAD?

- Do clients with GAD differ from those with Panic Disorder in terms of uncontrollability?

Is worry more uncontrollable and negative in people with GAD? (Hirsch, Mathews, Lequertier, Perman & Hayes, 2012)

- GAD Clients
- Community GAD (not seeking treatment)
- High Worriers without GAD (matched on trait worry)
- Panic Disorder Clients

Worry Persistence Task (WPT)

(adapted from Borkovec, et al., 1983)

- **Measure of uncontrollability of worry**

Breathing Focus Period

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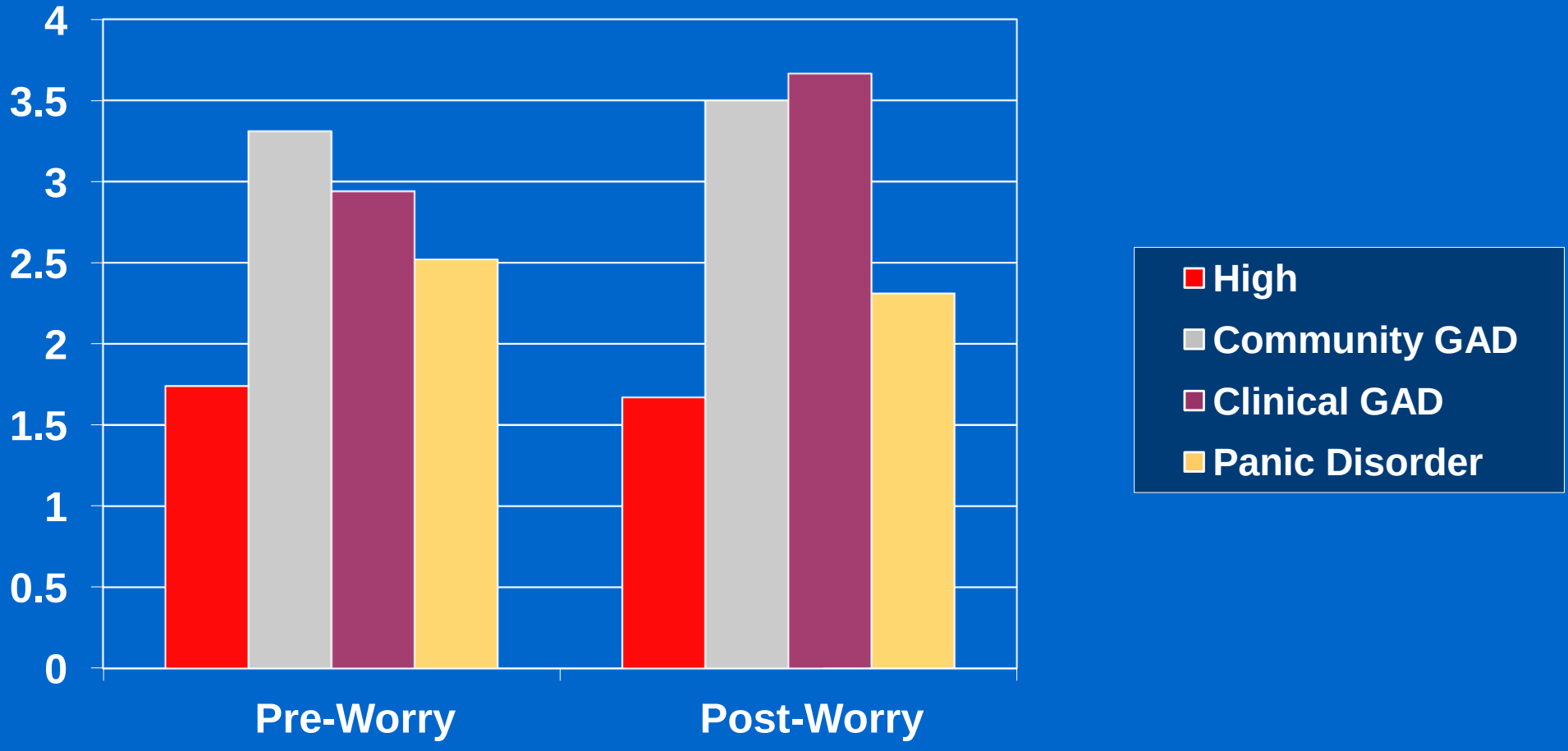
Worry Period

⇩

Breathing Focus Period

- Critical Measure: Self & Assessor: number of negative intrusions
- Additional measure: Assessor: degree of negativity of negative intrusions

WPT: Number of negative thought intrusions pre- & post-worry



Degree of negativity of negative intrusions

- High negativity (e.g. lose my home)
- Moderate negativity (e.g. fail exams)
- Low negativity(e.g. miss the bus)

- High worriers had more low negativity

- Clinical GAD, Community GAD and Panic groups mainly moderately negative

Hirsch et al. (2012) conc.

Frequency of Negative Intrusions

- Self = objective assessor
- High < GAD
- Community GAD = Clinical GAD = Panic Disorder

Negativity of negative intrusions

- High < GAD & Panic

Worry is more negative and uncontrollable in GAD than high worriers

Why is worry more uncontrollable in GAD than high worriers?

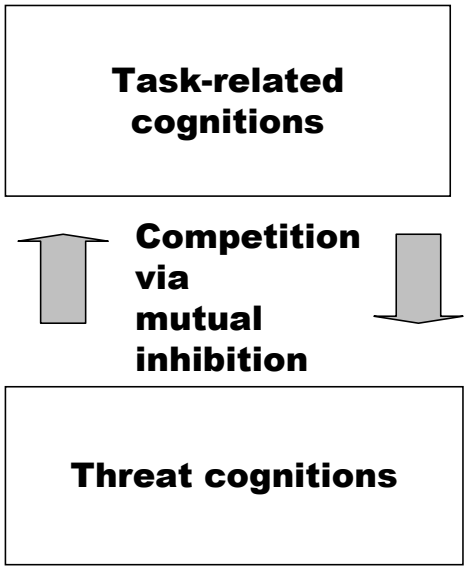
Cognitive processes & uncontrollable worry

What cognitive processes may influence the uncontrollability of worry?

- Involuntary cognitive biases to threat (e.g. attention; interpretation)
- Controlled allocation of attentional control resources
- Style of cognition (verbal linguistic thoughts; mental images)

Focused on the task at hand

What happens when threat cognitions also get triggered



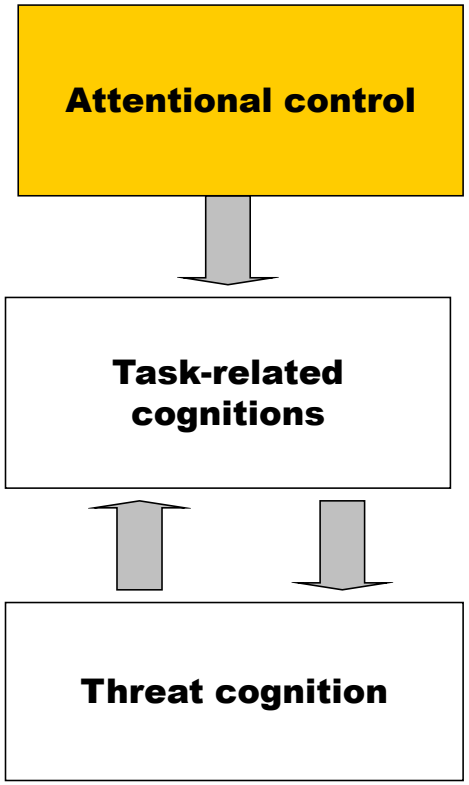
Attentional Control

Allocation of Attentional Control (AC)

- Miyake, et al (2000) limited capacity resource used to:
  - intentionally ignore distracting information
  - shift attention from one topic/task to another

- Potential relevance to worry
  - negative thoughts and worry need to be ignored to task focus
  - once worry has started need to shift attention away

Are worriers less able to allocate attentional control to task focus?



Attentional Control & Worry

Anxiety is associated with less available Attentional Control (Derryberry & Reed, 2002; Eysenck & Calvo,1992; Rapee 1993; Bishop, 2009)

Does worry take up more attentional control resources in high worriers?

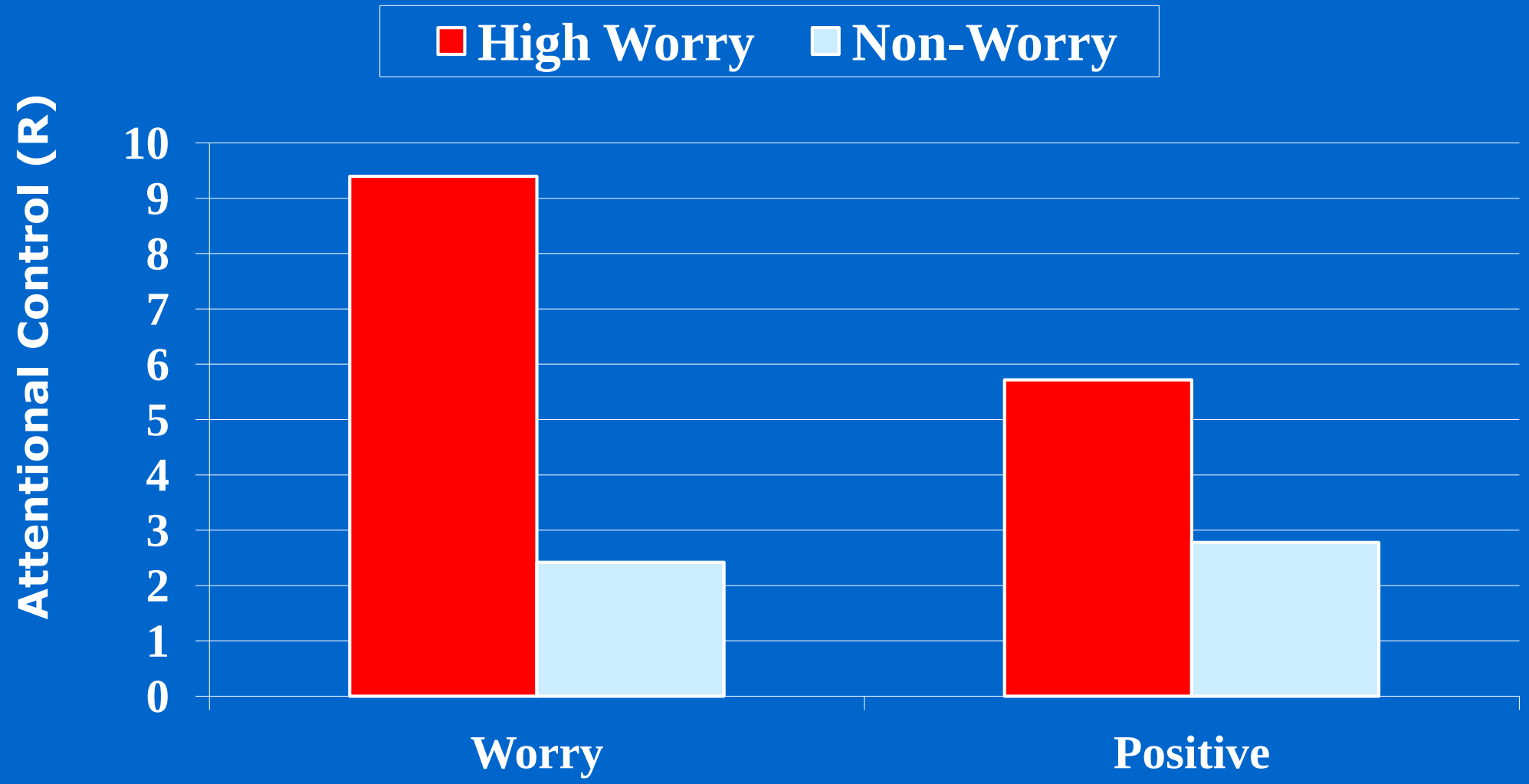
Does worry take up more attentional control in high worriers than non-worriers?

(Hayes, Hirsch and Mathews, 2008, Journal of Abnormal Psychology)

- High worriers vs. non-worriers

- Dual Task: to assess attentional control
  - Random key press
  - Worry vs. positive personally relevant topic

Attentional control taken up by worry or positive topics in High worriers and non-worriers



Hayes et al. (2008) conclusions

Non-worriers

AC worry = AC positive

High worriers

AC worry > AC positive

Worry in high worriers will make it more difficult to concentrate on the task at hand

What about people with GAD?

Does worry take up more attentional control in GAD clients than control participants? (Stefanopoulou, Hirsch, Hayes, Adlam & Coker, submitted)

- GAD clients vs. non-clinical controls
- Dual task to assess attentional control
- N-back task (general attentional control)

1-Back

D

A

C

C

2-Back

B

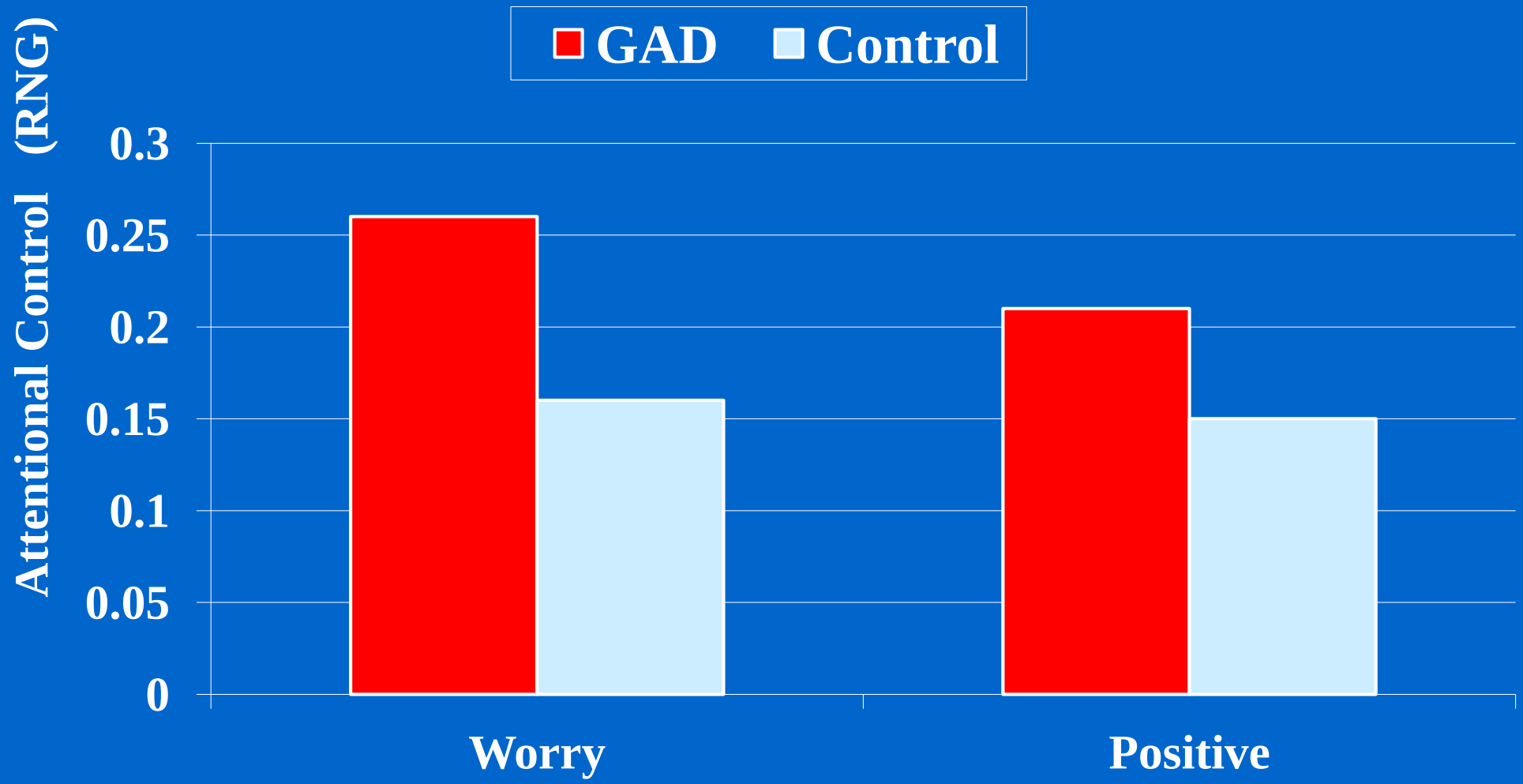
F

A

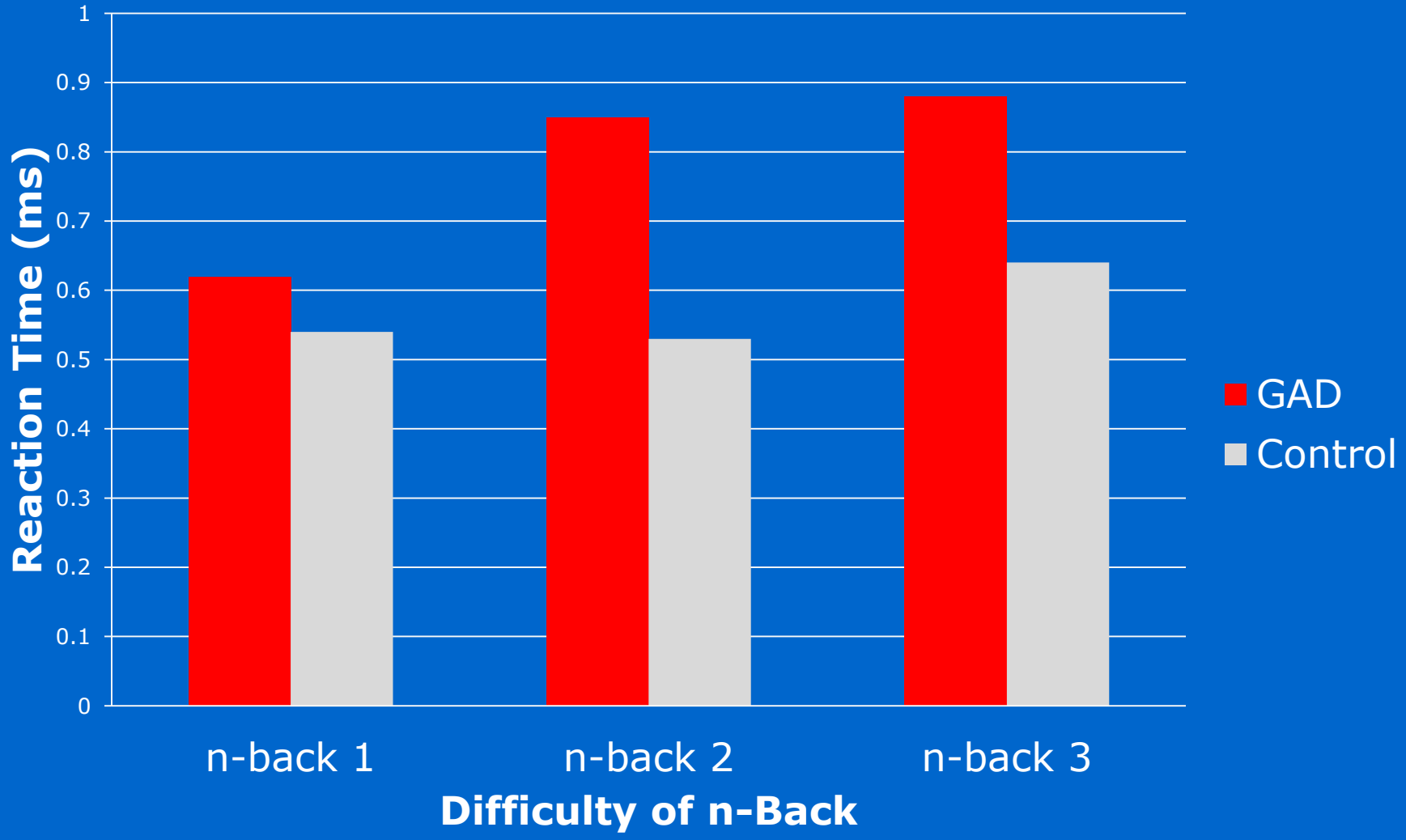
D

A

GAD and non-clinical control attentional control taken up by worry or positive topics



GAD and control reaction times on n-back task



Conclusions Stefanopoulou et al (submitted)

Dual task

Controls - AC worry = AC positive

GAD - AC worry > GAD AC positive

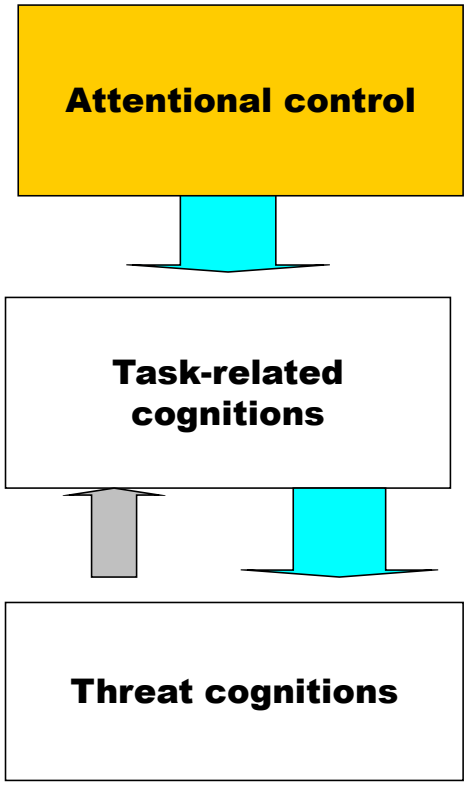
N-back

GAD less general Attentional Control on n-back than controls when task is demanding

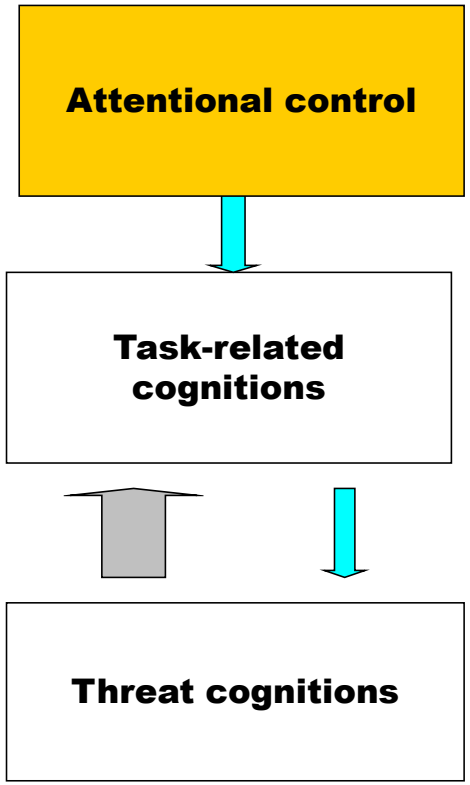
Concentration difficulties in GAD

Challenge for CBT sessions and homework when AC depleted

Controls: remain task focused



High Worriers & GAD: worry takes up attentional control so less task focused



Why does worry utilise more attentional control in high worriers & GAD?

Attentional control may be utilised by involuntary cognitive processes

- Attention
- Interpretation
- Predominance of verbal thought

What cognitive processes contribute to uncontrollable worry?

Attention

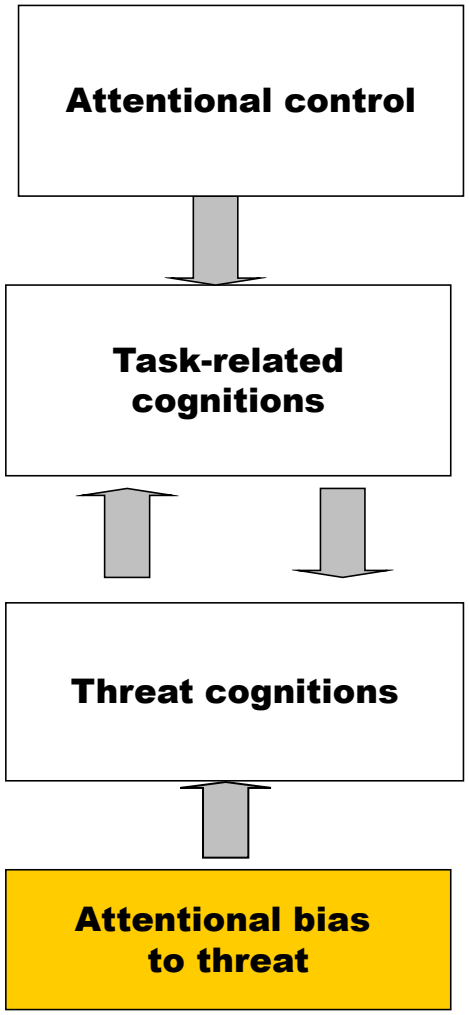
Dot probe

+

Death

Shell

Does involuntary attention bias to threat cause worry to continue?



Attentional Bias to threat in GAD

- Attention to threat or benign information

  MacLeod et al., 1986; Bradley et al., 1999; MacLeod, et al., 2007

- Experimentally modify attention

  Cognitive bias modification - Attention

  MacLeod et al., 2002; Amir, Beard, Burns, & Bomyea, 2009; Hazen, Vasey, & Schmidt, 2009

- Is there a causal role for attentional bias in maintaining uncontrollability of worry?

Does a threat attentional bias cause worry to persist? (Hayes, Hirsch & Mathews, 2010, Journal of Abnormal Psychology)

High Worriers:

Benign vs. Control (non-trained)

Design:

Attention modification

Dot-probe (MacLeod et al. 2002)

+

Dichotic Listening Task

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Worry Persistence Task (WPT)

Cognitive bias modification: Dot Probe

Benign Group

- **Probe replaces benign word 100%**

Control Group

- **Probe replaces benign word 50% threat word 50%**

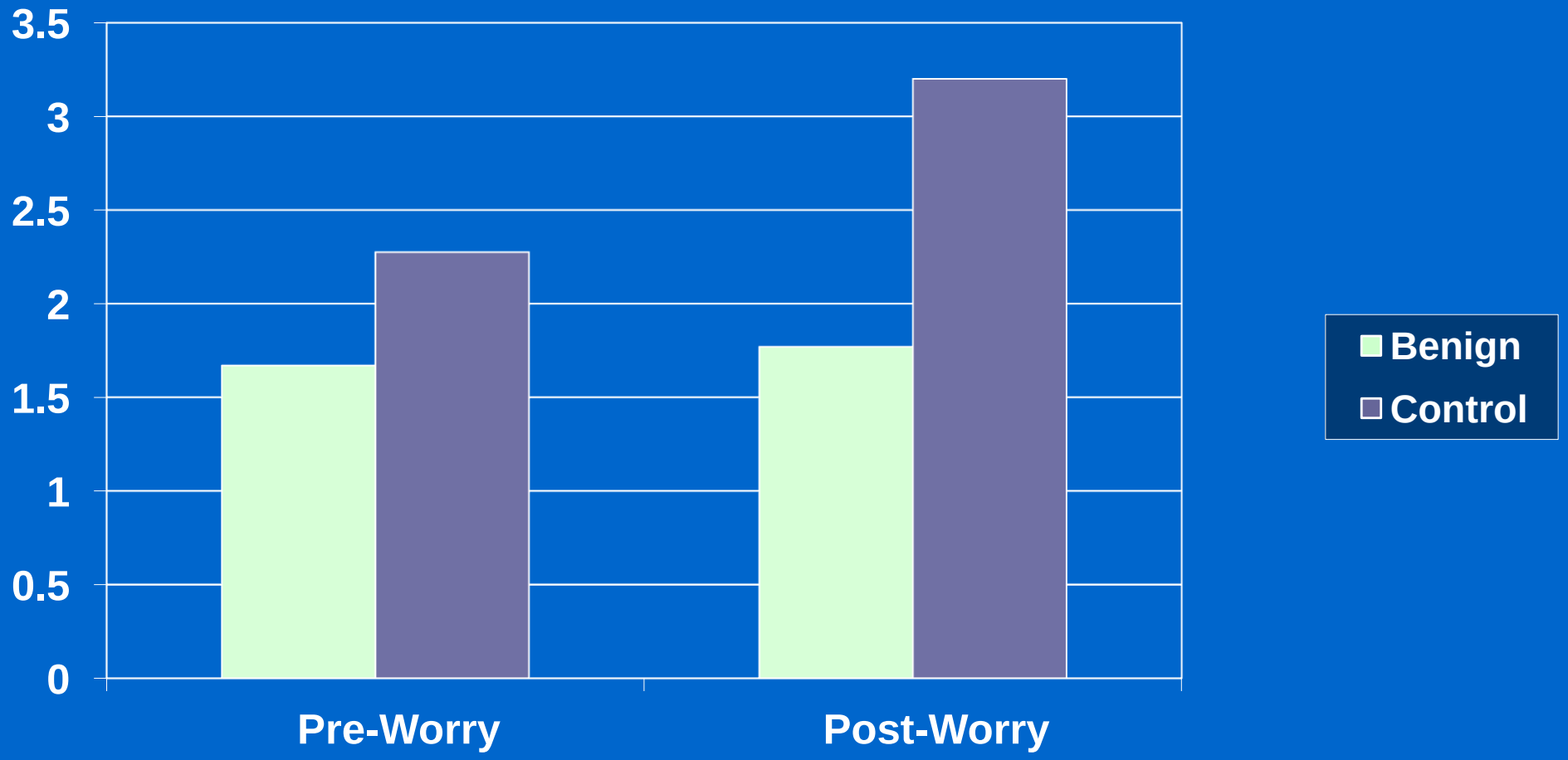
Dichotic Listening Task

- 10 story pairs
- One worry & one positive
- Told title of story to follow and which channel (ear of headphones)
- Follow story as switches channel
- Comprehension questions

Benign group - follow positive story 100%

Control group – 50% worry and 50% positive

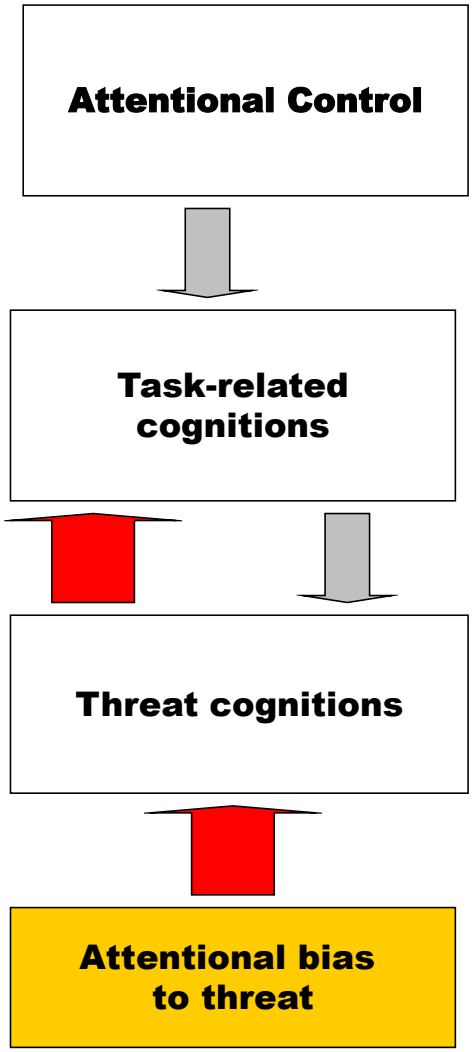
WPT: Number of negative thought intrusions pre- & post-worry



Hayes et al. (2010) conclusions

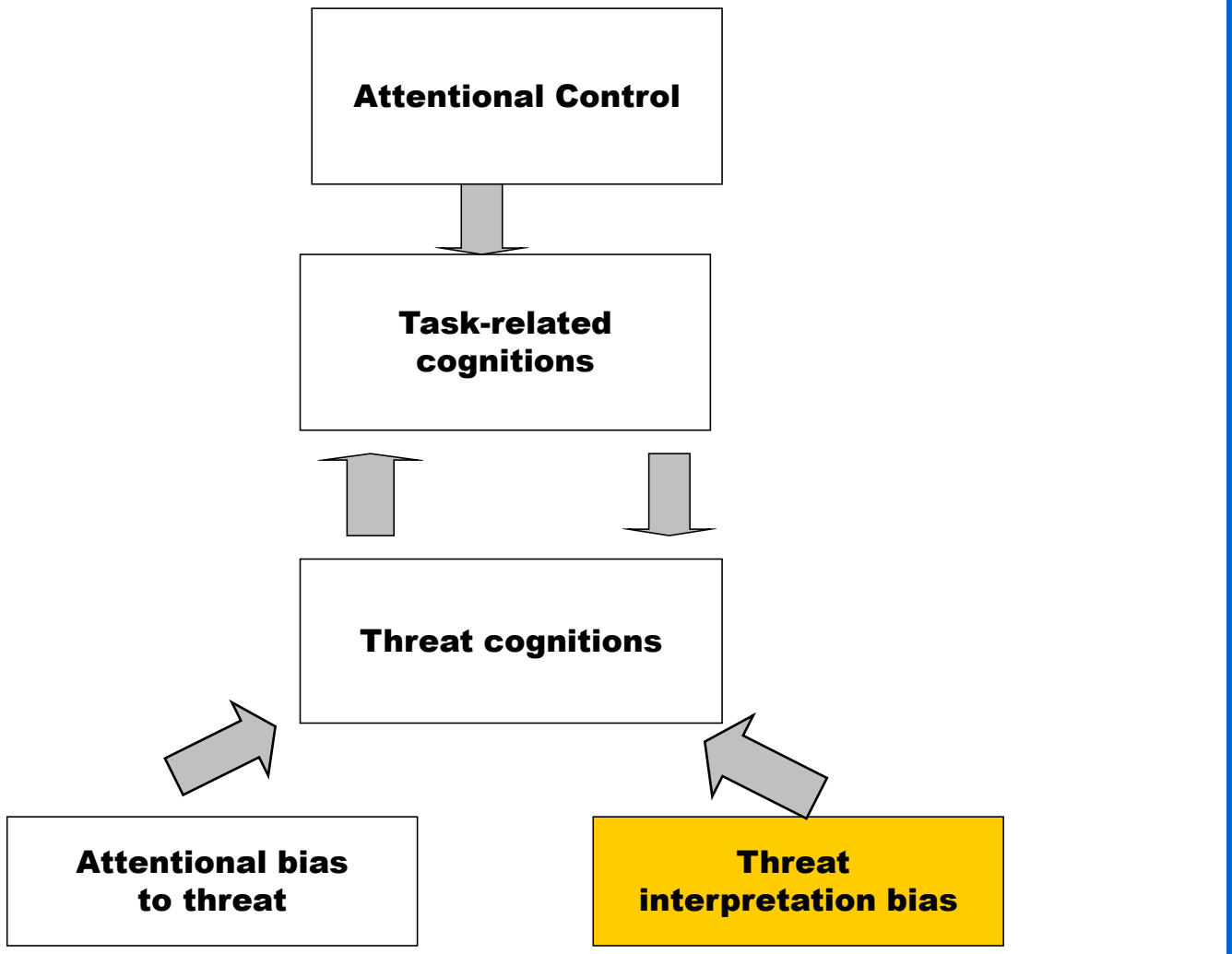
- Benign attentional bias reduces negative intrusions in high worriers
- Causal role for threat attentional bias in contributing to uncontrollability of worry
- CBT

Impact of attention on threat in worriers



Interpretation

Could a threatening interpretation bias help maintain worry?



Interpretation Bias and GAD

Ambiguous information

Threat interpretation bias in GAD

Eysenck, et al. 1987 & 1991;Mathews et al. 1989; Mogg et al. 1994

Cognitive bias modification - interpretation

Grey & Mathews, 2000; Mathews & Macintosh, 2000; Mathews, et al. 2007; Hirsch et al. 2007; Murphy et al. 2007

Is there a causal role for interpretation bias in maintaining uncontrollability of worry?

Does facilitating a benign interpretation bias in GAD clients reduce worry? (Hayes, Hirsch, Krebs & Mathews, 2010, Behaviour Research & Therapy)

Participants: Clients in treatment for GAD

⇨ Benign vs. Control

Design:

Interpretation Modification

Homograph task (e.g. batter; Grey & Mathews, 2000)

+

Ambiguous Scenario Task (based on Mathews & Macintosh, 2000)

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Worry Persistence Task

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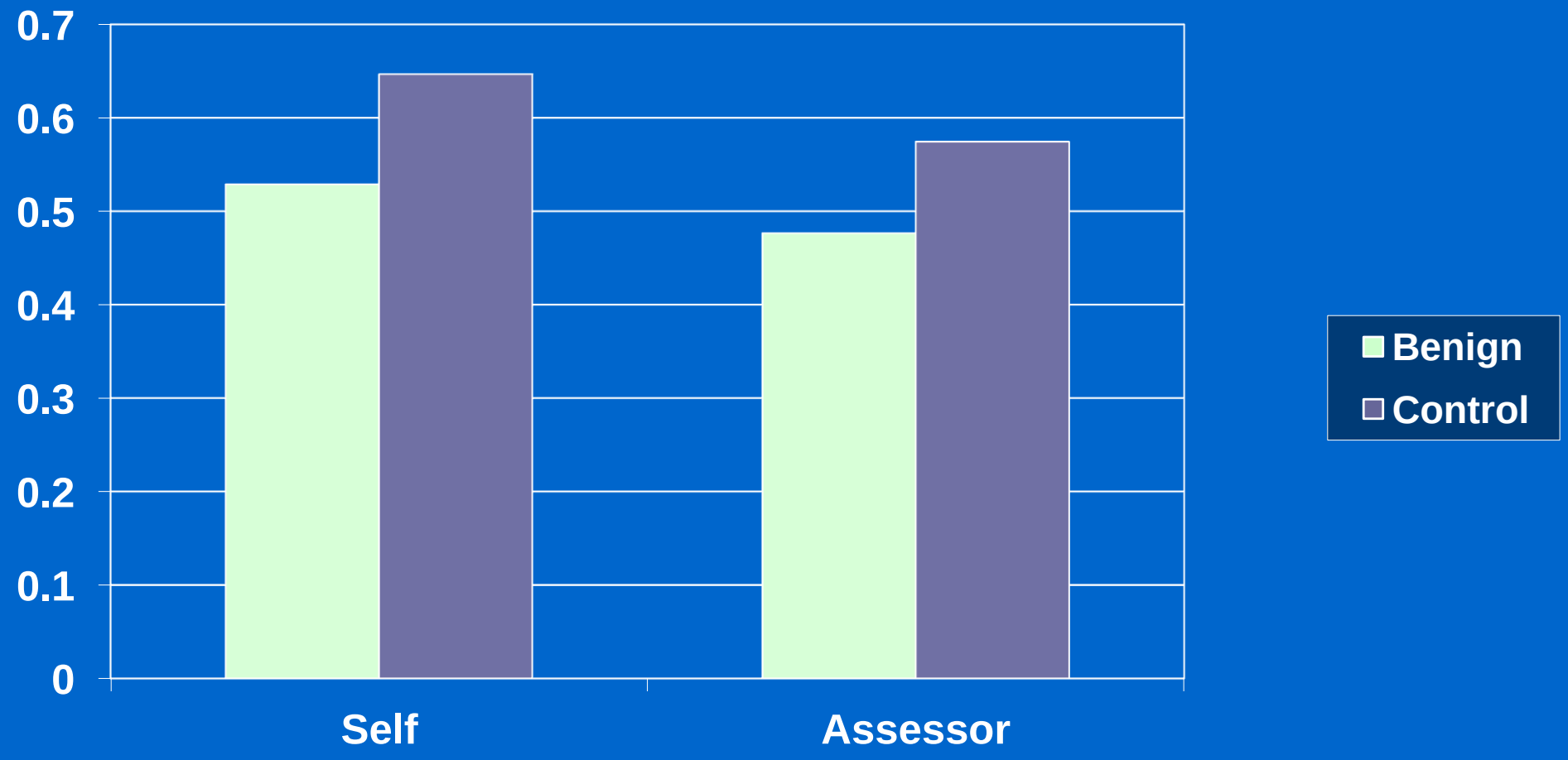
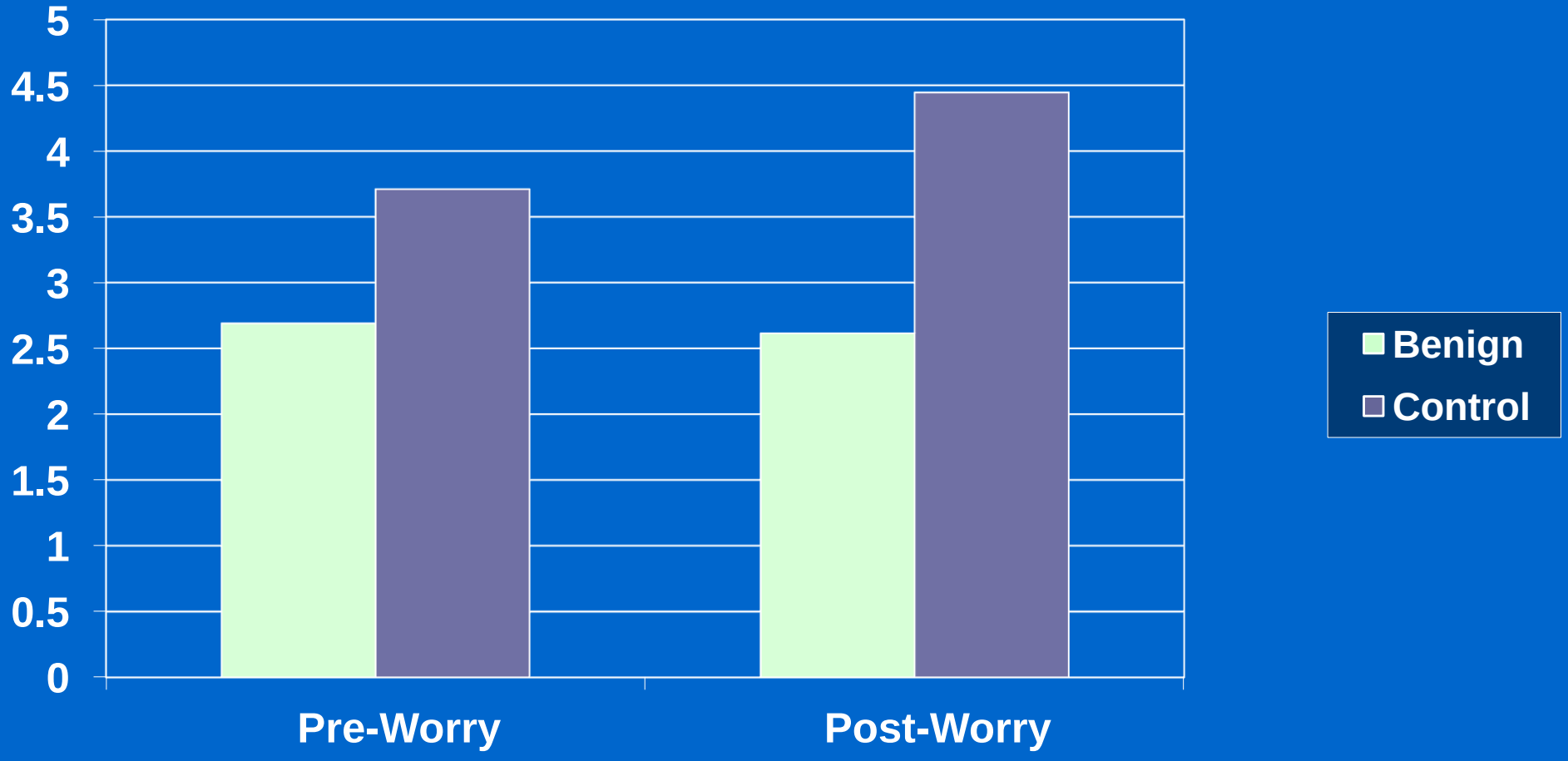
Interpretation Bias Assessment

Sentence Completion Task (Huppert et al. 2007)

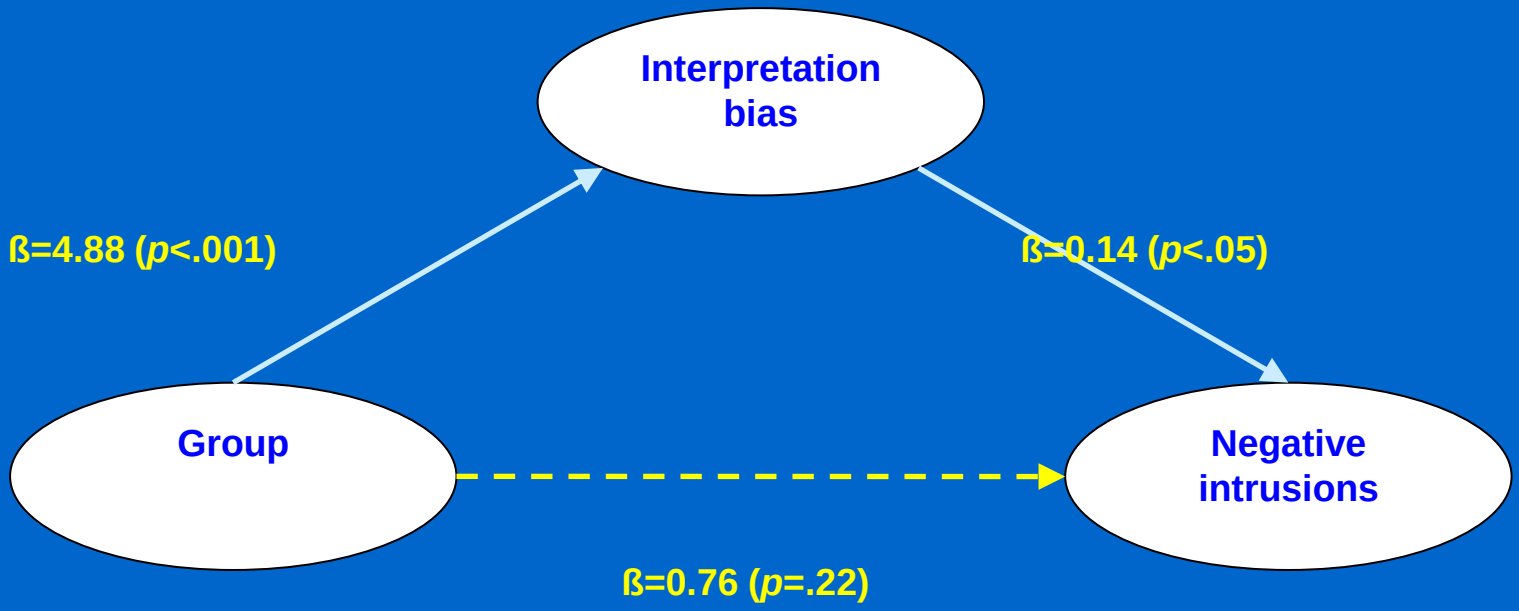
Interpretation Bias Assessment: Proportion of Negative Responses on Sentence Completion Task



WPT: Number of negative thought intrusions pre- & post-worry



Mediation analysis



Hayes et al. (2010) conclusions

- Benign interpretations reduces negative intrusions in GAD
- Threat interpretation bias has a causal role in uncontrollability of worry in GAD
- CBT
- Does a threatening interpretation bias take up attentional control?

Does a more benign interpretation bias take up less attentional control? (Hirsch, Hayes and Mathews, 2009, Journal of Abnormal Psychology)

High worriers:

Benign vs. Control

Design:

Interpretation modification

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Worry Persistence Task

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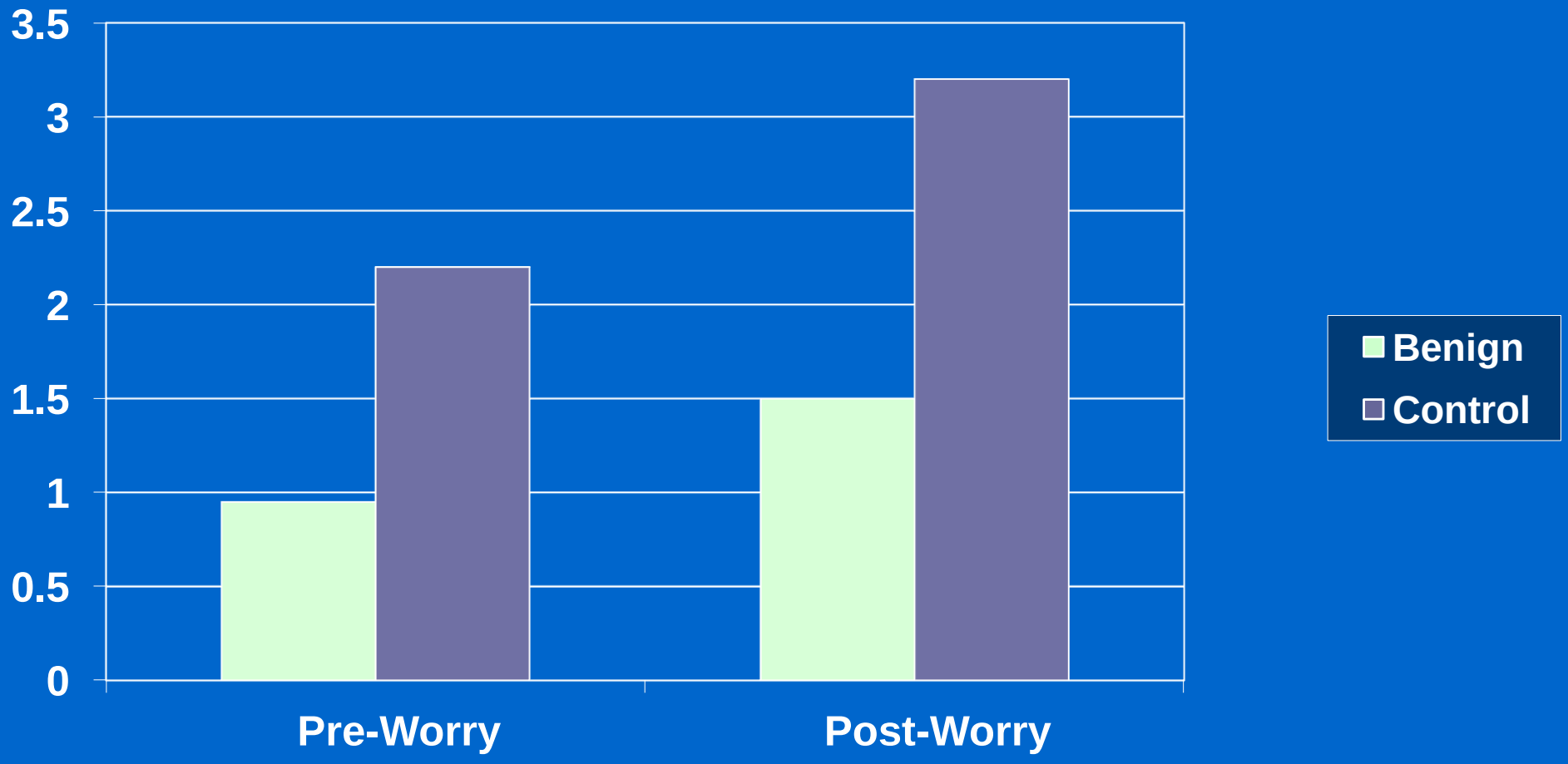
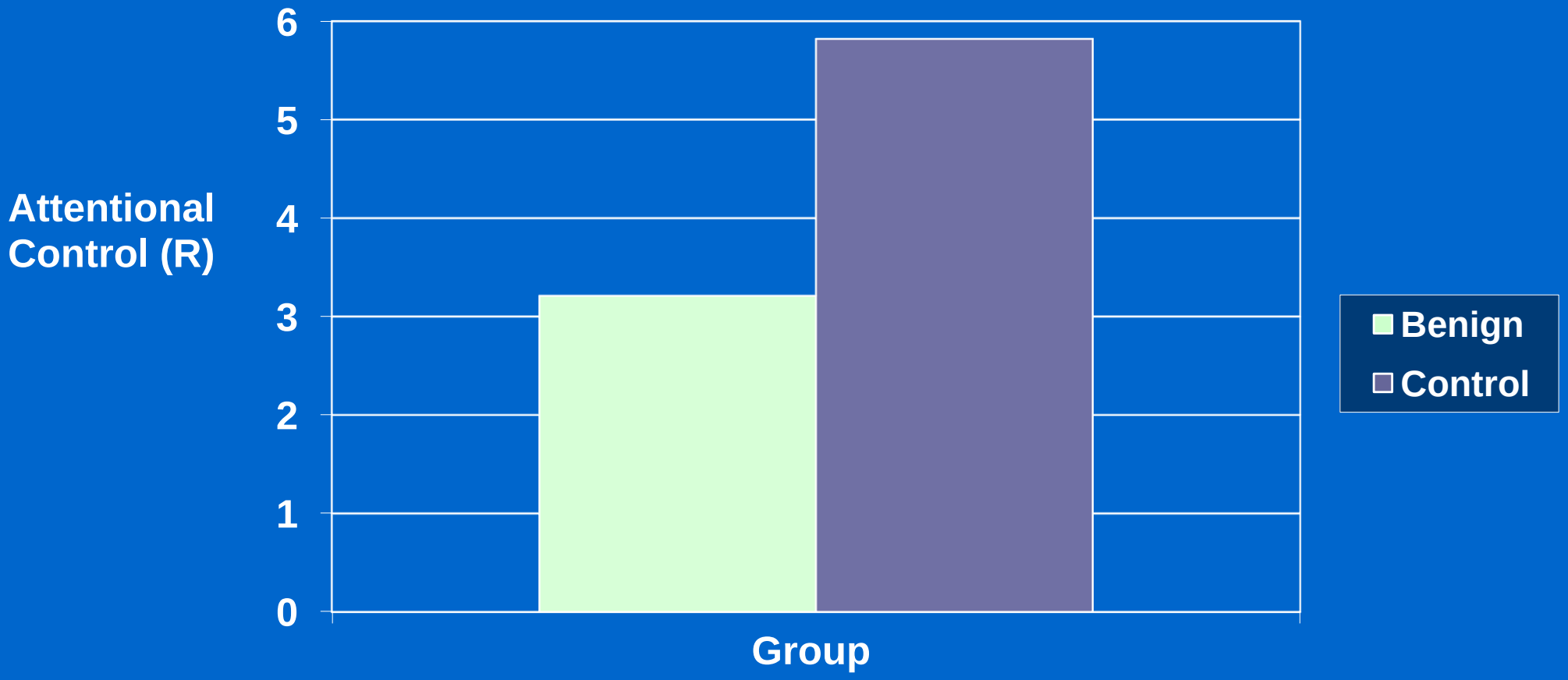
Dual Task (Attentional Control during Worry)

WPT: Number of negative thought intrusions pre- & post-worry



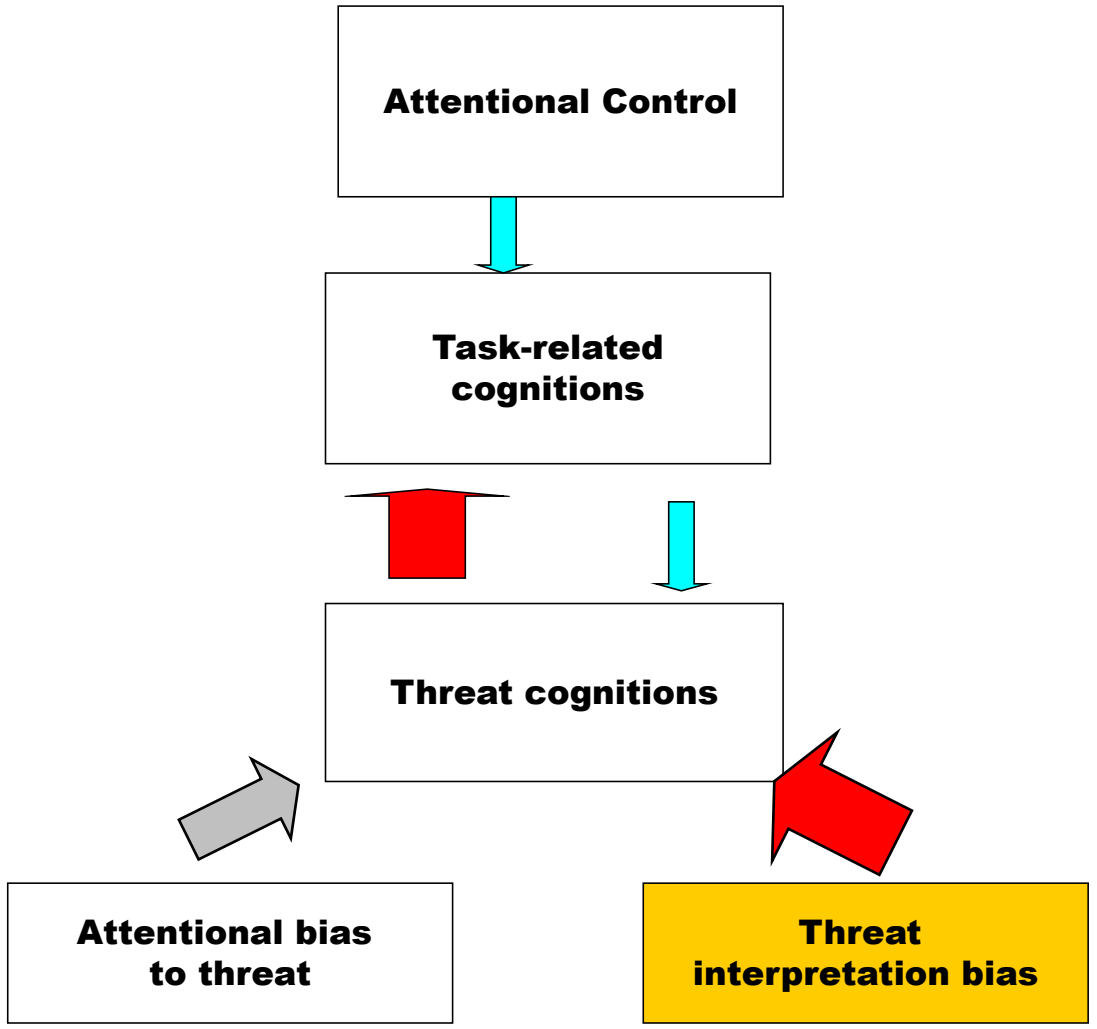
Dual Task: Attentional control taken up by worry



Hirsch et al. (2009) conclusions

- Benign interpretations reduce:
  - negative intrusions
  - attentional control taken up by worry
- Causal role for threat interpretations in:
  - uncontrollability
  - difficulty concentrating on the task at hand

Threatening interpretation bias helps activate threat cognitions in worriers



Imagery & Verbal Processing

Negative imagery in psychopathology

- Negative Imagery

  Social Phobia - Hackmann et al. 1988;
  Agoraphobia- Day et al 2004; OCD - de Silva 1986;
  Health anxiety – Wells, et al. 1993

- Negative imagery has a causal role in maintaining anxiety

  Social Phobia – Hirsch et al. (2003;2004;2006)

Imagery during Worry in GAD

- Worry - predominance of Verbal activity with little imagery

  Borkovec & Inz, 1990; Freeston, et al., 1996; Hoyer, et al., 2001; Borkovec, et al., 1998

- Is this because:

a) Imagery occurs less often in GAD

b) When imagery occurs in GAD is it very brief

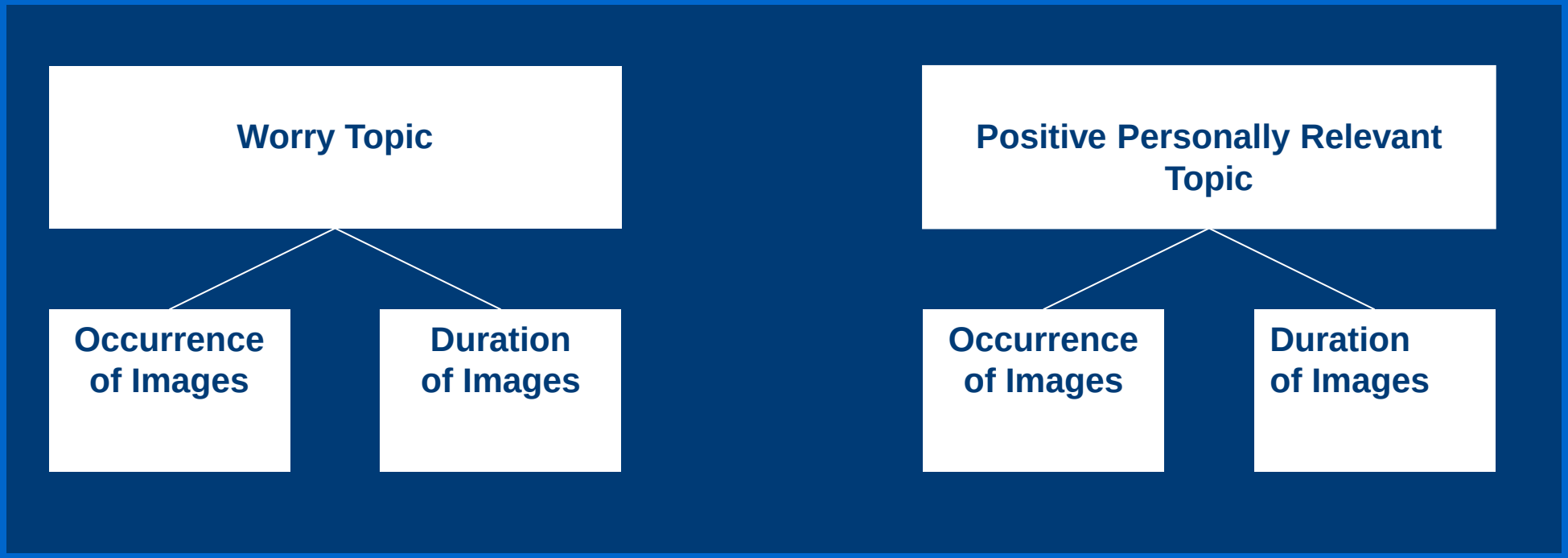
c) both

Is imagery less common and/or briefer in GAD?

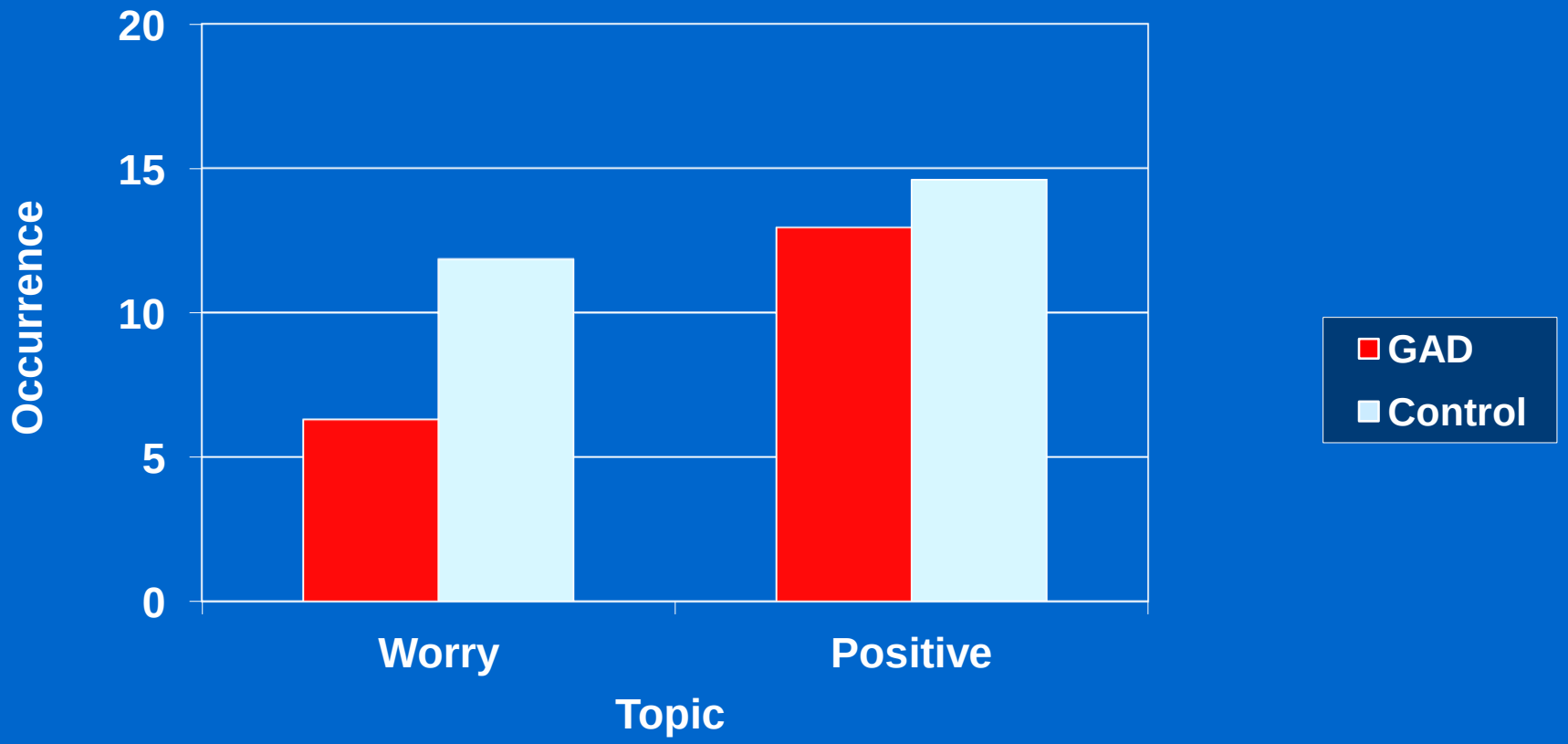
(Hirsch, Hayes, Mathews, Perman & Borkovec (2012) Journal of Abnormal Psychology)

Participants: GAD Clients vs. Community controls

Design: All participants complete worry and positive topics



Occurrence of Imagery



Imagery Duration

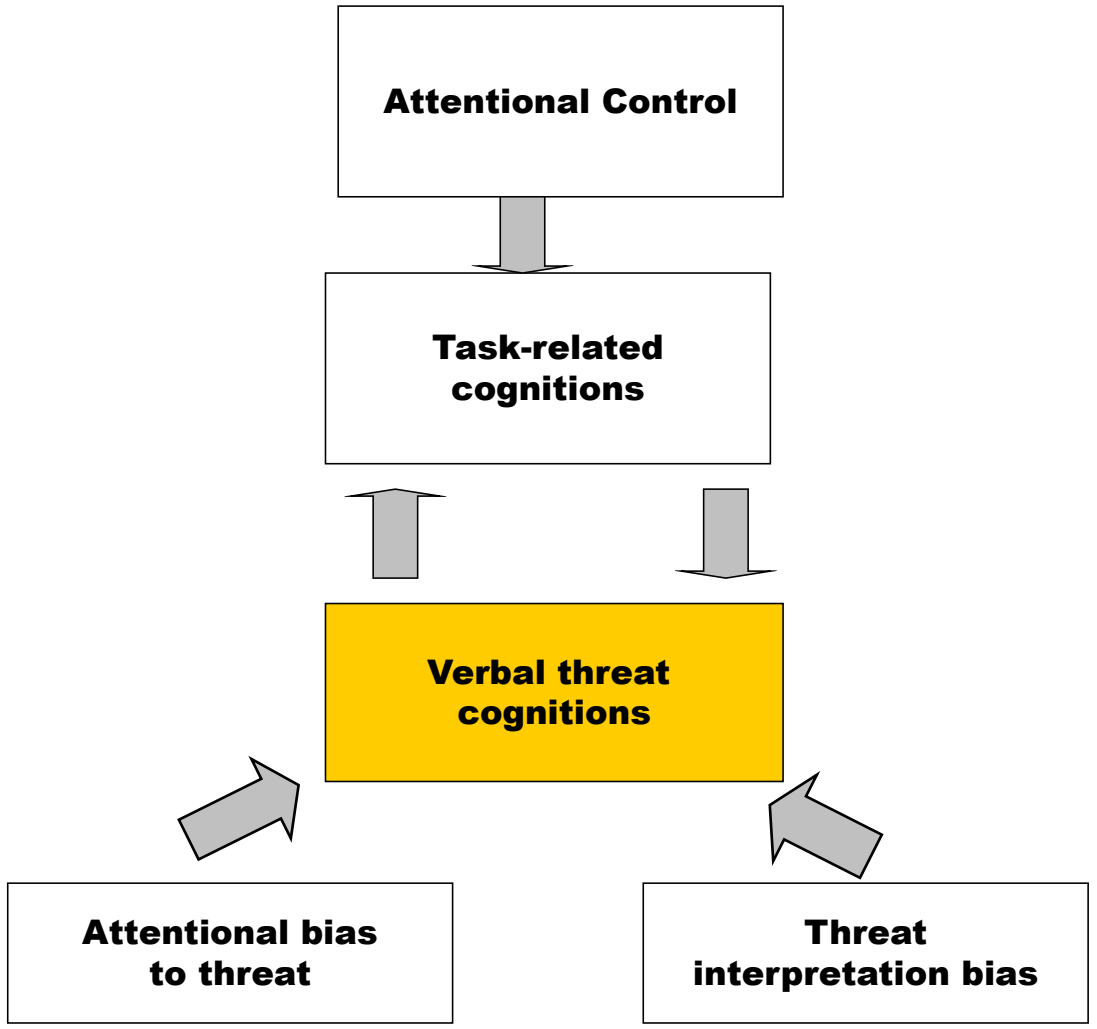
Hirsch, et al. (2012): conc.

- During worry (compared to positive) imagery:
  - occurs less
  - briefer
- In GAD imagery (compared to controls):
  - occurs even less during worry
  - always briefer

Does the verbal nature of worry in GAD contribute to its uncontrollability?

Verbal Worry

Does the verbal nature of worry have a role in maintaining worry



Does the verbal nature of worry help maintain worry?

(Stokes & Hirsch, 2010, Behaviour Research & Therapy)

Participants: High worriers

Design: verbal worry vs. worry in imagery

Task:

Breathing Focus Period

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Train Verbal or Imagery

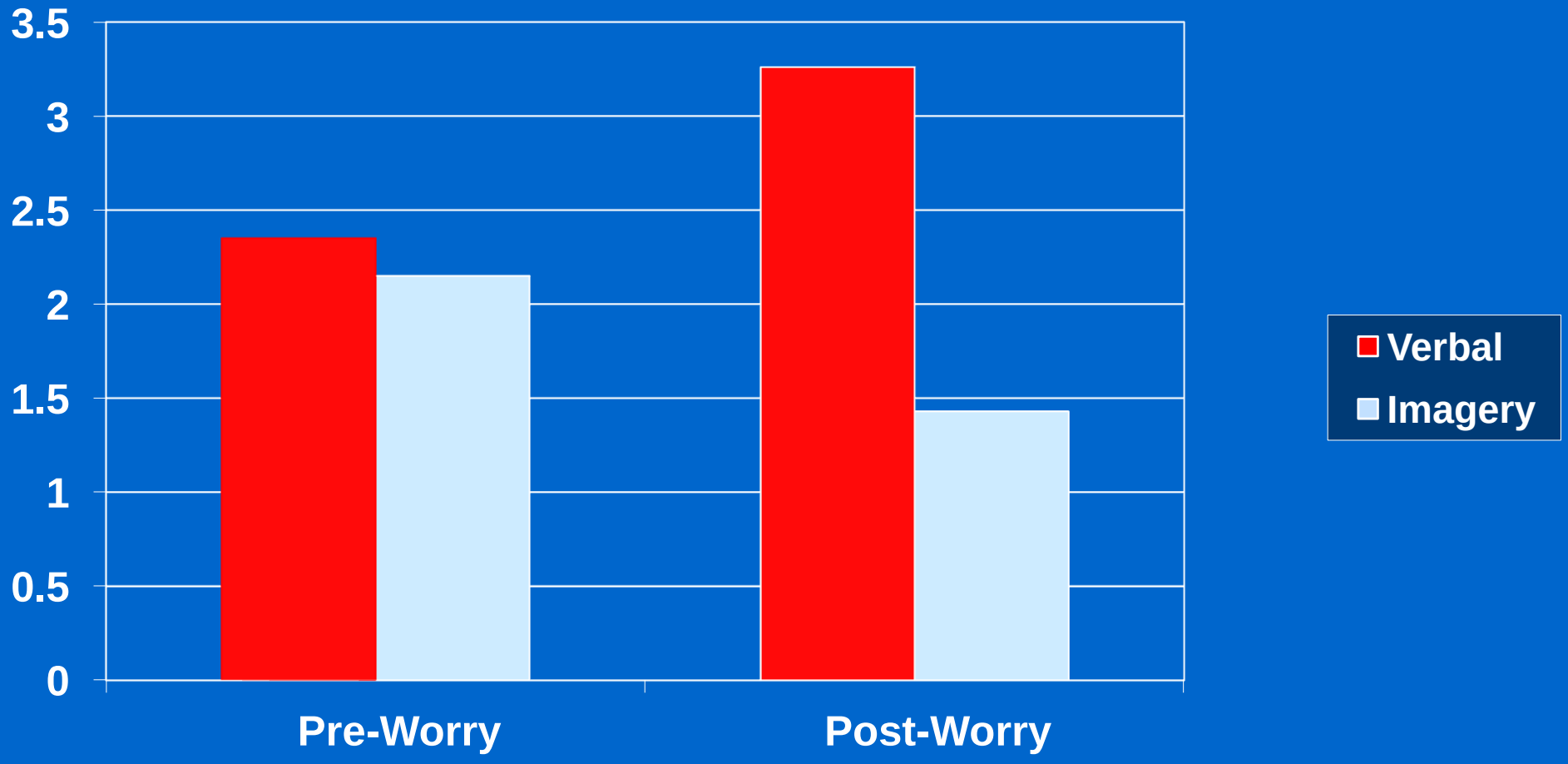
⇩

Worry (Verbal or Imagery)

⇩

Breathing Focus Period

WPT: Number of negative thought intrusions pre- & post-worry



Conclusions Stokes & Hirsch 2010

- Worry in its normal verbal form increases negative intrusions
- Verbal worry perpetuates uncontrollability

- Is all verbal processing less helpful than imagery?

What role does the valence and style of thinking have on uncontrollability of worry? (Hirsch, Perman, Mathews & Hayes, in prep)

- Positive imagery in social phobia (Hirsch et al., 2003; 2004;2006)
- Would positive imagery reduce intrusions more than feared imagery?
- Would positive verbal thinking be less helpful than positive imagery?

Participants: High worriers

Design: Allocated to Verbal OR Imagery
Allocated to Feared OR Positive

Procedure

Breathing Focus Period

⇩

Train imagery or verbal
of feared or positive outcome

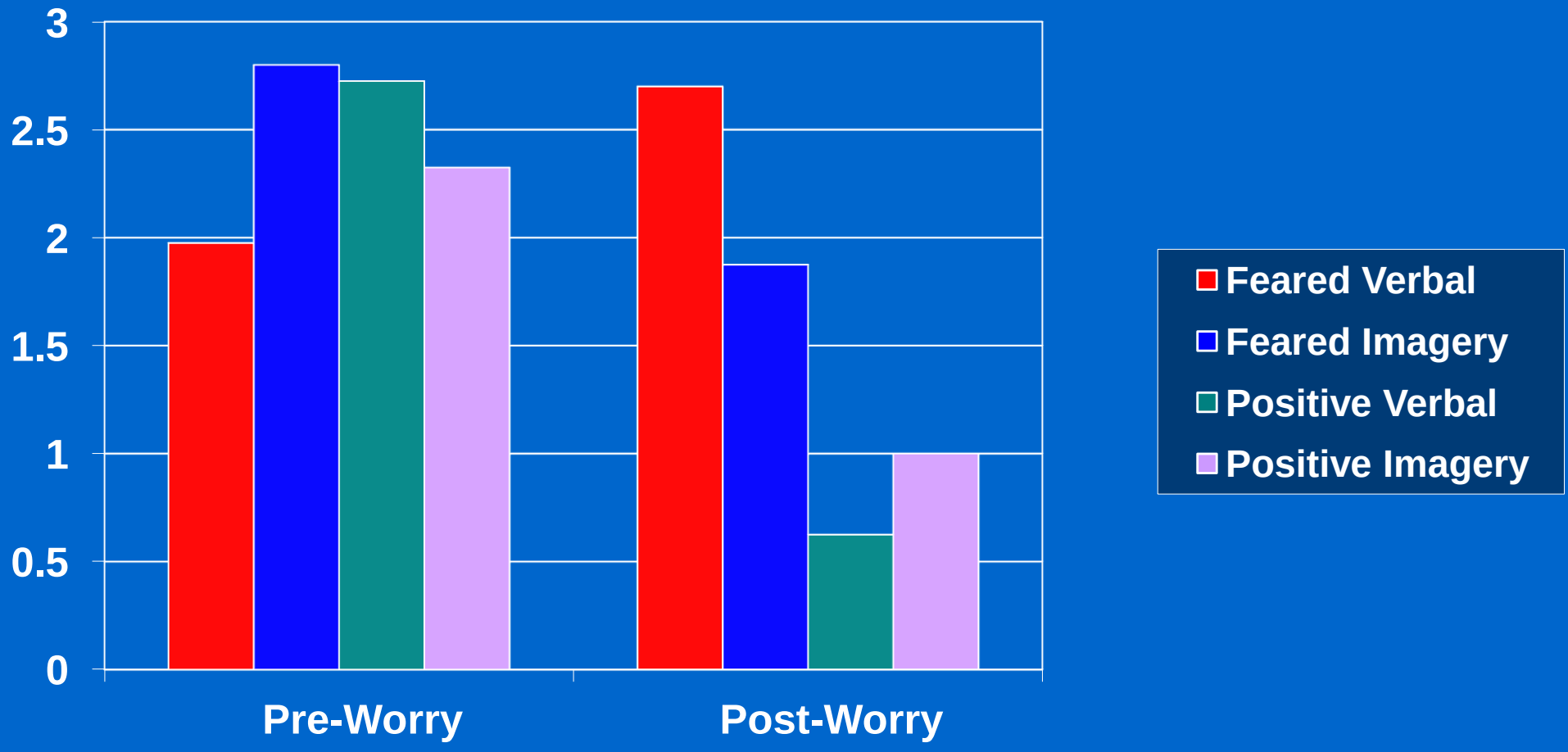
⇩

Worry Topic Period
(imagery or verbal
of feared or positive outcome)

⇩

Breathing Focus Period

WPT: Number of negative thought intrusions pre- & post-worry



Hirsch et al. (in prep) conclusions

- Imagery:
  Feared Imagery = Positive Imagery
- Positive:
  Positive Verbal = Positive Imagery

- Verbal Feared (normal worry) promotes intrusions
- Verbal nature of worry has a causal role in maintaining its uncontrollability

- CBT

- Is the abstract nature of verbal worry that is unhelpful?

Abstract Generalised worry

Is it the abstract nature of worry that is problematic? (Richards & Hirsch, in prep)

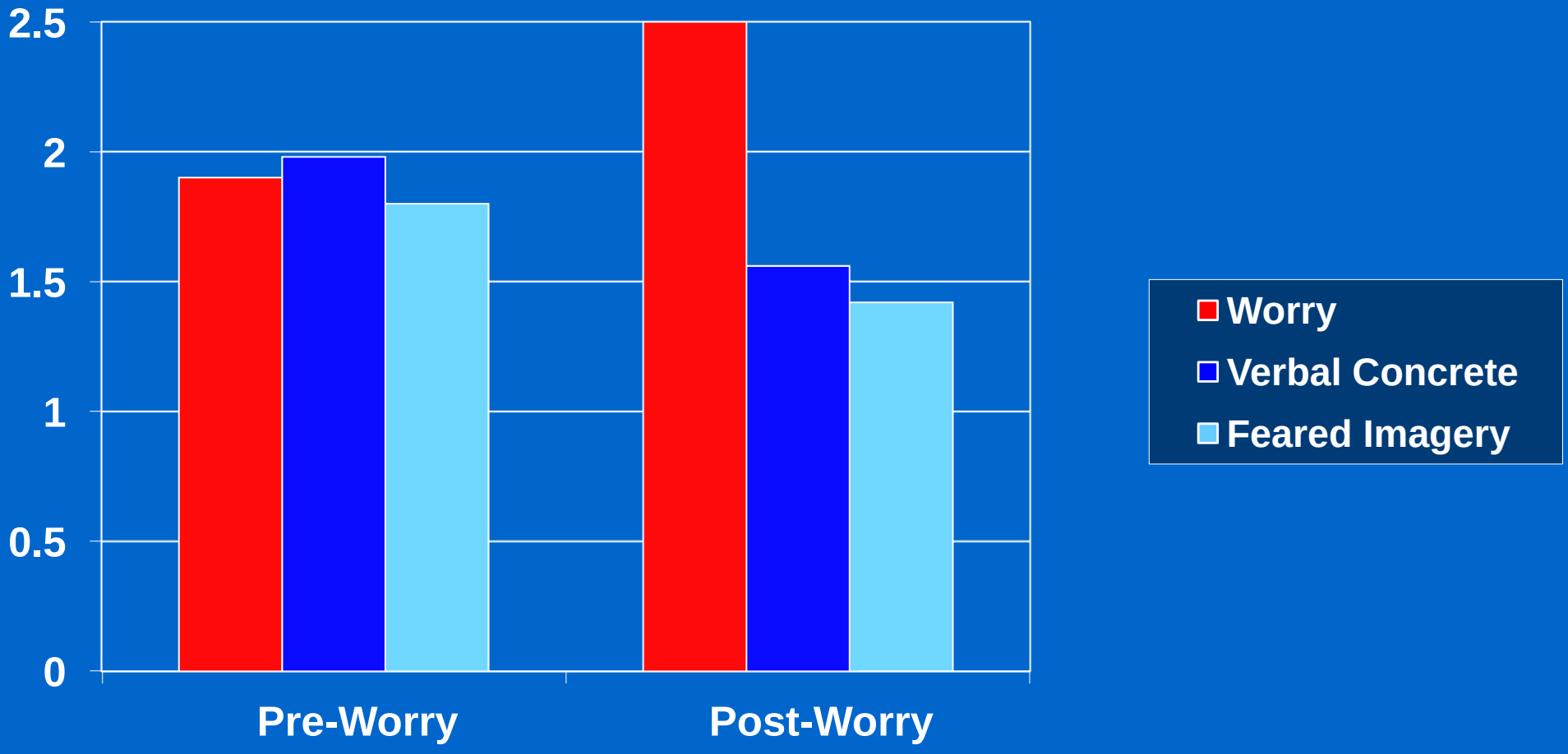
Worry is abstract in nature and lacks specificity (Stöber, 1998; Stöber et al., 2000)

High worriers:

- Imagery
- Worry as normal (abstract verbal)
- Verbal concrete and specific

Worry Persistence Task

WPT: Number of negative thought intrusions pre- & post-worry



Richards & Hirsch (in prep) conclusions

- Imagery = verbal concrete and specific:
- Worry as normal (verbal abstract) promotes intrusions
- Abstract nature of worry has causal role in uncontrollability of worry
- CBT
- Does verbal worry utilise attentional control?

Does the predominance of verbal thinking during worry take up attentional control?

(Leigh & Hirsch, 2011, Behaviour Research & Therapy)

Participants:

High vs. low worriers

Conditions:

Worry Verbally vs. Worry in Imagery

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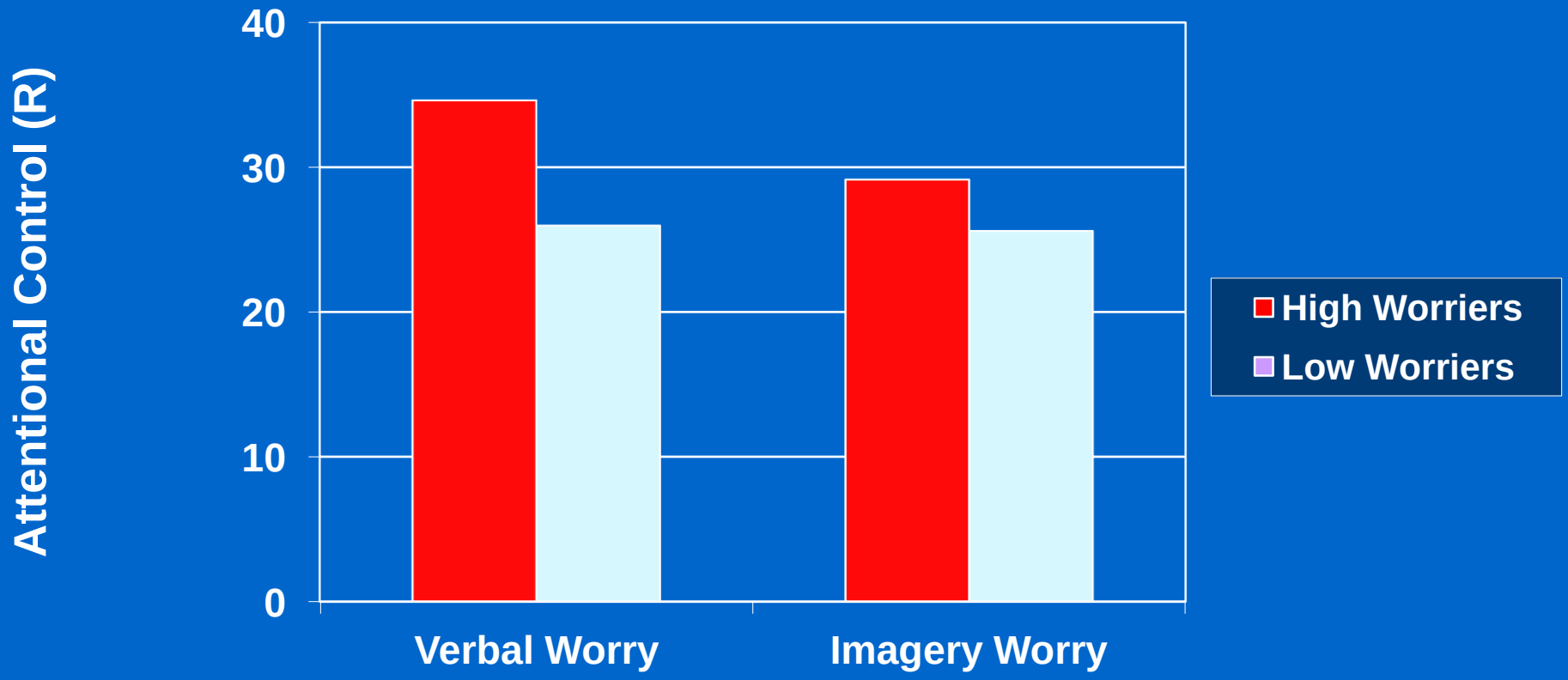
Assess attentional control during worry

(Random Interval Generation task)

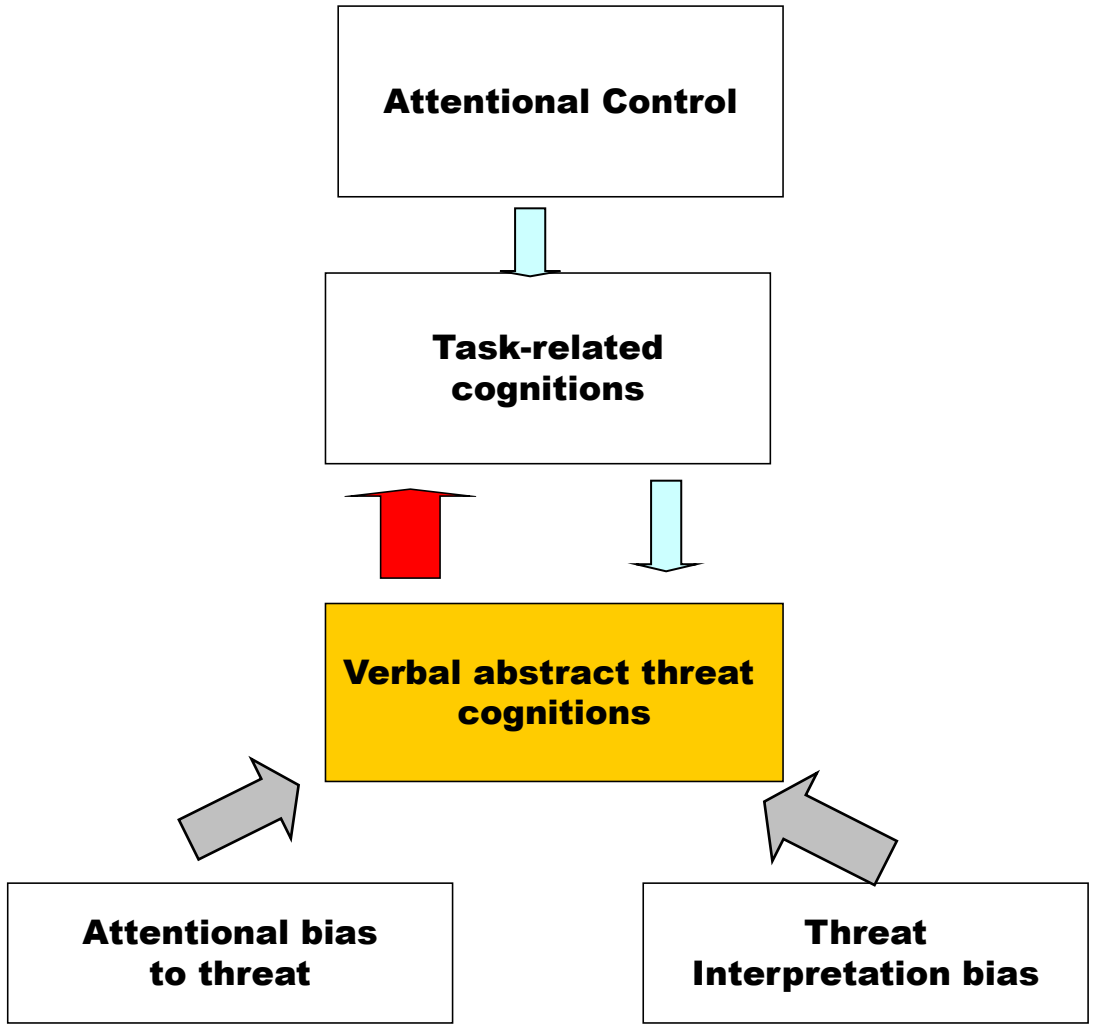
Attentional Control taken up by verbal or imagery worry in high and low worriers



Leigh & Hirsch (2011) conc.

- Low worriers: AC verbal = AC imagery
- High worriers: AC verbal > AC imagery
- Causal role for verbal worry in makes it difficult to concentrate on the task at hand
- CBT

Verbal abstract nature of worry is causal in reducing task focus high worriers



Verbal worry & attention to threat

Does the verbal nature of worry promote attention to threat? (Williams, Mathews & Hirsch, 2013, Jn of Behaviour Therapy & Experimental Psychiatry)

- Once normal verbal worry is occurring, does it increase attentional bias to threat?
- Does prolonged imagery of the worry do the same thing?

Participants: High worriers

Design: verbal worry vs. worry in imagery

Task: Train Verbal or Imagery

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Worry (Verbal or Imagery)

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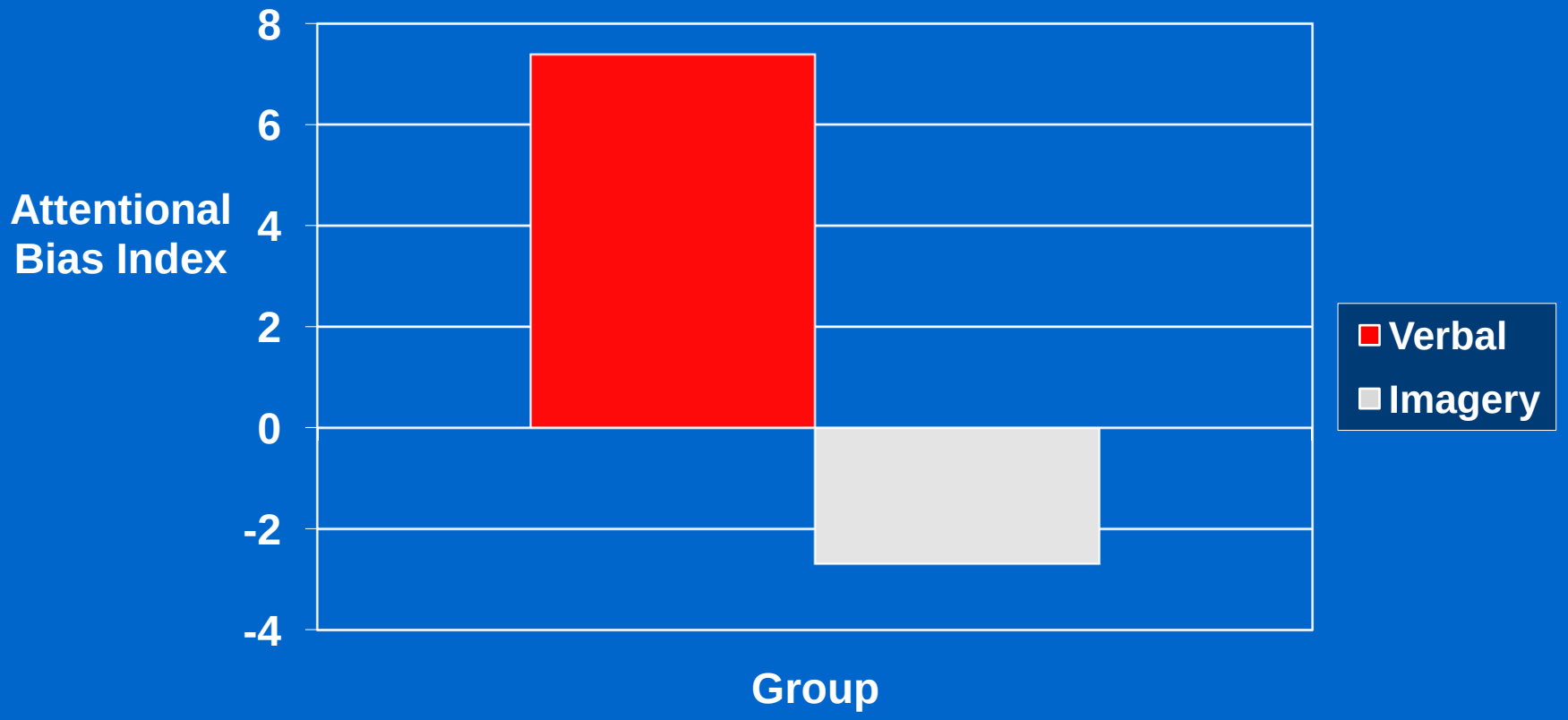
Dot probe attention test

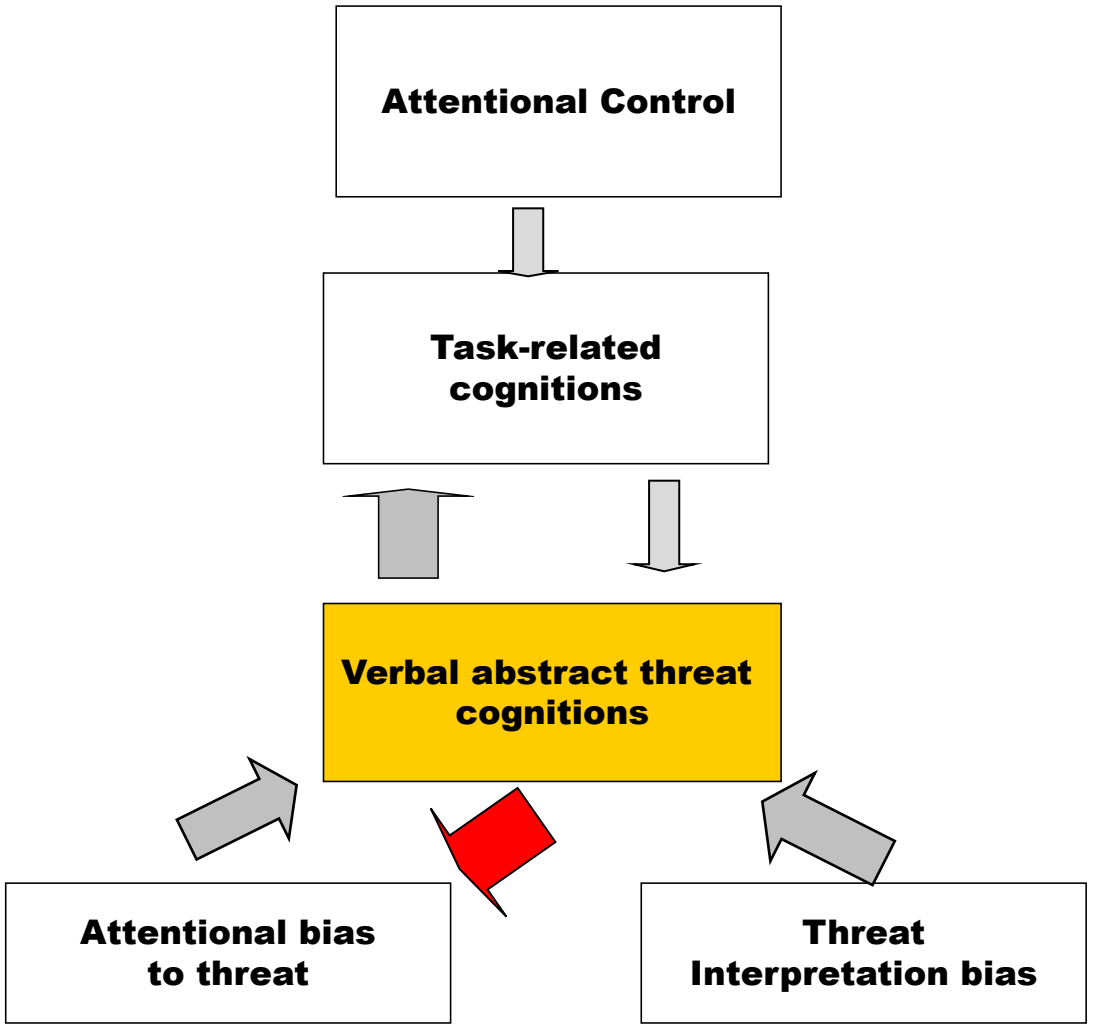
Attentional bias to threat for verbal and imagery groups



Williams et al (2013) conclusions

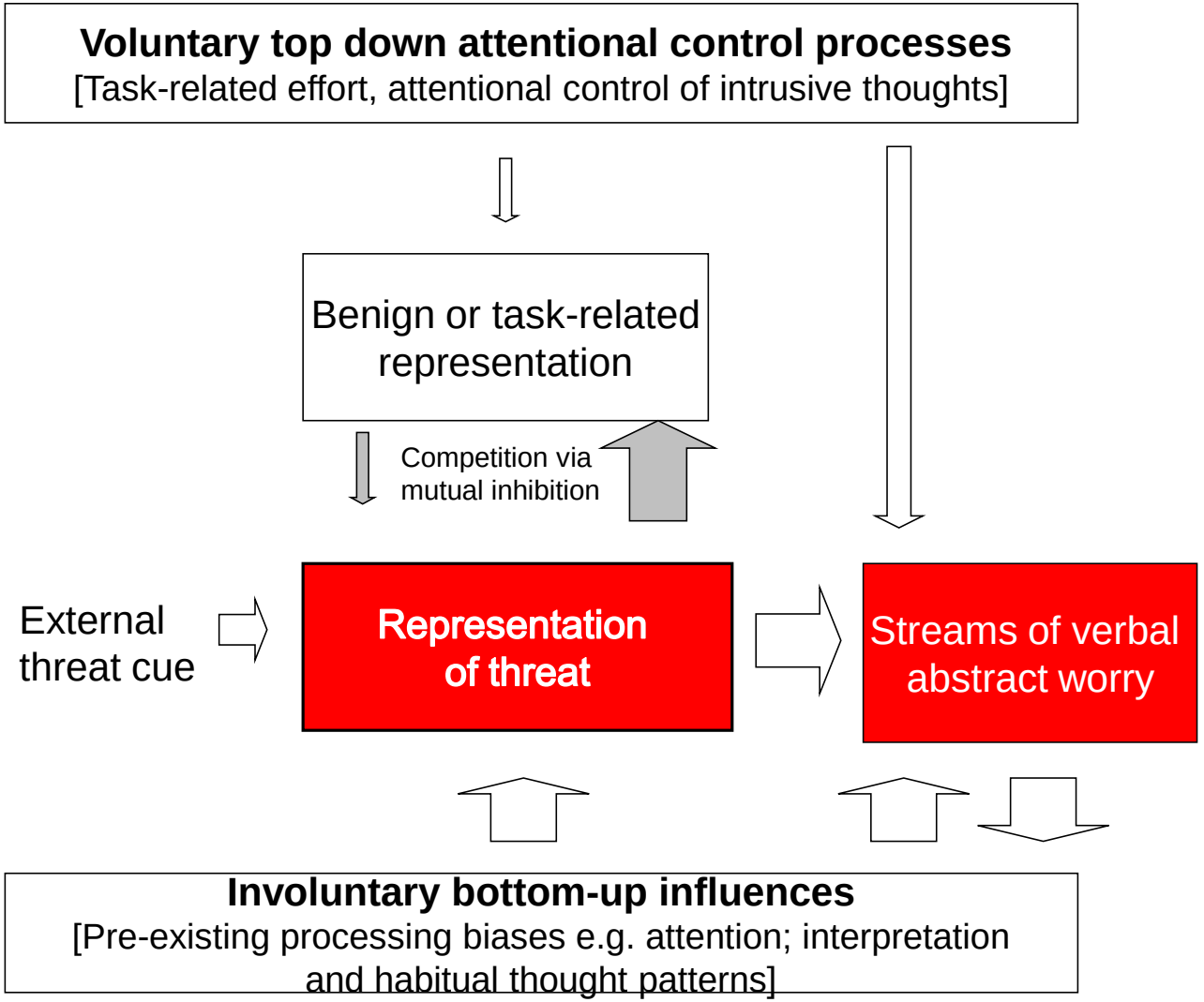
- Verbal worry promotes attention to threat
- Worry in imagery does not
- Causal role for verbal worry in promoting an attentional bias to focus on threat
- CBT

Verbal abstract nature of worry is causal in promoting threat focus in high worriers



Model of Pathological Worry

Model of Pathological Worry (Hirsch & Mathews (2012) Behaviour Research & Therapy



How can this theory guide cognitive behaviour therapy (CBT) for GAD?

Common clinical difficulties when working with GAD

- Clients often talk at length about all the worry – focus on content

- Multiple topics at any one time
- Worry topics change all the time
- Clinicians report finding ever changing worry topics a challenge

Focus on changing cognitive processes

- CBT for GAD provides a range of techniques (e.g. Borkovec 2006)
- Some techniques do not require information about worry content
- Some techniques involve getting limited information about current worry content
  - Focus on feared outcome (concrete and specific)

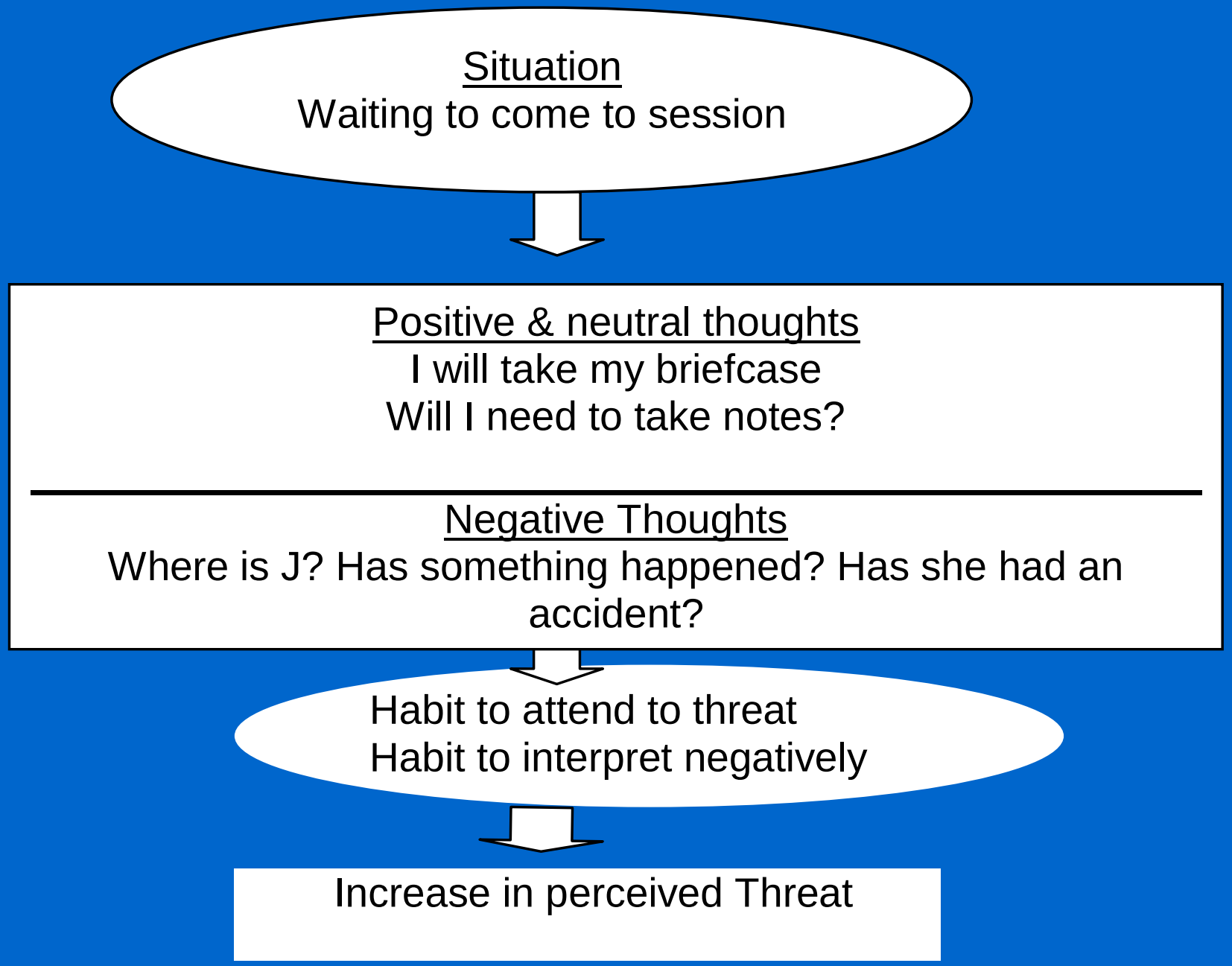
Client

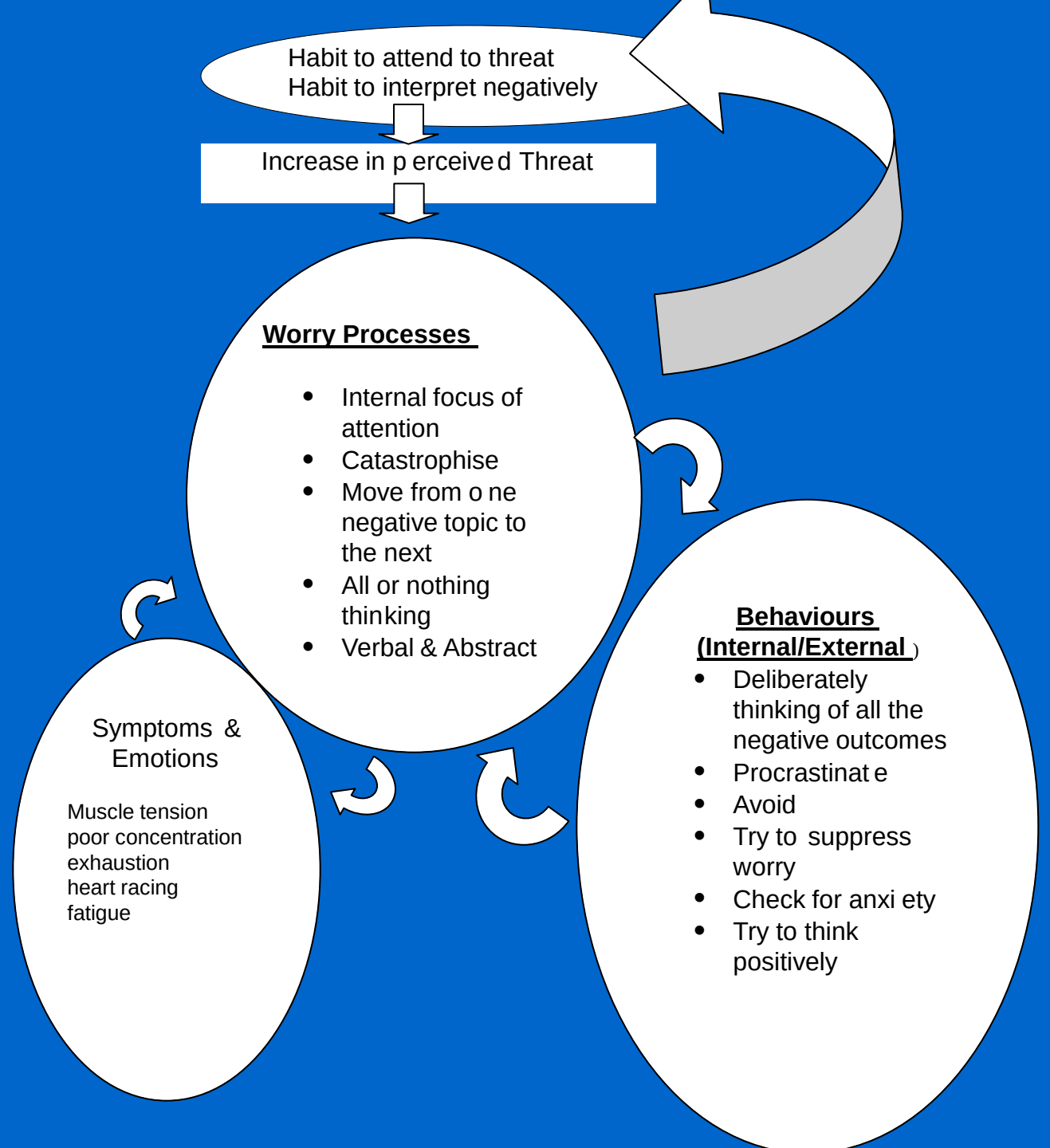
- AG 46 year old publisher
- GAD
- Worry about lots of different things
  - Will we get a seat at the pub?
  - Is the dog ok?
  - Will I wake up from the anaesthetic at the dentist?
  - What if I am late for work
- Multiple topics always changing

Co-morbid problems

- Claustrophobia
- Social anxiety
- Health anxiety
- Past depression

Formulation


Situation
Waiting to come to session
Positive & neutral thoughts
I will take my briefcase
Will I need to take notes?
Negative Thoughts
Where is J? Has something happened? Has she had an accident?
Habit to attend to threat
Habit to interpret negatively
Increase in perceived Threat


Habit to attend to threat
Habit to interpret negatively
Increase in p erceive d Threat
Worry Processes
Internal focus of attention
Catastrophise
Move from o ne negative topic to the next
All or nothing thin king
Verbal & Abstract
Behaviours (Internal/External)
Deliberately thinking of all the negative outcomes
Procrastinat e
Avoid
Try to suppress worry
Check for anxi ety
Try to think positively
Symptoms & Emotions
Muscle tension
poor concentration
exhaustion
heart racing
fatigue

What cognitive processes are targeted by CBT techniques

Abstract General Thinking

AG's Worry History Outcome

1 = Much Better Than I feared
2 = Better Than I feared
3 = As Bad as I feared
4 = Worse than I feared
5 = Much worse than I feared

Date	Worry topic	What I fear will happen	Actual outcome 1-5	How well well I coped 1-5
7/2	Appraisal	Boss will tell me my work is very poor	2	1
8/2	Traffic bad	Negative comments on my lateness	1	1

Range of cognitive processes targeted by Worry History Outcome

- Identify feared outcome (generalised abstract)
- Track worry outcome (attention to threat)
- Ratings review (negative interpretations)
- Prolonged imagery of positive outcomes (attention threat & verbal abstract)
- Collate data (threat focus)

Internal focus of attention on worry

Train AG to shift to external focus of attention

- Train external focus of attention
- Train when not highly worried to maximise attentional control

- Structured practice to attend externally

Cognitive Processes Addressed

- Directs attentional control externally;
- Reduces attention to threat, negative interpretations, verbal abstract thinking

Developing external focus when AG worries

- Worry free zones
- Worry Time Tabling (Stimulus control Training)

Processes addressed

Directs attentional control resources away from worry

Reduces attention bias to threat, negative interpretations, verbal abstract

Habit to worry verbally about multiple negative outcomes

AG's Positive Outcome Imagery

- Worry - multiple negative outcomes
- 85% of worry outcomes are positive (WHO)
- If bad outcome happens 75% of time cope OK

Prolonged positive outcome imagery for future worries

- Identify multiple positive outcomes
- Generate prolonged vivid image of positive outcome

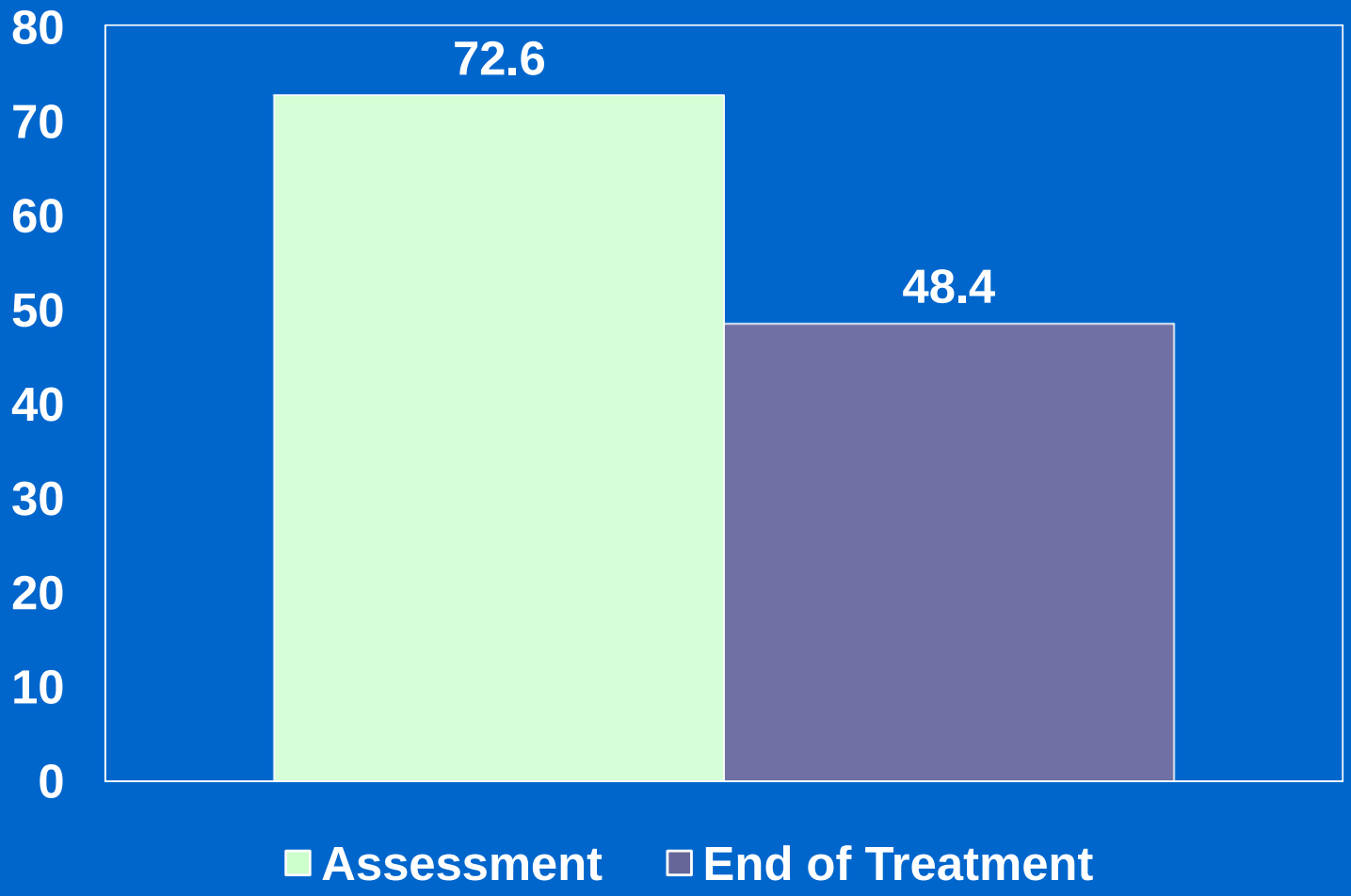
Cognitive processes addressed by prolonged positive imagery of future worry

- Imagine outcome (verbal abstract processing)
- Prolonged imagery (brief imagery)
- Positive outcome (attention to threat)

CBT for GAD & Cognitive Processes

- Specific techniques to reduce worry in GAD target key cognitive processes
- Repeated practice of techniques overcomes cognitive biases and helps promote ability to focus attentional control to task at hand

PSWQ scores for initial fourteen cases taking a cognitive process approach



Clinical Outcome

- Twelve sessions individual CBT guided by a cognitive process perspective
- Significant reduction in PSWQ
- Post treatment PSWQ matches general population mean (48)
- 13/14 no longer GAD

Future research questions

- What determines how we allocate attentional control resources:
  - Attention bias
  - Beliefs
- Why is worry imagery in GAD so brief?
- Can a cognitive process approach to treating GAD improve outcome and successful dissemination of CBT?

Thank you!