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Behavior health digital interventions: New opportunities and developments

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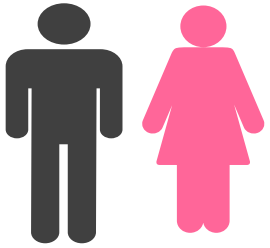
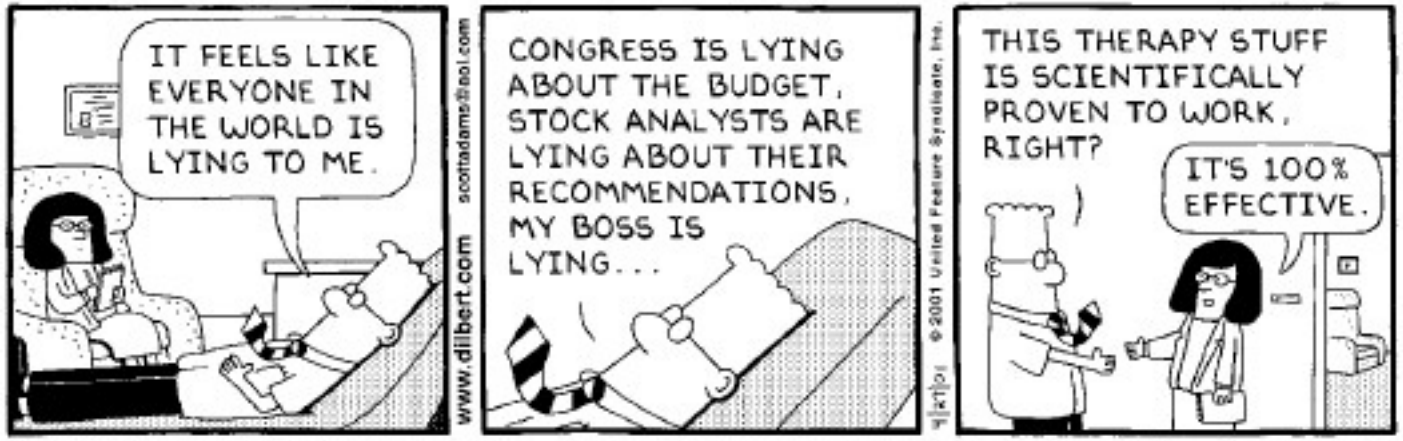
Why have interventions to date not successfully delivered alleviation of suffering?

Problems with face-to-face interventions

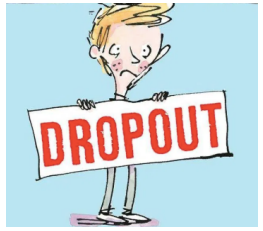
50%



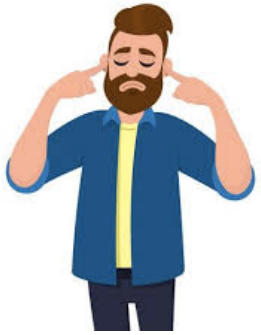
10%



15-25%



5-22%



Altamura, Buoli, Albano & Dell' Osso, 2010; APA, 2013; Abramowitz, Taylor & McKay, 2009; Olatunji, Davis, Powers & Smits, 2013; Twohig et al., 2010)

Premature termination/Treatment Drop-out

- Premature therapy termination or treatment drop-out is a significant problem
  - Limits effectiveness of any therapeutic approach
  - Results in detrimental outcomes in patients

Barrett et al., 2008; Wierzbicki & Pekarik, 1993

- No single agreed upon definition
  - Termination prior to problem recovery

Hatchett & Park, 2003; Swift et al., 2009

  - Termination without the agreement of the therapist and before the scheduled end point

Stone & Rutan, 1984

  - In research: missing a number of pre-arranged sessions irrespective of recovery status
- Literature focuses on rates and associated variables
  - Reasons for dropout?

Karekla, Konstantinou, Iouannou, Gloster & Karekla (2019). *Clinical Psychology in Europe*.

Premature termination/Treatment Drop-out

Overall weighted mean dropout rate=17.95%

ACT=17.35% vs. Comparisons=18.62%

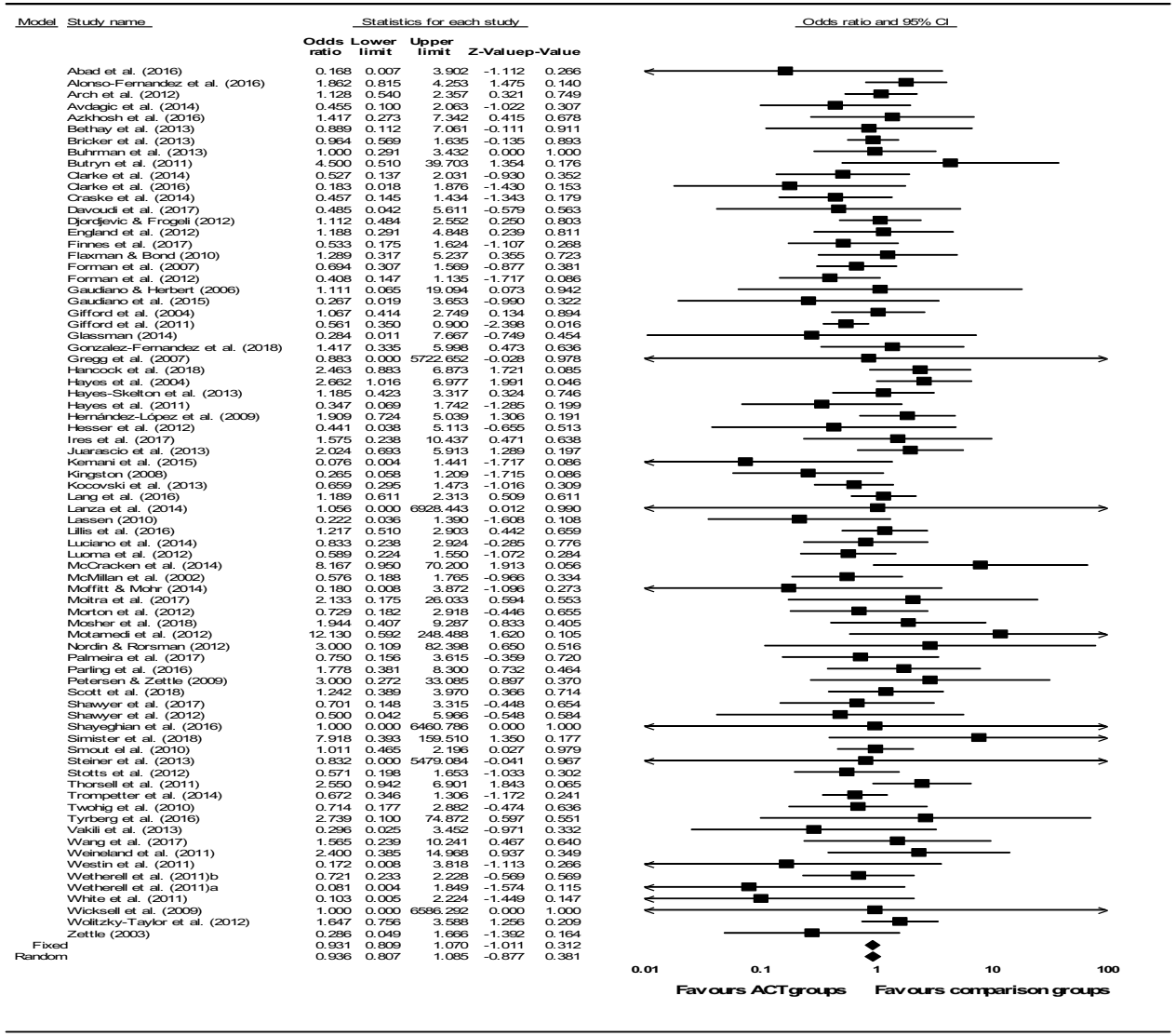
Reasons for Drop-out

ACT

lost contact, personal & transportation difficulties

Comparisons

lost contact, therapy factors, time demands



Karekla, Konstantinou, Ioannou, Gloster & Karekla (2019). *Clinical Psychology in Europe*.

Why individuals dropout of treatment?

Mobility Difficulties

- Pain was too severe to sit through sessions
- Lived in remote & isolated areas
- Transportation difficulties
- Difficulties completing the questionnaires
- Work Schedule

Health Issues

- Cancer
- Stroke
- Headaches/migraines
- Other health issues arising
- Higher severity and longer time since diagnosis

Poor therapy adjustment

- Not fitting in well with the group
- Preference for individual therapy or different therapist
- Need for a slower pace

Kasinopoulos, Karekla, Vasiliou, Siamata, & Karademas (2015)

Digitized Mode of Intervention

Quest for the Perfect Therapist

Just in Time Interventions

Digital mental health

- Many terms and different tools used
  - E-technology
  - Computer assisted interventions
  - Mobile technology
  - Internet-based interventions
  - On-line programs & communities
  - Smart-phone technologies
  - **Digital interventions**

The appeal of digital interventions

- Low cost & potentially cost-effective
- Lower or no delivery of treatment bias
- Provide opportunities for easy program evaluation, and data collection
- Accessibility
  - Support is available 24 hours a day, 7 days a week
  - Remove geographical constrains
  - Reach populations traditionally not interested in therapy
  - Convenience
  - Reduces burden on health professionals to deliver interventions to wider audiences
- Anonymity of the internet
- Various modalities can address developmental, psychosocial, behavioural & biological needs
- Utilization of computers has been consistently linked with an increase in participant interactivity (Newton et al., 2006)

Perfect therapists? Effectiveness of Digital Interventions

- In general: (0.53) Medium effect size: Similar to face-to-face interventions Barak et al., 2008; Carlbring et al, 2017
- Especially effective for **Anxiety disorders** (.80 – .83), **smoking cessation** (.62), **alcohol** (.48), **eating disorders** (.45) **depression** (.32-.90), **losing weight** (.17) Barak et al., 2008; Carlbring et al, 2017
- **Chronic pain** (small-medium effect sizes)

Clinicians' response

- Very limited uptake, maybe because:
  - Perceived lack of knowledge & skills
    - Depending on modality of the digital intervention may require very technical knowledge and skills &
    - May not be very flexible or amenable to changes
  - Lack of evidence base?
    - Dissemination issues
  - Concerns about security risk or other client risks (e.g. self-harm)
    - Lack of accountability Mohr, Cuijpers, & Lehman, 2011)
  - Concerns about drop-out or low compliance
  - Technology moves too fast

Difficulties with using digital technologies

- What is of quality or empirically supported?
  - Largely unregulated
- How to decide on which program or app to try?
  - Lack of skills & experience to evaluate accuracy of information or quality
- How much technological support needed?
- High dropout rates:
  - 2X more compared to face-to-face interventions (Macea et al., 2010)

Also…

Why individuals dropout of digitized treatments?

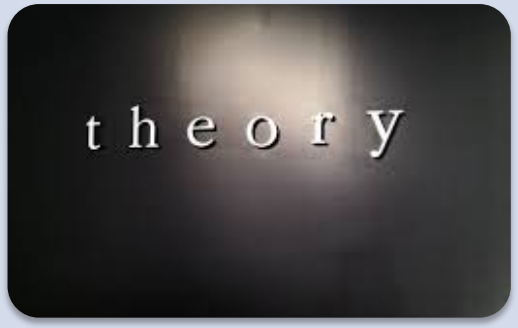
- Client socio-demographics
  - Poor health literacy, lower education level, being male, and condition severity
- In traditional RCTs: several levels of clinical filtering prior to treatment- indication of commitment level?

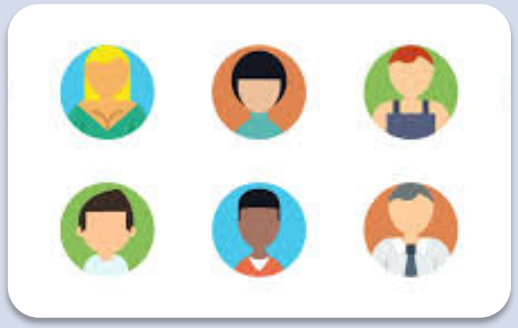
  (Eysenbach 2005)
- Developers' approach to technology

Karekla et al (2019). European Psychologist

How to engage users and increase adherence in digitalized interventions

4 Dimensional Recommendations





A-priory theoretical Planning

1) Utilize digital theory

2) Consist of theory driven evidence-based psychological intervention content

3) Take into account relevant ethical considerations

Human-Computer Interaction

1) Apply theory-driven and empirically supported technological characteristics

2) Include human or a sense of human contact

3) Frequent content update

User-Related Characteristics

1) Take into account known user characteristics that improve adherence

2) Assess computer knowledge and experience & provide assistance

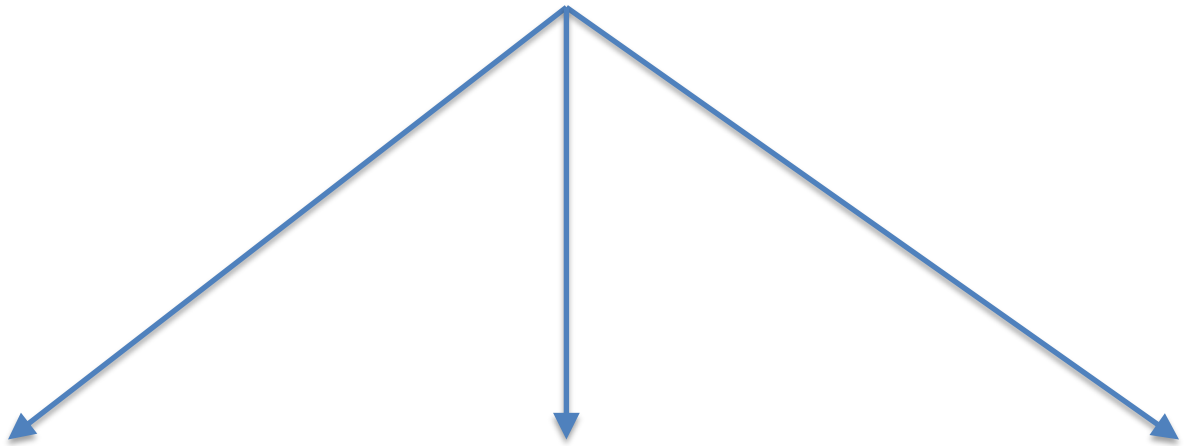
Active Assessment of usage

1) Simple and direct instructions

2) Utilize web-metrics to assess and monitor adherence of disengaged users

Karekla et al. (2019). *European Psychologist*

Examples from some of our studies

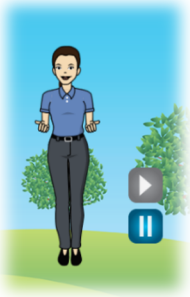


#FlexiQuit

acceptme

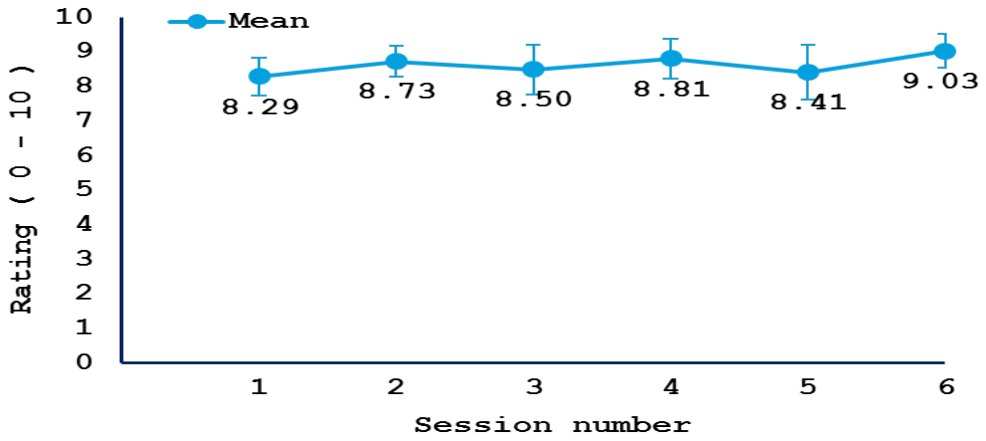
ALGEApp

AND THE OUTCOMES…



#FlexiQuit

Program session evaluation



Smoking cessation rates among adolescents and young adults:

Quit rate

0% to 11% - mean 3%

After intervention:

Mean cessation rate: 14%

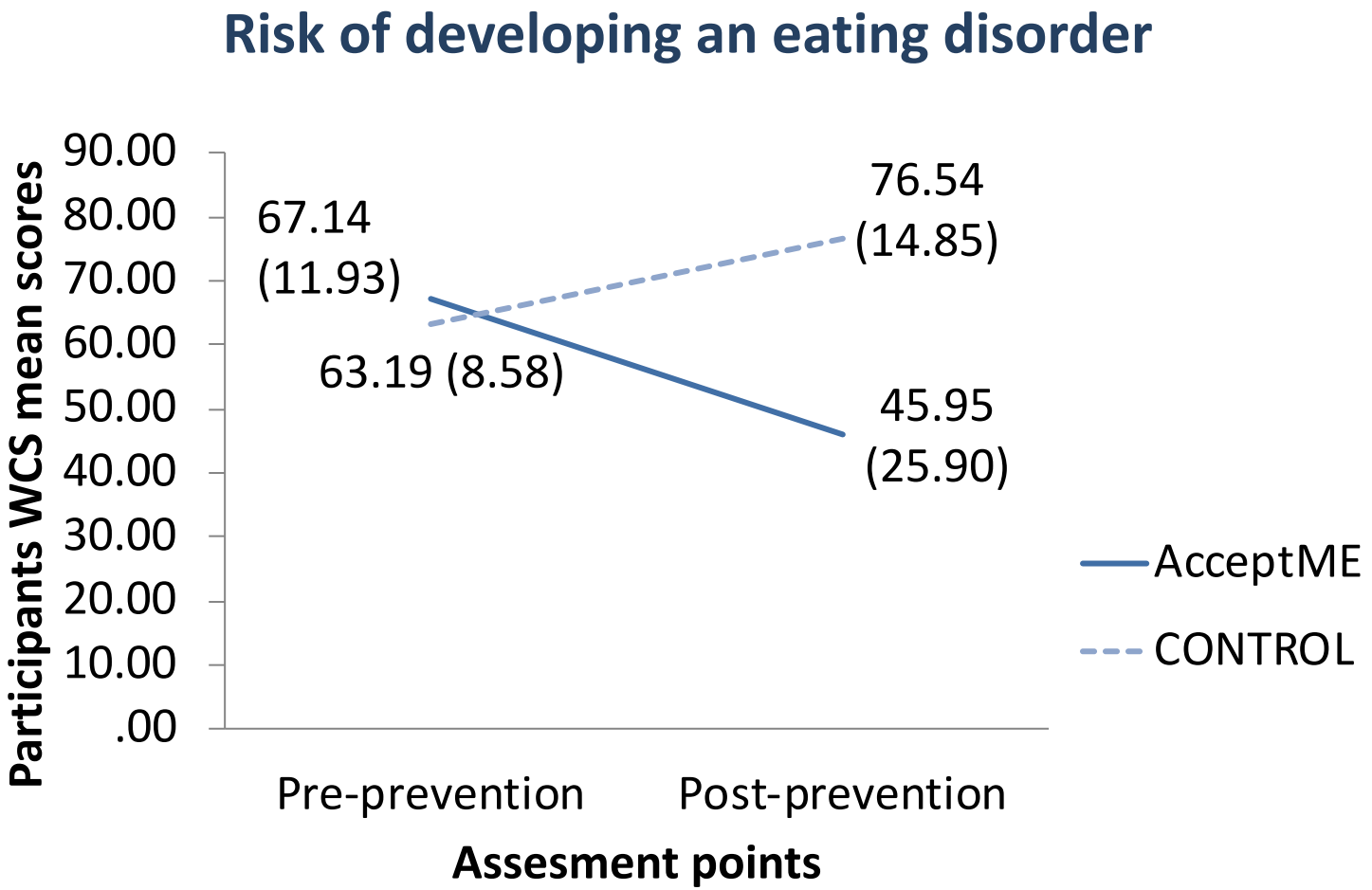
51.9%

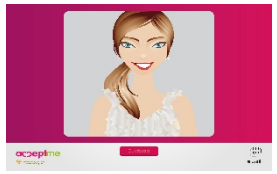
Vs. 14.3% in wait-list control

Savvides dissertation (2015). Evaluating an internet-based, avatar led, Acceptance and Commitment Therapy intervention for smoking cessation in youth; Karekla & Savvides (2019) Translational Behavioral Medicine. Karekla, Savvides & Gloster (2020). Annals of Behavioral Medicine.

#AcceptME

- N= 92 adolescent girls at high risk for developing an eating disorder (*Mage=15.27, SD =2.25)*
  - 58 in AcceptME & 34 wait-list control
- **Large effect sizes (*Cohen's d=.92*)**





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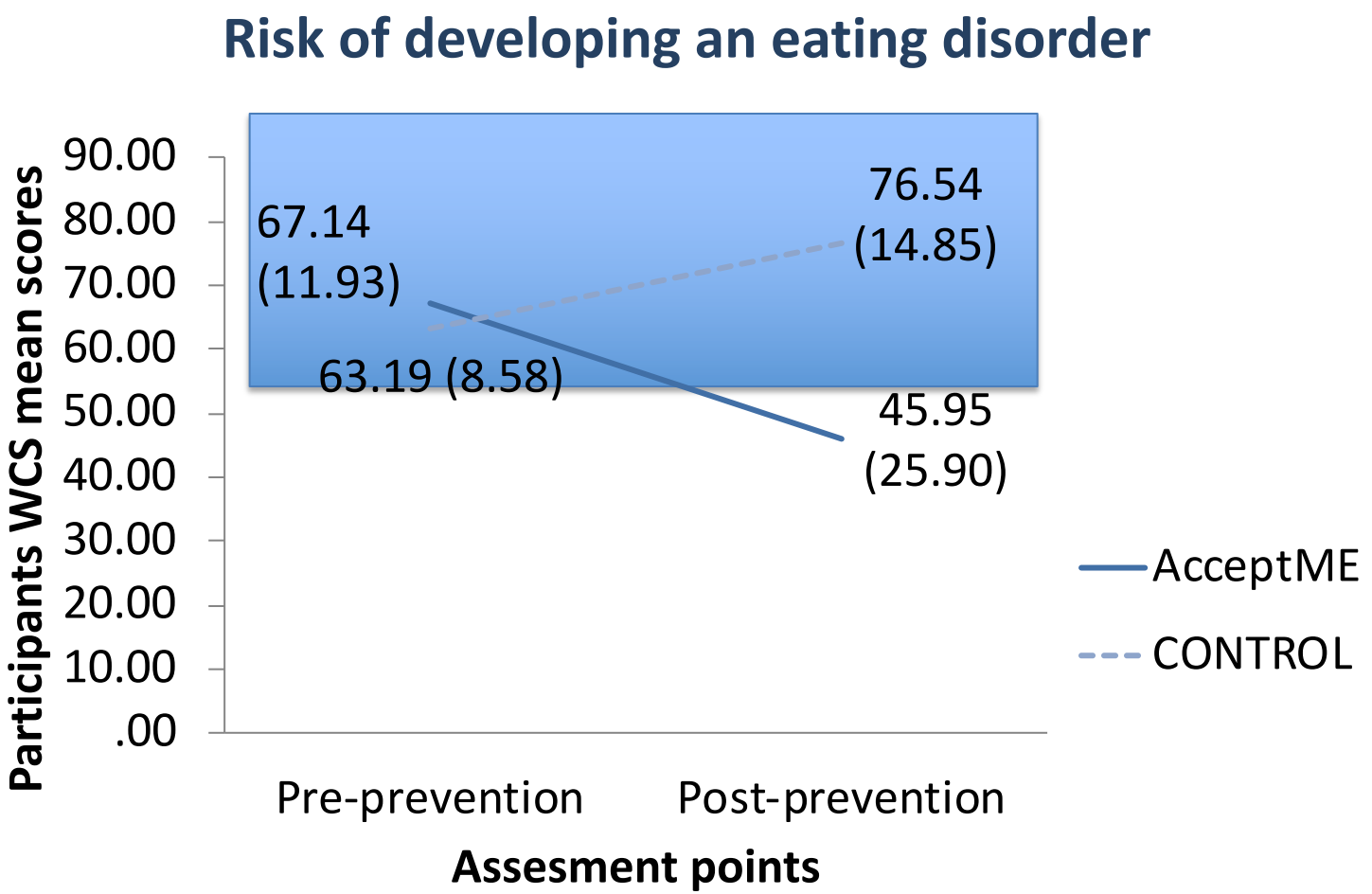


Nicolaou dissertation (2017). ACT to prevent eating disorders: Evaluation of the AcceptME digital gamified prevention program based on Acceptance and Commitment Therapy ; Karekla & Nicolaou, P. (submitted).

Metrics	Intervention users	
	Mean	SD
Total time spent (minutes)	230.11	194.19
*Average time spent per module (minutes)	40.67	12.15
No. of logins	4.16	0.60
No. of exercises downloaded	3.41	2.54
No. of exercises viewed	1.86	1.92
**No. of Correct MCQs (/18)	15.26	1.87

Client Satisfaction Questionnaire (CSQ-8)

89.2% → "Highly Satisfied from the intervention"

94.6% → "Helped to a good/great extend by this intervention"

97.3% → *"Would recommend this type of intervention to a friend"* and *"Would return back if I needed help in the future"*

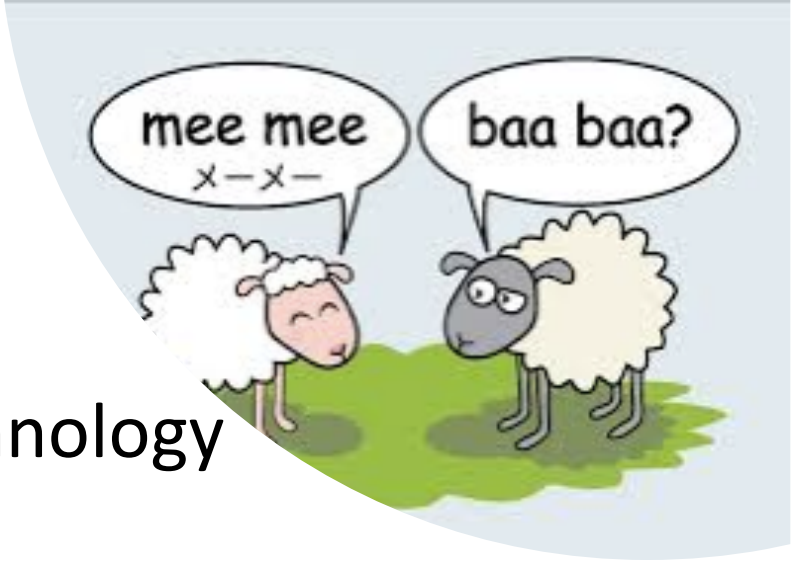
*"I urge you to **continue this program**, it is really **helpful**! It's a pity for people who suffer to **miss on such opportunities** out of **stigma** and **fear**! Thank you for this opportunity!"*

*"I managed to see life through **a different angle and I re-evaluated my values and goals**. Nowadays, **pain is present but I manage**!"*

*"I feel the pain but **actually being able to manage it without medication**, was beyond my expectations. Thanks!"*

Kasinopoulos (2019). AlgeaApp: ACT based digitalized program for the treatment of chronic pain.

Digital Intervention Challenges and Lessons Learned



- Communication between psychologists and technology specialists
- Fast pace changes in technologies
- Ability to effectively deliver services briefly and on all mobile formats/devises
- Competition with other digital media & sites
  - Current and future technological trends & advancements
  - Dissemination: Competition
- Dealing with drop-outs
- Anonymity and ethical concerns
- Verifying outcomes behaviorally

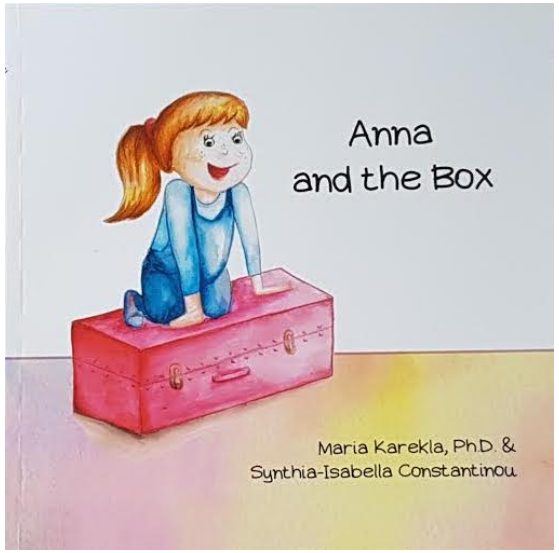
Have we developed the “perfect” therapist?

- Acceptable and feasible
- Effective (medium to high effect sizes)
- Engaging and may improve adherence and treatment dropout

- Still have ways to go…

Next steps

- Digitizing our ACT-based books and prevention programs for children



To order a copy of the book:
https://www.jccsmart.com/e-bill/invoices/2491/pay

Thanks

To all the internal and external collaborators friends/perfect therapists all over the world

To our funders and all our participants

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