

## **The benefits of ACT for promoting health and health related behaviors: An empirical summary**

(Last revised June 12 2014. This will be regularly updated.)

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This review focuses on health. For evidence that ACT is effective in improving mental health and well-being, please see the ACT fact sheet here:  
<http://www.acceptandchange.com/act/>

This document has focused on experimental and intervention studies. There is also substantial evidence, not reviewed here, for the benefit of ACT processes in naturalistic settings (e.g., longitudinal and correlational research).

If something is missing from this list, please do email me. [ciarrochij@gmail.com](mailto:ciarrochij@gmail.com)

## **ACT Evidence Part 1: ACT Improves Diet and Physical Activity**

**1) Lillis et al. (2009)** randomly assigned 84 overweight participants who had lost weight within the past 2 years to a wait-list or a 1 day ACT workshop targeting obesity-related stigma (Lillis, Hayes, Bunting, & Masuda, 2009). At 3-month follow-up, Act participants had lost an additional 1.6% of their body weight, whereas the control group gained .3%.

**2. Tapper et al. (2009)** randomly assigned 62 women who were attempting to lose weight to attend four 2-hour act workshops or a control condition. At 6 months, workshop participants engaged in significantly more physical activity than control participants. There was a trend for the ACT group to lose more weight (1.35 kg)(Tapper et al., 2009). The participants who said they applied the principles in the workshop, compared to those who said they never applied them, showed a significant decrease of 2.3 kg. Neither the Lillis or Tapper study incorporated specific-weight loss techniques. Both were designed to complement the weight loss activity the participant was already engaged in.

**3) Forman et al. (2009)** conducted a open trial (single group design) to examine the feasibility of ACT for weight loss. There were 29 overweight or obese women and 19 completed the trial. Intention to treat weight loss was 4.5% at posttreatment and 6.6% at 6 month followup. The psychological variables targeted by the intervention (e.g., emotional eating, urge related eating, motivation) showed improvement.

**4. Juarascio, et al.(2010).** Inside a larger RCT of ACT versus CT, subanalysis (N = 55) shows that ACT produced greater reductions in eating pathology, and greater increases in global functioning.

**5. Daubenmier et al. (2011)** examined the benefit of a mindfulness-based stress reduction intervention on metabolic syndrome and stress-related eating (Daubenmier et al., 2011). 47 overweight/obese participants were assigned to a 4-month intervention or waitlist group. Treatment participants improved in mindfulness and anxiety and reduced external-based eating. The obese subgroup showed significant reductions in cortisol awakening response (CAR) and maintained body weight in the treatment condition, while the obese control participants had stable CAR and gained weight. Improvements in mindfulness, chronic stress, and CAR were associated with reductions in abdominal fat. *Butryn, et al. (2011)* conducted an RCT (N = 54) comparing 4 hrs of education vs ACT for promoting physical activity. ACT participants exercised more on objective measure.

**6. Butryn, et al. (2011)** conducted an RCT (N = 54) comparing 4 hrs of education vs ACT for promoting physical activity. ACT participants exercised more on objective measure.

**7. Weineland et al (2012)** examined the role of ACT in preventing weight regain amongst bariatric surgery patients. The trial was an RCT (n=39) with an ACT/internet condition (two face to face + internet) and a treatment as usual condition. Participants in the ACT condition significantly improved on eating disordered behaviours (e.g., reduced emotional eating), body dissatisfaction, and quality of life. This paper provides a nice model of a 6 week internet-based ACT program

**8. Neimeier et al (2012)** examined the effect of an Acceptance-Based Behavioural intervention on weight loss amongst those who have difficulties with internal disinhibition (eating in response to emotions and thoughts) (Neimeier, Leahey, Reed, Brown, & Wing, 2012). 21 overweight and obese adults started the trial, with 86% completing the six-month program and a three-month follow-up. Participants lost an average of 12 kg after six months of treatment and 12.1 kg at 3-month follow up, thus exceeding the weight lost typical seen in behavioural treatment programs (8kg).

**9. Goodwin, et al. (2012)** conducted a Pilot study examining the initial effectiveness of a brief Acceptance-Based Behaviour therapy for modifying diet and physical activity among cardiac patients. Approximately 90% of cardiac events are attributable to a small number of modifiable behavioural risk factors that, if changed, can greatly decrease morbidity and mortality. However, few at-risk individuals make recommended behavioural changes, including those who receive formal interventions designed to facilitate healthy behaviour. Given evidence for the potential of specific psychological factors inherent in acceptance-based behaviour therapy (ABBT; that is, intolerance of discomfort, mindfulness, and values clarity) to impact health behaviour change, the authors evaluated the feasibility and initial effectiveness of an ABBT pilot program designed to increase adherence to behavioural recommendations among cardiac patients. Participants (N = 16) were enrolled in four, 90-min group sessions focused on developing mindfulness and distress tolerance skills, and strengthening commitment to health-related behaviour change. Participants reported high treatment satisfaction and comprehension and made positive changes in diet and physical activity. This was the first evaluation of an ABBT program aimed at increasing heart-healthy behaviours among cardiac patients

**10. Pearson, et al. (2012)** conducted A pilot study of Acceptance and Commitment Therapy (ACT) as a workshop intervention for body dissatisfaction and disordered eating attitudes. RCT (N = 73) showed that ACT helps with body dissatisfaction and disordered eating attitudes.

**11) Forman et al.(2013)** conducted an RCT with 48 overweight women. ACT-based treatment versus standard cognitive reappraisal/distraction intervention (drawn from Brownell's LEASRN protocol) to deal with food urges. Lower cravings and consumption with acceptance especially for those with greater susceptibility to the presence of food and a tendency to engage in emotional eating.

**12. Juarascio et al. (2013)** conducted an RCT (N=140) of ACT groups vs. in patient TAU for eating disorders. Trend toward greater reductions in eating disorders in ACT and less rehospitalization at 6 mo.

**13) Rafiee et al (2014)** examined the effect of Acceptance and Commitment Therapy on reducing anxiety symptoms and body image dissatisfaction in obese women. Journal of Social Issues & Humanities, 2 (1), 187-190. Small RCT (N = 30) of ACT versus no treatment. ACT reduced anxiety and body dissatisfaction in obese women.

**14) Forman et al (in press)** randomly assigned 128 overweight participants to a fourty week Acceptance-based behavioural treatment (ABT) and a standard behavioural treatment (SBT). Both groups produces significant weightloss and, when administered by experts, weight loss was significantly higher for ABT than SBT at posttreatment (13.17% versus 7.54%) and 6 month follow-up ( 10.98% and 4.83%). Moreover, 64% of those receiving ABT from experts (vs. 46% for SBT) maintained at least a 10% weight loss by follow-up. Moderation analyses revealed a powerful advantage, at follow-up, of ABT over SBT in those potentially more susceptible to

eating cues. For participants with greater baseline depression symptomology, weight loss at follow-up was 11.18% in ABT versus 4.63% in SBT; other comparisons were 10.51% versus 6.00% (emotional eating), 8.29% versus 6.35% (disinhibition), and 9.70% versus 4.46% (responsivity to food cues). Mediation analyses produced partial support for theorized food-related psychological acceptance as a mechanism of action. The authors argued that results offer strong support for the incorporation of acceptance-based skills into behavioral weight loss treatments, particularly among those with greater levels of depression, responsivity to the food environment, disinhibition, and emotional eating, and especially when interventions are provided by weight-control experts.

**15) Katterman et al (in press)** conducted a RCT (N= 58) of ACT and Behavioral methods (8 group sessions) vs assessment only in preventing weight gain in female college students with a BMI 23-32 kg/m<sup>2</sup>. ACT group lost 2.24 kg (−0.74 kg/m<sup>2</sup>) over one year; control group gained 1.07 kg and 0.34 kg/m<sup>2</sup> over the year

## **ACT evidence Part II: The Components of ACT work as expected**

*1. Forman et al. (2007)* utilized an analog paradigm to investigate the effectiveness of two strategies for coping with food cravings, which was theorized to be critical to the maintenance of weight loss. Ninety-eight undergraduate students were given transparent boxes of chocolate Hershey's Kisses and instructed to keep the chocolates with them, but not to eat them, for 48 h. Before receiving the Kisses, participants were randomized to receive either (a) no intervention, (b) instruction in control-based coping strategies such as distraction and cognitive restructuring, or (c) instruction in acceptance-based strategies such as experiential acceptance and defusion techniques. Measures included the Power of Food Scale (PFS; a measure of psychological sensitivity to the food environment), self-report ratings of chocolate cravings and surreptitiously recorded chocolate consumption. Results suggested that the effect of the intervention depended on baseline PFS levels, such that acceptance-based strategies were associated with better outcomes (cravings, consumption) among those reporting the highest susceptibility to the presence of food, but greater cravings among those who scored lowest on the PFS. It was observed that craving self-report measures predicted chocolate consumption, and baseline PFS levels predicted both cravings and consumption. Results are discussed in terms of the implications for weight loss maintenance strategies.

**2. Hong et al. (2012)** found evidence that mindfulness can increase liking of food. Perhaps mindful eating can be directed towards the eating of healthy food.

Abstract: They examined the positive role of mindful raisin-eating in participants' expectation of liking of raisins, other foods, and nonfood stimuli was tested across two experiments. The present study examined the relation between mindful raisin-eating and the affective evaluation of food and nonfood items (i.e., the degree to which individuals expect to or think they will like a food or nonfood item). In Experiment 1, college students were randomly assigned to complete a mindful raisin-eating task or complete a nonmindful raisin-eating control task and then reported on how much they thought they would like raisins and other foods. In Experiment 2, a third, no-task condition was included to categorize foods and non-foods into initially disliked, neutral, and liked categories. Results indicate that mindful raisin-eating produced higher ratings of expected liking of foods in general (Experiments 1 and 2) compared to nonmindful raisin-eating and that the effect was strongest for initially disliked foods, moderate for initially neutral foods, and smallest for initially liked foods (Experiment 2). Furthermore, the results of Experiment 2 suggest that mindfully eating also produced higher expected liking of non-food stimuli (pets and hobbies) compared to nonmindful raisin-eating. Implications for the use of mindfulness in enhancing daily life experiences and addressing food neophobia and picky eating are discussed.

**3. Hooper et al (2012)** found some evidence that defusion can reduce ones tendency to eat in the presence of food cravings. Abstract: Handling food cravings seems to play a major role in weight management. Many try to simply avoid cravings. However, avoidance based techniques like thought suppression can make attempts to deal with cravings more difficult. Recent research suggests that acceptance based techniques, such as defusion, may be a plausible alternative. The current study aimed to compare these two techniques. Participants were instructed in either a thought suppression or defusion technique at the beginning of a week-long period of attempted chocolate abstinence. A control group was given no instruction. It was predicted that the participants given the defusion intervention would eat less chocolate during six days and during a final taste test. It was found that participants in the defusion group ate significantly less chocolate during the taste test than other groups. However, no difference was found in the amount of chocolate eaten throughout the duration of the experiment. The results are discussed in terms of the possible utility of acceptance based techniques in promoting weight management.

**4. May et al. (2010)** showed that mindfulness-based body scanning reduces the proportion of thoughts about food (but so did thought suppression). However, other evidence finds that thought suppression is problematic in the long term, and in other contexts (Wenzlaff & Wegner, 2000), so it would seem that the body scanning would be preferable. Abstract: Intrusive thoughts about food may play a role in unhealthy eating behaviours. Food-related thoughts that capture attention can lead to craving and further intrusive thoughts. We tested whether diverting attention to mental images or bodily sensations would reduce the incidence of intrusive thoughts about snack foods. In two experiments, participants reported their thoughts in response to probes during three 10min periods. In the Baseline and Post-task period, participants were asked to let their mind wander. In the middle, Experimental, period, participants followed mind wandering (Control), thought diversion, or Thought Suppression instructions. Self-directed or Guided Imagery, Mindfulness-based Body Scanning, and Thought Suppression all reduced the proportion of thoughts about food, compared to Baseline. Following Body Scanning and Thought Suppression, food thoughts returned to Baseline frequencies Post-task, rather than rebounding. There were no effects of the interventions upon craving, although overall, craving and thought frequency were correlated. Thought control tasks may help people to ignore thoughts about food and thereby reduce their temptation to snack.

**5. Logel et al (2012)** found that women who completed a values affirmation weight less, had lower BMI and had smaller waistlines than women who had not completed a values affirmation after a two month interval.

### **ACT Evidence Part III: ACT is Beneficial for many Health-Related Conditions**

1) **Dahl, et al.** conducted a small (N = 19) RCT showing that a 4 hour ACT intervention reduced sick day usage by 91% over the next six months compared to treatment as usual in a group of chronic pain patients at risk for going on to permanent disability (Dahl, Wilson, & Nilsson, 2004). .

2) **Gifford, et al.** conducted an RCT (N = 76) comparing ACT to nicotine replacement therapy (NRT) as a method of smoking cessation(Gifford et al., 2004). Quit rates were similar at post but at a one-year follow-up the two groups differed significantly. The ACT group had maintained their gains (35% quit rates) while the NRT quit rates had fallen (<10%). Mediation analyses shows that ACT works through acceptance and response flexibility.

3) **Gregg, et al.** conducted an RCT (N = 81) showing that ACT + patient education is significantly better than patient education alone in producing good self-management and better blood glucose levels in lower SES patients with Type II diabetes (Gregg, Callaghan, Hayes, & Glenn-Lawson, 2007). Effects at follow up are mediated by changes in self-management and greater psychological flexibility with regard to diabetes related thoughts and feelings.

4) **Vowles et al.** conducted a well controlled RCT (N = 74) in which patients with chronic low back pain are assigned to very brief acceptance, pain control, or practice conditions and given physical tasks to perform(Vowles et al., 2007). The acceptance group improved the most.

5) **Wicksell et al.** conducted a small RCT (N = 21) comparing ACT to TAU with whiplash patients (Wicksell, Ahlqvist, Bring, Melin, & Olsson, 2008). They found significant differences in pain disability, life satisfaction, fear of movements,

depression, and psychological flexibility (pain related fusion and acceptance as measured by Wicksell's Psychological Inflexibility in Pain Scale or PIPS). Improvements in the treatment group were maintained at 7-months follow-up. Mediation results reported in: Wicksell, R. K., Olsson, G. L., & Hayes, S. C. (in press). Processes of change in ACT-based behaviour therapy: Psychological flexibility as a mediator of improvement in patients with chronic pain following whiplash injuries. *European Journal of Pain*. Found that follow up changes in life satisfaction and to a lesser degree pain disability were mediated by post PIPS scores.

**6) Wicksell et al** conducted a Small RCT (n = 32) comparing a brief ACT intervention (10 individual sessions) to multidisciplinary treatment plus amitriptyline (MDT) for chronic paediatric pain (Wicksell, Melin, Lekander, & Olsson, 2009). Treatment continued in the MDT condition during the 3.5 and 6.5 month follow-up, which complicated comparisons at follow-up assessments due to more sessions for MDT, but results showed substantial and sustained improvements for the ACT group. When follow-up assessments were included, ACT performed significantly better than MDT on perceived functional ability in relation to pain, pain intensity and pain related discomfort (intent-to-treat analyses). At post-treatment, before the dose differences happened, significant differences in favour of the ACT condition were also seen in fear of re/injury or kinesiophobia, pain interference and in quality of life.

**7) Johnston, et al** conducted a very small RCT (N = 14) showing that ACT bibliotherapy (Dahl & Lundgren, 2006 ) helps with chronic pain (Johnston, Foster, Shennan, Starkey, & Johnson, 2010).

**8) Wetherell et al.** conducted an RCT (N=114) comparing ACT and traditional CBT for chronic pain (Wetherell JL et al., 2011). Good outcomes over 6 months. No differences in outcomes. Treatment completers were more satisfied with ACT.

**9) Thorsell et al** conducted an RCT (N = 90) of ACT versus applied relaxation using a combination of an initial face to face session, a 7 week self-help manual with weekly therapist telephone support, and a concluding face-to-face session (Thorsell et al., 2011). 6 and 12 mo follow up. Better outcomes for ACT in level of function, pain intensity, acceptance, and marginal life satisfaction. Depression and anxiety improved but no diff between conditions.

**10) Rost, et al.** conducted an RCT (N = 31; 47 originally but the rest died or entered hospice care) comparing ACT and traditional CBT approaches to women coping with end-stage gynaecological cancer(Rost, Wilson, Buchanan, Hildebrandt, & Mutch, 2012). Nice outcomes; dominantly in favour of ACT.

**11) Jensen et al** conducted the first RCT to do pre - post fMRI assessments in the psychosocial treatment of chronic pain. (N = 43; all female; all w/ Fibromyalgia) (Jensen, 2012). This is an ACT study with a wait-list control. 12 weekly group sessions and 3 mo f-up. Better outcomes on depression, anxiety, and self-reported global change (activity limitation, symptoms, emotions, quality of life).

**12) Mo'tamedi, et al.** conducted A small RCT (n=30) with a medical treatment as usual control condition(Mo'tamedi, Rezaieamaram, & Tavallaie, 2012). Chronic tension type of headache (63%) and chronic migraine without aura (37%) were the headache types reported by the participants. Data analyses indicated the significant reduction in disability ( $F[1,29] = 33.72, P < .0001$ ) and affective distress ( $F[1,29] = 28.27, P < .0001$ ), but not in reported sensory aspect of pain ( $F[1,29] = .81, P = .574$ ), in the treatment group in comparison with the control group. Consistent with other ACT pain studies.

**13) McCracken et al.**(2013) conducted a Medium RCT (N = 73) of ACT vs TAU for long standing pain (median = 10 years) in primary care Rx. ). A 3-month f-

up, ACT demonstrated lower disability, less depression, and significantly higher pain acceptance. Data on patient acceptability for this trial is published here: McCracken, L. M., Sato, A., Wainwright, D., House, W., & Taylor G. J. (in press). A feasibility study of brief group-based acceptance and commitment therapy for chronic pain in general practice: recruitment, attendance, and patient views. *Primary Health Care Research and Development*. PMID: 23866920

**14) Bricker, et al (in press)** conducted a medium sized RCT (N = 121) comparing uninsured South Carolina State Quitline callers who were adult smokers (at least 10 cigarettes/day) wanting to quit within the next 30 days. Randomized to 5 sessions of either ACT or CBT telephone counseling. Intent-to-treat 30-day point prevalence abstinence at six months post randomization: 31% in ACT vs. 22% in CBT (OR=1.5, 95% CI=0.7-3.4). Among participants depressed at baseline (n = 47), the quit rates were 33% in ACT vs. 13% in CBT (OR=1.2, 95% CI=1.0-1.6). Among participants scoring low on acceptance of cravings at baseline (n = 57), the quit rates were 37% in ACT vs. 10% in CBT (OR=5.3, 95% CI=1.3-22.0).

## **ACT evidence part 4. Miscellaneous studies linking ACT to health-related outcomes**

- 1) **Berman, M. I., Boutelle, K. N., & Crow, S. J. (2009).** A case series investigating acceptance and commitment therapy as a treatment for previously treated, unremitted patients with anorexia nervosa.\* *European Eating Disorders Review*, 17\*(6), 426-434.
- 2) **Heffner, M., Sperry, J., Eifert, G. H., & Detweiler, M. (2002).** Acceptance and commitment therapy in the treatment of an adolescent female with anorexia nervosa: A case example.\* *Cognitive and Behavioral Practice*, 9\*(3), 232-236.
- 3) **Hill, M. L., Masuda, A., Melcher, H., Morgan, J. R., & Twohig, M. P. (2014).** Acceptance and commitment therapy for women diagnosed with binge eating disorder: A case-series study.\* *Cognitive and Behavioral Practice*,
- 4) **Merwin, R. M., Timko, C. A., Moskovich, A. A., Ingle, K. K., Bulik, C. M., & Zucker, N. L. (2011).** Psychological inflexibility and symptom expression in anorexia nervosa.\* *Eating Disorders: The Journal of Treatment & Prevention*, 19\*(1), 62-82.



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