

The Maturing of Virtual Reality Research in Behavioral Health: A Meta-Analysis and Review

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VR Research in Behavioral Health

Anxiety disorders

- Specific Phobias
- Social Phobia
- Panic Disorder and Agoraphobia
- Posttraumatic Stress Disorder

Eating Disorders

Pain Distraction

Addictions

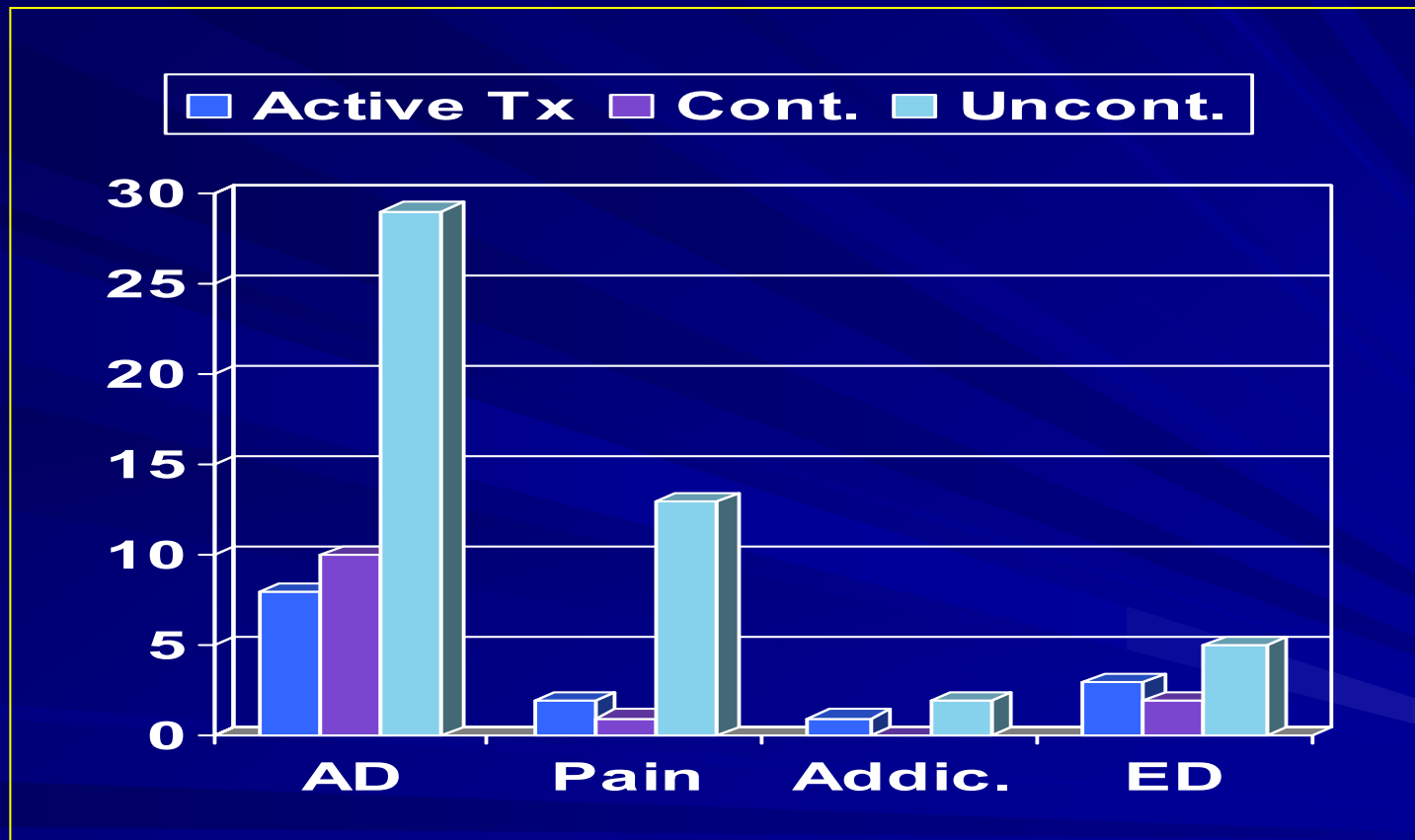


A Review of VR Behavioral Health Research

- Databases searched: PsyINFO & Medline
- Total number of studies reviewed: 76
 - Anxiety Disorders 47 studies
 - Pain Distraction 16 studies
 - Eating Disorders 10 studies
 - Addiction Cue Exposure 3 studies
- Types of studies reviewed
 - Controlled with active treatment
 - Controlled with no treatment
 - Uncontrolled and case studies



VR Research Review Summary



Review Findings: Addictions

- Three published studies on cue exposure
 - Between subjects study for heroin exposure
 - Within subjects study for nicotine exposure
 - Between subjects study for nicotine exposure
- Results are promising, all concluded that VR effective in eliciting craving responses

Review of Findings: Eating Disorders

- Research on VR treatment of Bulimia, Obesity, and Anorexia
- 5 controlled studies published
 - Insufficient data presented to compute effect sizes
- 1 controlled study published with sufficient data to compute effect sizes
 - Mean effect size compared to standard treatment: $d(8) = 1.90$



Review of Findings: Pain Analgesia

- 13 uncontrolled and case studies
- 2 controlled studies published with sufficient data to compute effect sizes
 - Burn pain
 - Subcutaneous pain (catheter port access)

Mean effect size of VR treatment compared to:

Alternative distraction for
burn pain:
 $d(3) = 1.64$

Alternative distraction for
subcutaneous pain:
 $d = .38$

No distraction for
subcutaneous pain:
 $d = 0.63$



Review of Findings: Anxiety Disorders

■ Specific Phobias

- 36 uncontrolled and controlled studies on fears of:
 - flying
 - heights
 - spiders

■ Social Phobia

- 4 controlled studies, 2 on fear of public speaking

■ Panic and Agoraphobia

- 2 controlled published studies to date

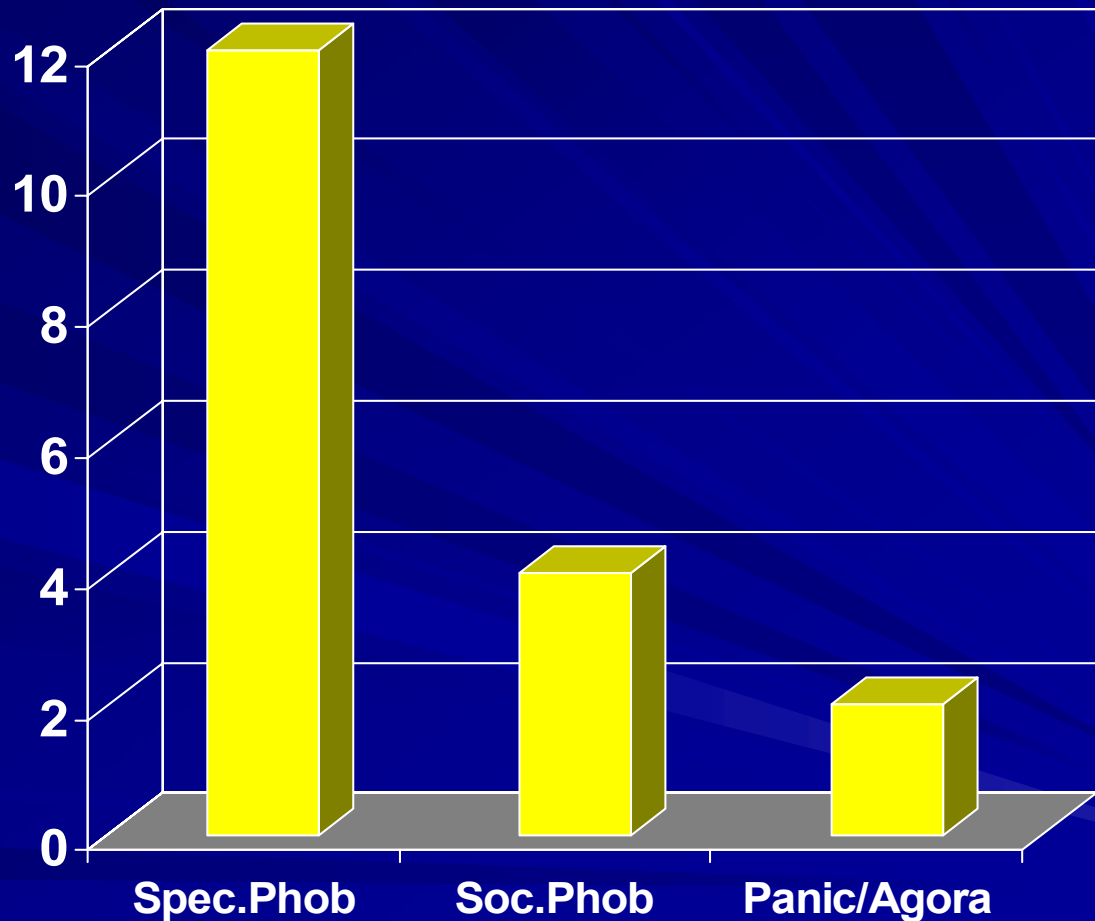
■ Posttraumatic Stress Disorder

- 2 uncontrolled published studies to date



Meta-Analysis of VR in Anxiety Disorders

- 18 controlled studies
- 172 effect sizes
- Mean total sample size is 25
- Unbiased effect size used due to small sample Ns

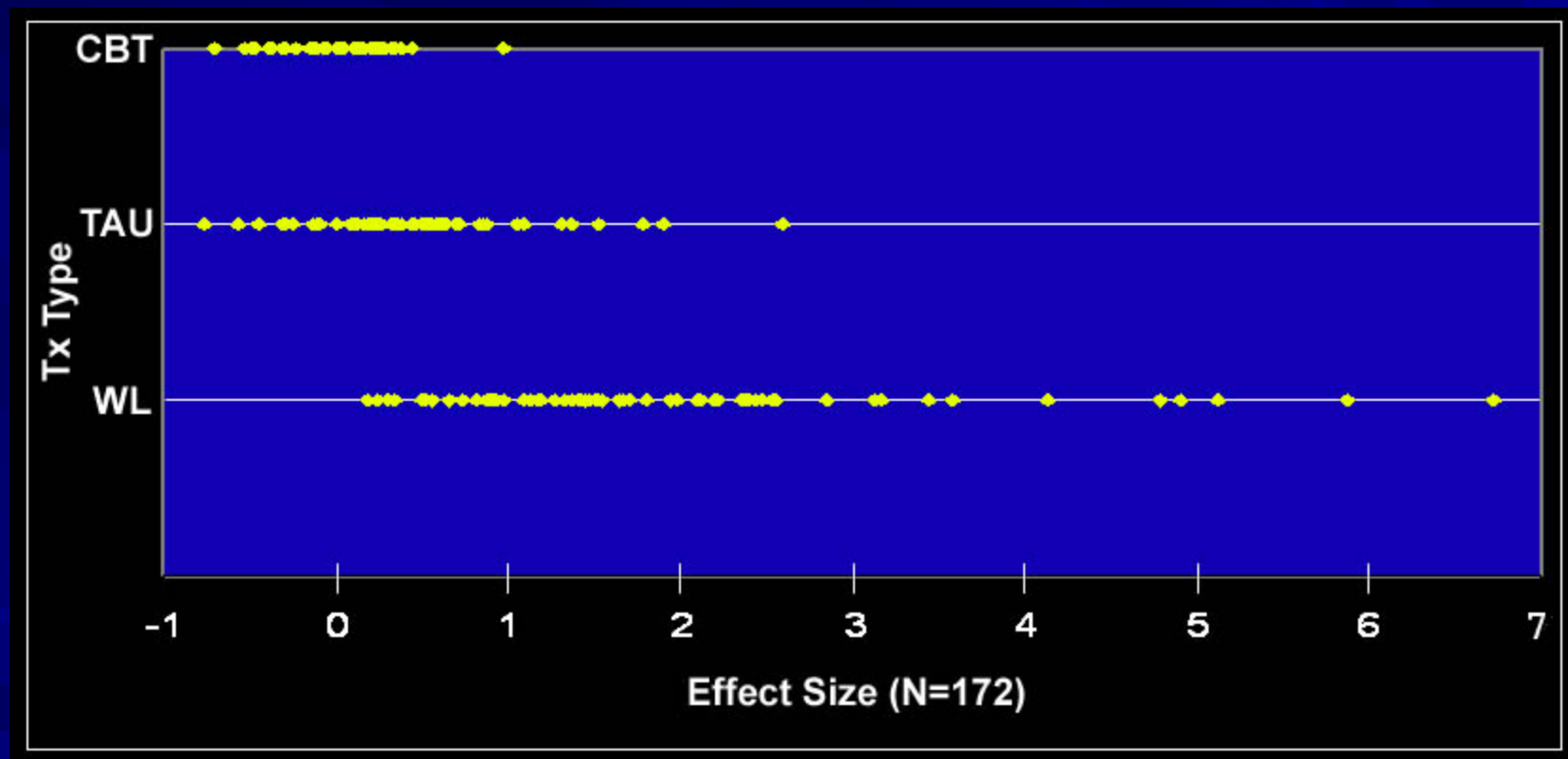


Meta-Analysis Results Across Comparison Conditions

	Number of Effect Sizes	Mean Effect Size	SD	Median
Wait List	64.0	1.90	1.37	1.52
Treatment As Usual	63.0	0.48	0.64	0.38
CBT In Vivo	45.0	0.02	0.30	0.00



Meta-Analysis Results Across Comparison Conditions



Conclusions

- VR treatment is effective compared to no treatment
- VR compares favorably with standard treatment
- VR exposure treatment is as effective as in vivo treatment



Conclusions

- Rate of VR research maturation differs for each disorder
 - Addictions: early development phase
 - Pain Distraction: move to controlled studies
 - Eating Disorders: expand controlled studies
 - Anxiety Disorders: broaden emphasis from specific phobias
- Need for more comprehensive data to be reported for meta analysis



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