



# Contingency Management with Patients Receiving Medication for Opioid Use Disorder: A Meta-Analysis

Dr. Hypatia Bolívar

University of Illinois at Springfield



# Disclosures

- No disclosures or conflicts of interest to declare.

# Acknowledgements

- Thank you to my co-authors and mentors:
  - Dr. Elias Klemperer
  - Dr. Sulamunn Coleman
  - Dr. Tyler Nighbor
  - Dr. Diann Gaalema
  - Dr. Stephen Higgins
  - Biostatisticians Michael DeSarno and Joan Skelly

## Background: “Twin Epidemics”

- Opioid epidemic remains a public health crisis: In 2018, 10.3 million (3.7%) in the U.S. aged 12 yrs+ reported past year opioid misuse
  - 9.9 M reporting misuse of Rx opioids and 0.8 M use of heroin (SAMHSA, 2019)
- “Twin Epidemics” emerging (Ellis et al., 2018): Reported rates of stimulant use in U.S. patients starting treatment with medication for OUD (MOUD) increased from 7.8% to 21.3% between 2012 - 2018 (Severtson et al., 2019)
- Will this surge **undermine** the considerable progress made in curtailing the opioid crisis through MOUD?

# Treating Opioid and Stimulant Abuse

- Medications for opioid use disorder (MOUD) have been key in combating this epidemic
- To date, **no pharmacological tx for stimulant abuse**
  - Thus, we must use evidence-based psychosocial interventions
  - Among these interventions, approaches involving contingency management (CM) are the most effective
    - De Crescenzo et al. (2018): 50 RCTs of psychosocial interventions for stimulant use disorder
    - Monetary-based CM only intervention that significantly reduced psychomotor stimulant use both during and at end of treatment

# Contingency Management

- Behavioral intervention: Incentives delivered contingent upon verifiable behavior change (Higgins et al., 2008)
  - Seminal work with cocaine abstinence (e.g., Higgins et al., 1994)
- Effective for a variety of drug and non-drug behavioral targets
- Previous work evaluating CM either has not focused on this population (e.g., Lussier et al., 2000; Davis et al., 2016) or is outdated or limited in scope (e.g., Ainscough et al., 2017, Griffith et al., 2000)

# Purpose of the Current Review and Meta-analysis

- Clinicians and policy-makers are faced with the public-health crisis of emerging psychomotor stimulant use and other challenges in people receiving MOUD
- This project provides a comprehensive review and synthesis of evidence of CM for patients receiving MOUD
  - Today: Psychomotor stimulants and polysubstance abuse

## Search Methods

- Systematic search: PubMed, Web of Science, and Cochrane Controlled Register of Trials (CENTRAL) databases
- Dates: All time prior to May 06, 2020
- Terms were “vouchers OR contingency management OR “financial incentives” [all fields]” AND (substance-related disorders [MeSH/subject])
- Examined references lists and previous reviews



# Inclusion Criteria

- A. Appears in a peer-reviewed journal
- B. Reports results from an original study
- C. Tests a monetary-based CM intervention
- D. Uses a prospective between- or within-participant experimental design
- E. Includes a no-incentive comparison condition
- F. Uses a research design allowing attribution of treatment effects to CM
- G. Reports findings where all participants received MOUD or a sub-analysis in which data were exclusively from participants who received MOUD
- H. Reports findings from at least 10 participants

# Data extraction

- At least 2 co-authors evaluated each title/abstract for full-text review
- At least 2 co-authors evaluated full-text articles for final inclusion
- Disagreements resolved by consensus
- Data extracted included:
  - Behavior targeted by CM
  - MOUD
  - Duration of CM
  - Max possible earnings
  - End-of-treatment and follow-up outcomes: Prioritized longest duration of abstinence

# Overall Results

- Databases identified 2,242 articles
  - Remove duplicates → 1,435 articles remained for title and abstract screening
  - 8 additional articles added from reference sections of relevant papers and reviews
- Of the 1443 reviewed at title/abstract level: We included and read the full text of 215
- 75 articles were included
  - 72 articles reported during-treatment or during-treatment plus follow-up results
  - 3 reported only follow-up data from articles included in the 72

# Abstinence from Psychomotor Stimulants

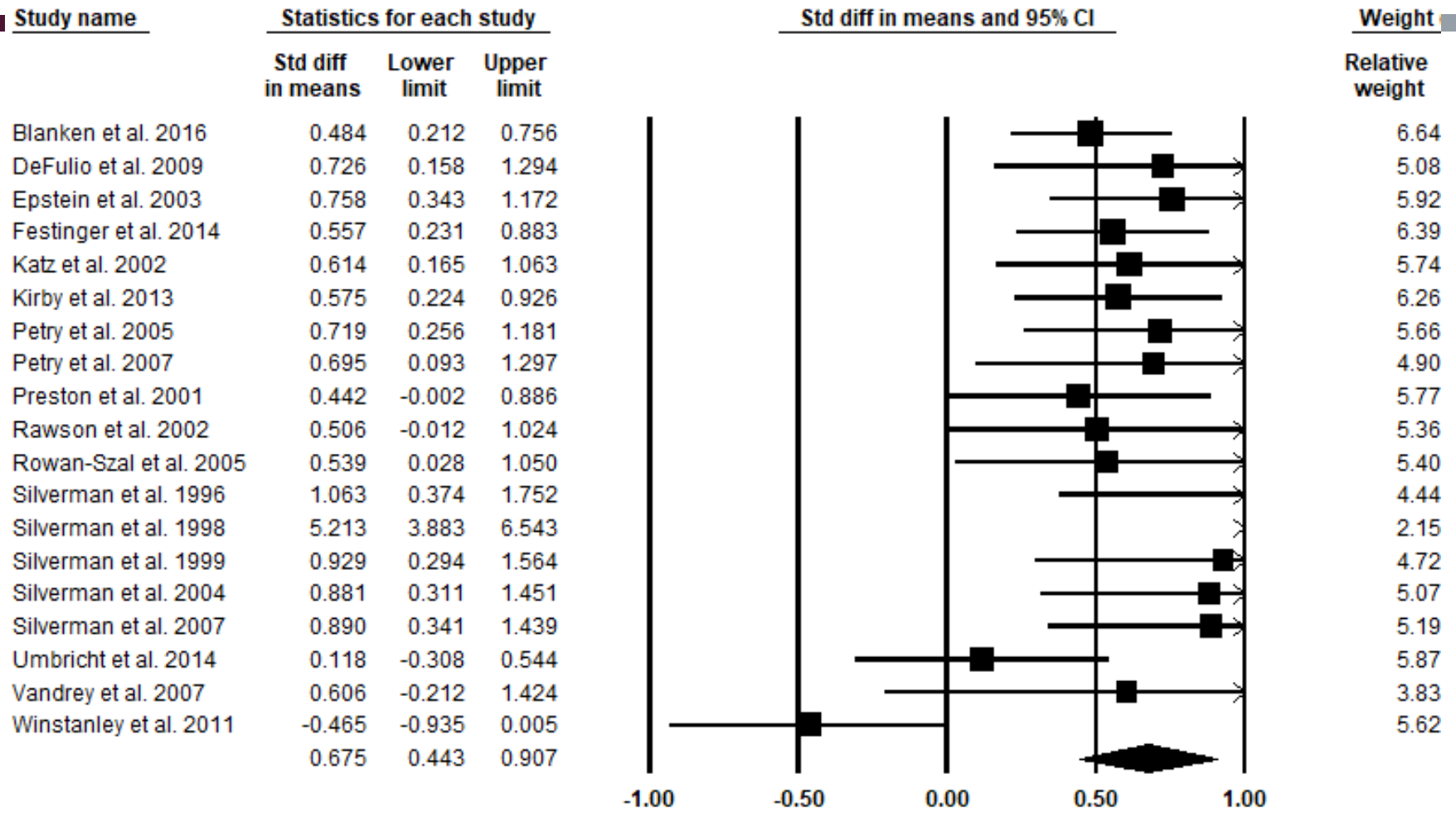
- 22 studies
  - 20 (90%) showed that CM resulted in significant increases in abstinence at the end of treatment
  - Methadone was the MOUD used in all but one study
  - Mean duration of CM was 17.3 weeks (SD = 13.9)
  - Mean maximum daily earnings was \$17.33 (SD = 15.51)

# Abstinence from Polysubstance Use

- 24 studies
  - 14 (58%) showed that CM resulted in significant increases in abstinence at the end of treatment
  - MOUD type varied: methadone was used in 13 (54%), buprenorphine in six (25%), naltrexone in two (8%), levacetylmethadol in one (4%), and methadone and buprenorphine in two (8%)
  - Mean duration of CM was 15.2 weeks (SD = 8.6)
  - Mean maximum daily earnings was \$17.84 (SD = 24.16)
  - Psychomotor stimulants were among the drugs targeted in all studies

Obtained ES from 19 studies

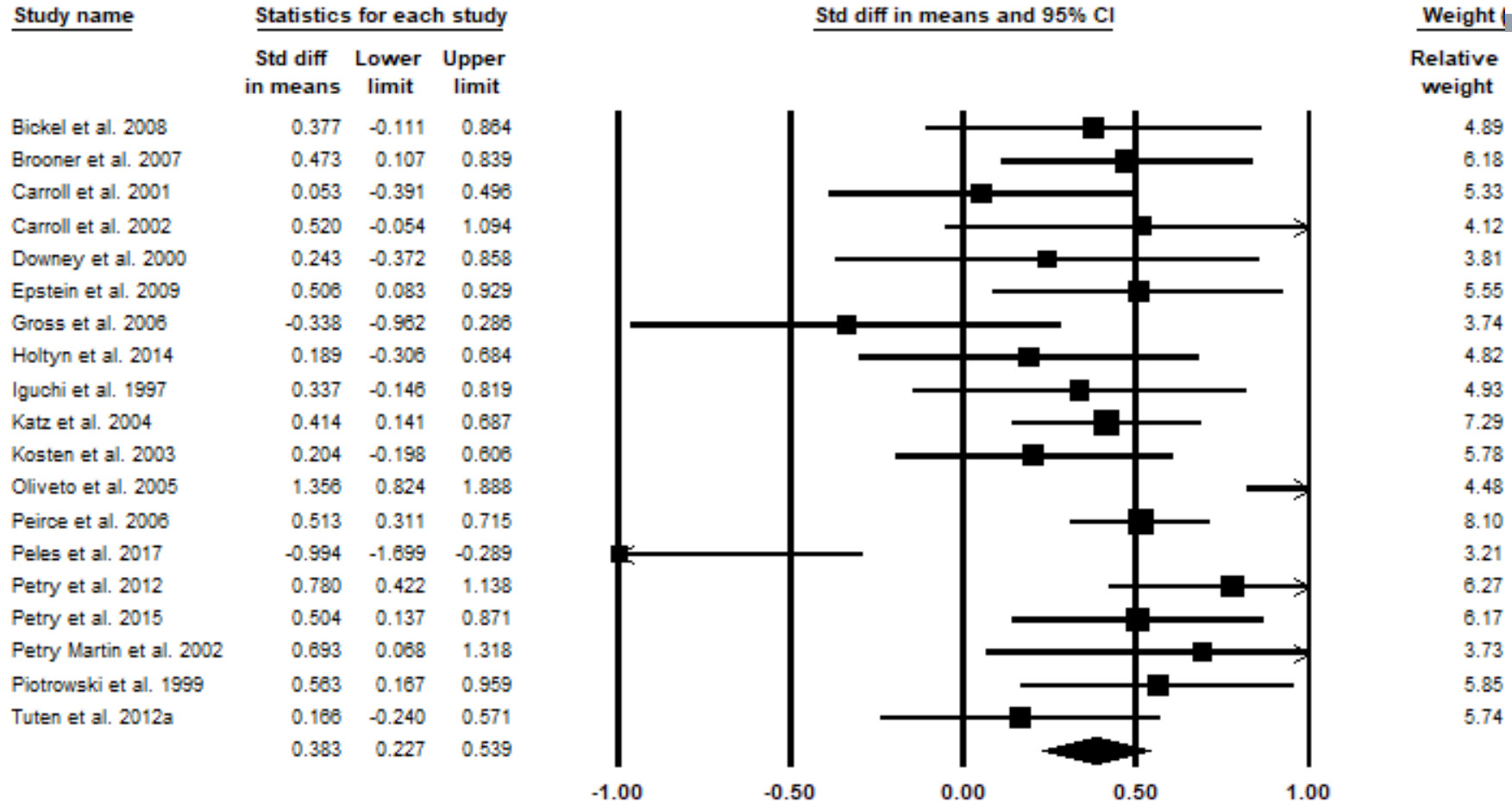
Overall Cohen's *d*: 0.68 (95% CI: 0.44-0.91)



## META-ANALYTIC RESULTS: ABSTINENCE FROM PSYCHOMOTOR STIMULANTS

Obtained ES from 19 studies

Overall Cohen's *d*: 0.38 (95% CI: 0.23-0.54)



## META-ANALYTIC RESULTS: ABSTINENCE FROM POLYSUBSTANCE USE

## Conclusion

- Examined past several decades of literature on use of CM to reduce substance use in people receiving MOUD
- Compelling evidence that CM is a **highly reliable intervention** for reducing psychomotor stimulant and polysubstance abuse in this population
  - Moderate to large ES for psychomotor abstinence
  - ES diminishes when targeting multiple substances (range: 2-7) but still efficacious



## Discussion

- Urgent problem of “Twin Epidemics” demands the use of high quality, evidence-based interventions → CM fits the bill.
- Challenges that remain:
  - Sustained effects: Long-term use may be needed (Silverman, 2004)
  - Dissemination: Finding funds to get CM into community settings is a challenge



# Thank you!

Contact: [hboli01s@uis.edu](mailto:hboli01s@uis.edu)

