Mechanisms of Change in Acceptance-Based Interventions

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Mindfulness and Behavior Change Processes in Acceptance and Commitment Therapy

Akihiko Masuda & Steven C. Hayes, University of Nevada, Reno

The Relationship of Three Self-report Measures of Mindfulness to Each Other and to Measures of Emotion, Cognition, and Psychopathology

Emily A. Haigh, Shane A. Mares, Candace Croft, Michael T. Moore, & David M. Fresco, Kent State University

Differential Strategies in Coping with Induced Pain as a Function of Experiential Avoidance

Robert D. Zettle, Tanya R. Hocker, Katherine A. Mick, Brett E. Scofield, Connie L. Petersen, Hyunsung Song & Ratna P. Sudarijanto, Wichita State University

Learning is a Mechanism Through Which Psychological Acceptance Affects Mental Health and Job Performance

Frank W. Bond, Goldsmiths College, University of London, United Kingdom

Comparing Outcome and Mechanisms of Action in Cognitive Behavioral and Acceptance and Commitment Therapies

Evan M. Forman, James D. Herbert, Peter D. Yeomans, Katie McGrath, Ethan Moitre & Pamela A. Geller, Drexel University

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ACT vs CBT

	CBT	ACT
Focus	reducing or eliminating distorted/unwanted thoughts, feelings, and bodily sensations	reducing *unwillingness* to experience and efforts to *control* thoughts, feelings and sensations
Efficacy studies:		
Depression	Numerous (cf. DeRubeis & Crits-Christoph, 1998)	Growing (e.g. (Zettle & Hayes, 2002; Zettle & Rains, 1989)
Anxiety	Numerous (cf. DeRubeis & Crits-Christoph, 1998)	Growing (e.g. Block & Wulfert, 2000; Roemer & Orsillo, 2002; Zettle, 2003)

Theorized Mechanisms of Action

		Empirical Evidence
CBT		
	Reducing dysfunctional attitudes	*Against*: Barber & DeRubeis, 1989; DeRubeis, Evans, Hollon, Garvey, & et al., 1990; Teasdale et al., 2001
	Increasing Meta-cognitive awareness	*For*: Teasdale et al., 2001
ACT		
	Decreasing Experiential Avoidance	
	Increasing Psychological Acceptance	*For*: Bond & Bunce, 2000; Zettle, 2003
	Increasing Defusion	
	Awareness	

Study Questions

- Disseminability?
- Efficacy (RCT)?
- Effectiveness in real-world setting (few exclusion criteria, comorbidity, subthreshold diagnostically) [Strosahl et al., 1998]
- Mechanisms of action?

... of ACT relative to CBT

Study Design

- Setting: University counseling center
- Participants: health science students (nursing, medicine, physical therapy, etc.)
- Therapists: Doctoral students (n = 13) in a CBT-oriented clinical psychology program
- Therapist Training/Supervision
  - CBT: 4 weekly 2-hour trainings
  - ACT: 6 weekly 2-hour trainings
  - 1-hour weekly ongoing group supervision
  - 1-hour weekly ongoing individual supervision
- Random assignment of participants to CBT / ACT
- Each therapist administered both CBT & ACT

Measures

- Collection: Baseline & 3-mo follow-up (±8 sessions)

Symptom / Functioning		
	Depression	BDI-II
	Anxiety	BAI
	Functioning Diff.	OQ-45
	Global Functioning	CGI
Well-being		
	Quality of Life	QOLI
	Life Satisfaction	SLS
	Self-Esteem	RSES

Mediators		
	Exper. Avoidance	AAQ
	Mindfulness –Observe –Awareness –Describe –Acceptance	KIMS
	Negative Thoughts –Frequency –Believability	ATQ

Participant Recruitment & Enrollment

102 Subjects Screened

- 84 (82%) eligible
  - 74 (78%) administered consent
    - 51 (61%) agreed
      - 7 (14%) could not be assigned
      - 22 (43%) assigned to ACT
        - 20 (91%) active → **10 ACT**
        - 2 (9%) dropped out
      - 22 (43%) assigned to CBT
        - 19 (86%) active → **8 CBT**
        - 3 (14%) dropped out

Reached 3-mo follow-up

10 ACT

8 CBT

Intake Demographics

- Age: M=27.6 yrs., Min = 19, Max = 46
- Gender: 8 Males (18%), 36 Females (82%)
- Marital Status: Single = 22 (50%), Divorced = 1 (2%),
  Married/Partnered = 12 (27%),
  Not Living with current spouse/partner = 9 (21%)
- Ethnicity: Caucasian = 32 (73%),
  African American/Black = 4 (9%),
  Latino = 1 (2%), Asian = 7 (16%)

Participants Reaching Time 2

- Age: M=28.7 yrs., Min = 21, Max = 46
- Gender: 7 Males (39%), 11 Females (61%)
- Marital Status: Single = 9 (50%), Divorced = 1 (6%),
  Married/Partner = 5 (28%),
  Not Living with current spouse/partner = 3 (17%)
- Ethnicity: Caucasian = 13 (72%),
  African American/Black = 1 (6%),
  Asian = 4 (22%)

Baseline Diagnoses/Symptom Levels

Diagnosis	N	%
Anxiety Disorders	6	33%
Major Depressive Disorder	5	28%
Other Mood Disorders	6	33%
Eating Disorders	1	6%
No Diagnosis	7	39%

Measure	M	SD
Beck Depression Inventory (BDI)	17.0	11.2
Beck Anxiety Inventory (BAI)	10.7	11.0
Beck Hopelessness Scale (BHS)	7.2	6.0

Problem Checklist: Main Concerns

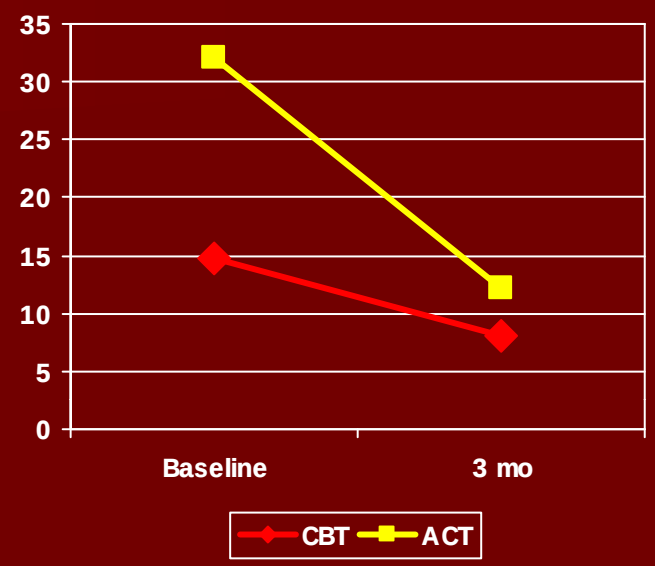
- Worried about my grades or academic work
- Concerned about my primary relationships
- Feel easily irritated, frustrated, and/or angry
- Feeling depressed or unhappy
- Not feeling close/connected to others
- Worried about my physical health
- Concerned about my eating habits/nutrition
- Having fears/worries that occupy my mind

Results
Highly Preliminary

- Enrollment Slowdowns → 18 participants have reached time 2
  - Effect sizes > p values
  - Clinical Significance
- Groups not equal at baseline (randomization failure)
  - Repeated measures compares *slopes* of change not simple difference
  - Stratification by symptom (BDI, BAI, BHS, OQ) threshold; participants with minimal symptoms discarded
- No midpoint assessment (→mediational analyses)

Depression (BDI)

Repeated Measures ANOVA			
	$F_{(1,12)}$	p	η_p^2
Time	19.94	.001*	.624
Time x Group	4.96 ACT	.046*	.293

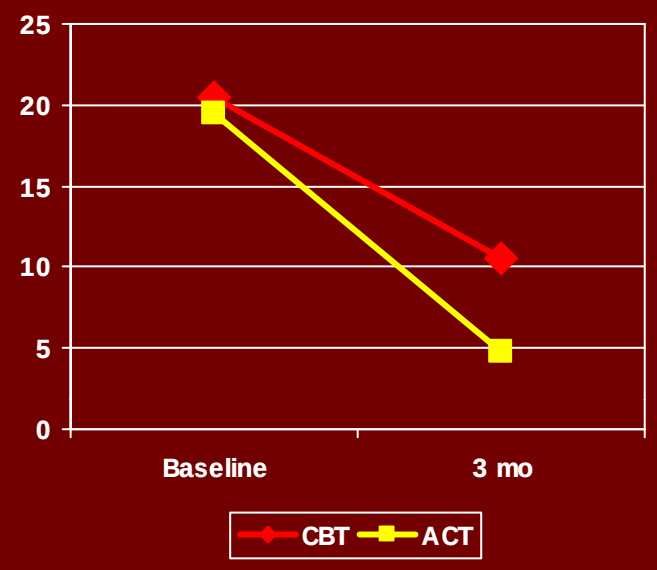


Clinical Significance

	Baseline	3 mo		*Reliable* Improvemnt	*Recovered*
CBT	14.67 (3.13)	8.00 (3.14)		50%	50%
ACT	32.13 (2.71)	12.18 (2.96)		88%	50%

Anxiety (BAI)

Repeated Measures ANOVA			
	$F_{(1,8)}$	p	η_p^2
Time	33.58	.000*	.808
Time x Group	4.96 ACT	.298	.134

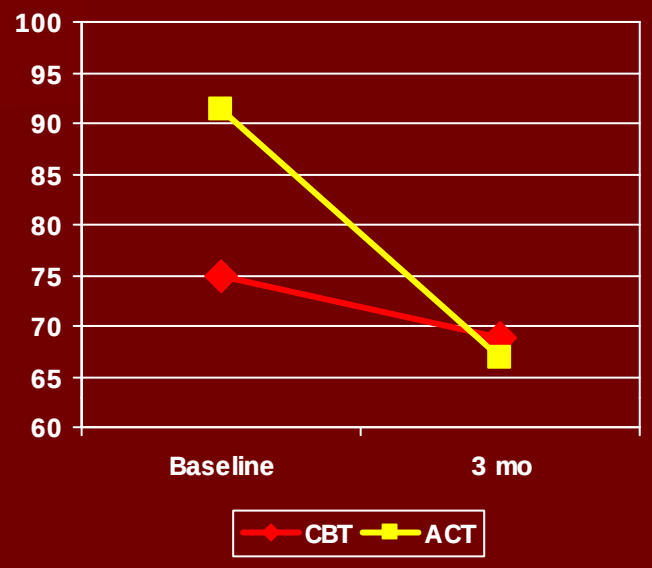


Clinical Significance

	Baseline	3 mo		*Reliable* Improvemnt	*Recovered*
CBT	20.50 (4.49)	10.50 (3.16)		50%	0%
ACT	19.50 (2.25)	4.75 (1.58)		63%	63%

Functioning Difficulties (OQ-45)

Repeated Measures ANOVA			
	$F_{(1,14)}$	p	η_p^2
Time	11.47	.004*	.450
Time x Group	4.11 ACT	.062°	.227

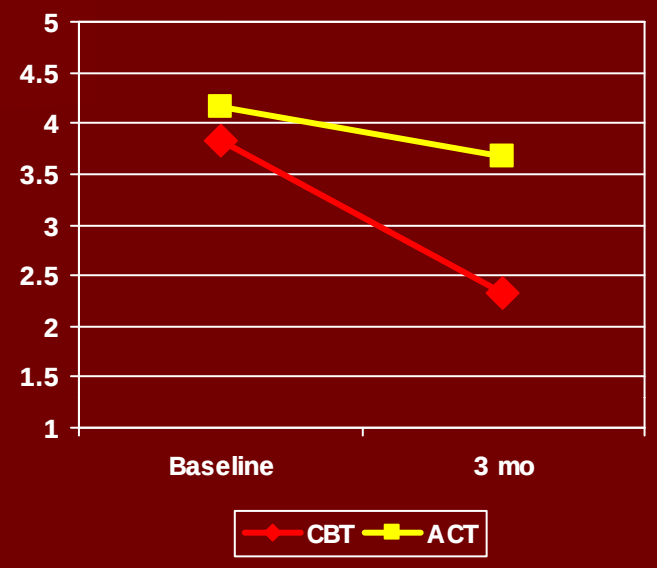


Clinical Significance

	Baseline	3 mo		*Reliable* Improvemnt	*Recovered*
CBT	75.00 (9.20)	68.80 (7.37)		0%	0%
ACT	91.46 (6.20)	66.80 (4.97)		46%	0%

Therapists' Clinical Global Impression (CGI)

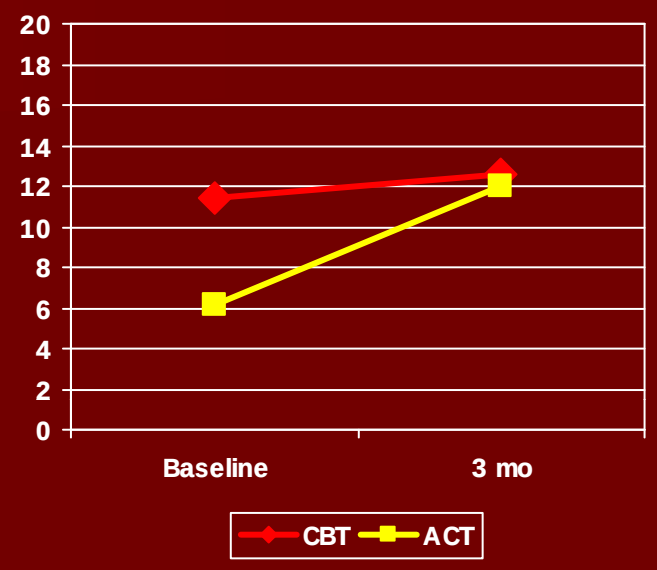
Repeated Measures ANOVA			
	$F_{(1,10)}$	p	η_p^2
Time	8.00	.018*	.444
Time x Group	4.11 CBT	.189	.167



	Baseline	3 mo
CBT	3.83 (.401)	2.33 (.459)
ACT	4.17 (.401)	3.667 (.459)

Subjective Life Satisfaction (SLS)

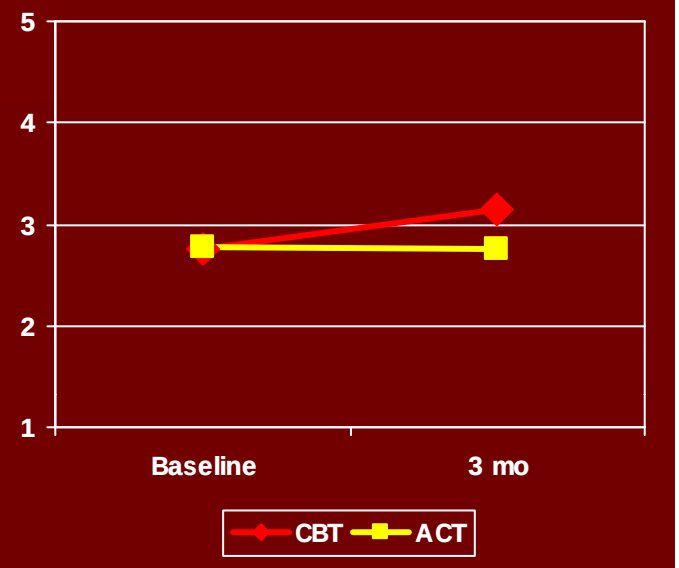
Repeated Measures ANOVA			
	$F_{(1,12)}$	p	η_p^2
Time	4.41	.058°	.269
Time x Group	1.93 ACT	.190	.138



	Baseline	3 mo
CBT	11.40 (2.48)	12.60 (3.09)
ACT	6.11 (1.85)	12.00 (2.30)

Quality of Life (QOLI)

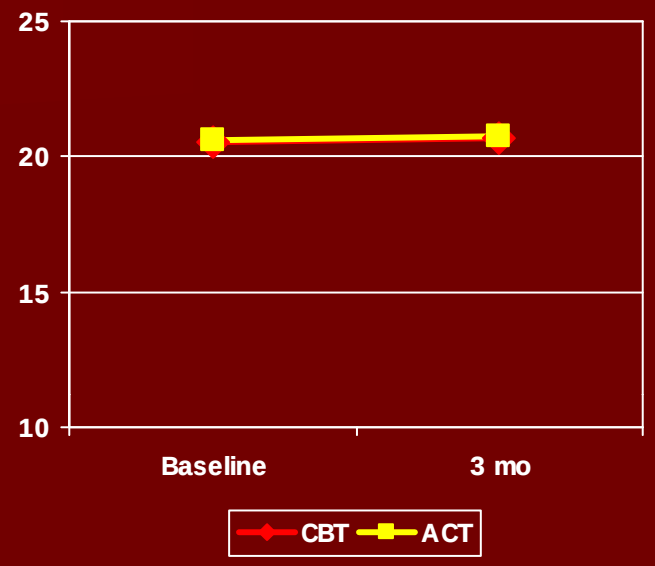
Repeated Measures ANOVA			
	$F_{(1,16)}$	p	η_p^2
Time	.421	.526	.026
Time x Group	1.93 CBT	.473	.033



	Baseline	3 mo
CBT	2.76 (.333)	3.15 (.371)
ACT	2.77 (1.85)	2.75 (.296)

Self-Esteem (RSES)

Repeated Measures ANOVA			
	$F_{(1,16)}$	p	η_p^2
Time	.023	.881	.001
Time x Group	.001	.973	.000



	Baseline	3 mo
CBT	20.57 (1.04)	20.71 (.55)
ACT	20.64 (.83)	20.73 (.44)

Mediational Analyses

1. Does mediational variable decrease as a function of treatment and differentially by treatment type (CBT vs ACT)?
2. Does change in mediational variable covary with change in outcome?
3. Is treatment effect attenuated—differentially by treatment type—when mediational variable is statistically controlled?

Automatic Thoughts – Believability (ATQ-B)

Treatment → Δ ATQ-B?
Yes, particularly for **ACT**

	F (1,12)	p	η_p^2
Time	8.122	.015	.404
T x Group	3.985	.069	.249

Repeated Measures analysis, DV = ATQ-B

Δ ATQ-B → ΔOutcome Var?

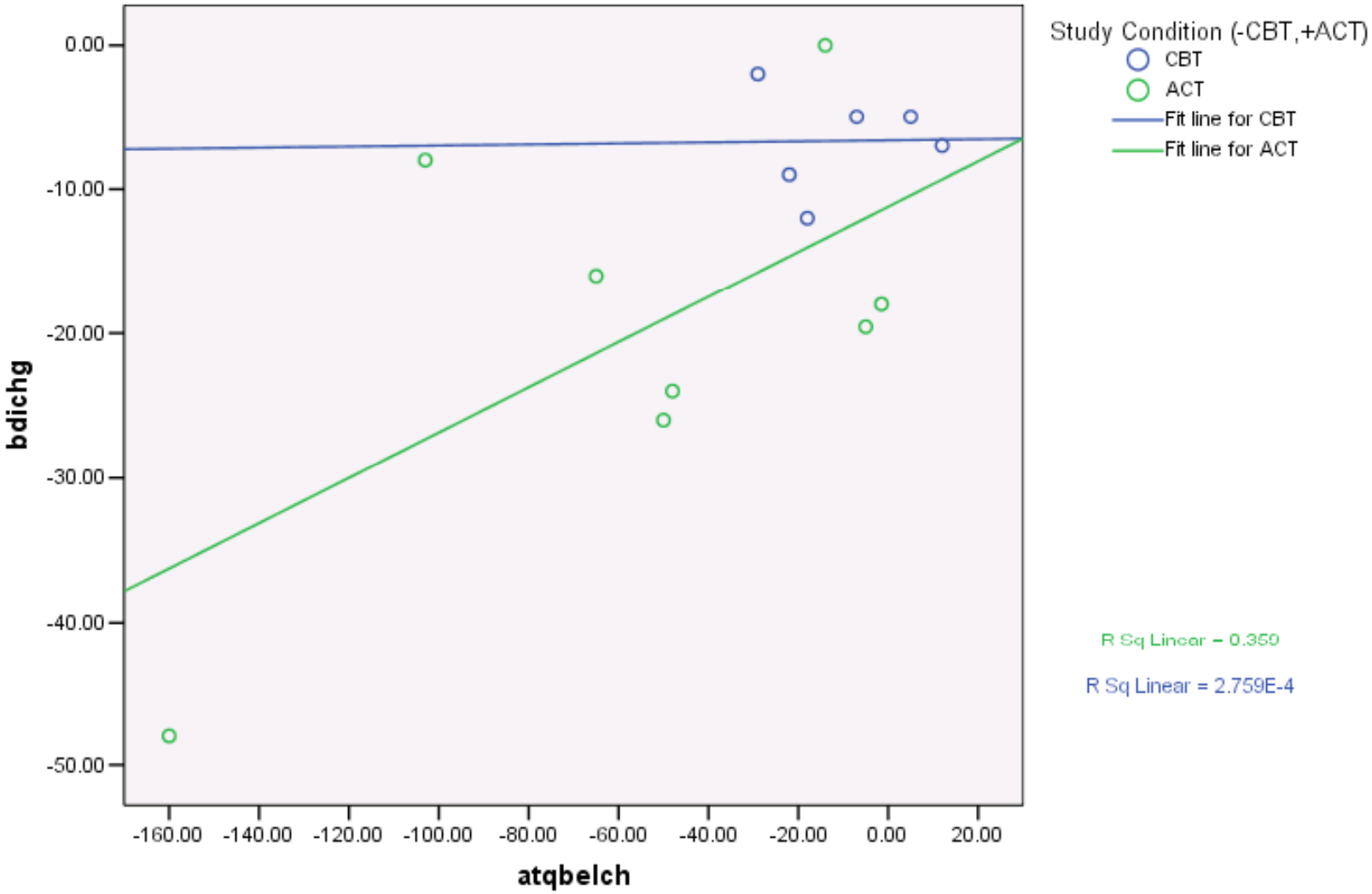
Regrssn	ATQ Beta	p	Intrctn Beta	p	
Δ **BDI**	.30	.58	.32	.19	**ACT**
Δ BAI	.69	.37	-.43	.62	--
Δ OQ	.70	.14	.01	.98	--

Δ ATQ-B attenuates tx effect?

Repeated Measures analysis before and after covarying ATQ-B

	BDI		BAI		OQ	
η_p^2	CBT	**ACT**	CBT	ACT	CBT	ACT
Nothing covaried	.813	.694				
ATQ Covaried	.748	.336				
% decrease	8%	52%				

Decreases in **believability** are associated with decreases in **depression**, but only in the **ACT** condition.



Summary of Mediating Effects

		Treatment → Δ mediator	Δ mediator → ΔOutcome Var	Δ mediator attenuates tx effect?
ATQ	Believability	Yes (ACT)	BDI (ACT)	BDI (ACT)
	Frequency	very similar to ATQ-Bel; r = .91		
	AAQ	*Yes?* (ACT)		BDI (ACT)
KIMS	Observe	*Yes?* (ACT)	BDI (ACT) BAI (ACT)	BAI (ACT)
	Describe	*Yes?* (ACT)	BDI (ACT) OQ (ACT)	
	Awareness	No		
	Acceptance	Yes (ACT)	OQ (ACT)	OQ (ACT)

Summary

- Disseminable
- Effective
- Efficacious relative to CBT
  - Depression
  - Functioning
  - Subjective Life Satisfaction

(CGI)

- Mechanisms of Action
  - **Believability**, for ACT, not CBT, on **depression**
  - **Observe**, for ACT, not CBT, on **anxiety**
  - **Acceptance**, for ACT, not CBT, on **functioning**

Future

- Increase n
- Consider specific diagnoses
- Session-by-session data (BSQ)
- Diffusion as a mechanism of action