# *The Long View of Meta-Analysis: Testing Technical, Relational, and Conditional Process Models in Brief Motivational Intervention*

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# Taking the Long View

# Overview

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- Background: Meta-path-analysis and the conditional process model
- Background: Toward a Theory of Motivational Interviewing
- The Meta-Analytic Study 1: Magill et al., 2014
- The Meta-Analytic Study 2: Just the take home

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- Long view 2: Relational Hypothesis
- Long view 3: A technical *a path* conditioned on relational factors
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- Conclusions and acknowledgements

# Background: Meta-analysis – what it is and what it isn't

- In 1977, Meta-analysis told us psychotherapy does work;
- In 1995, Meta-analysis topped the Evidential Hierarchy.
- But meta-analysis is a tool for research synthesis;
- Knowledge derived is about relationships across studies, not relationships within individuals.

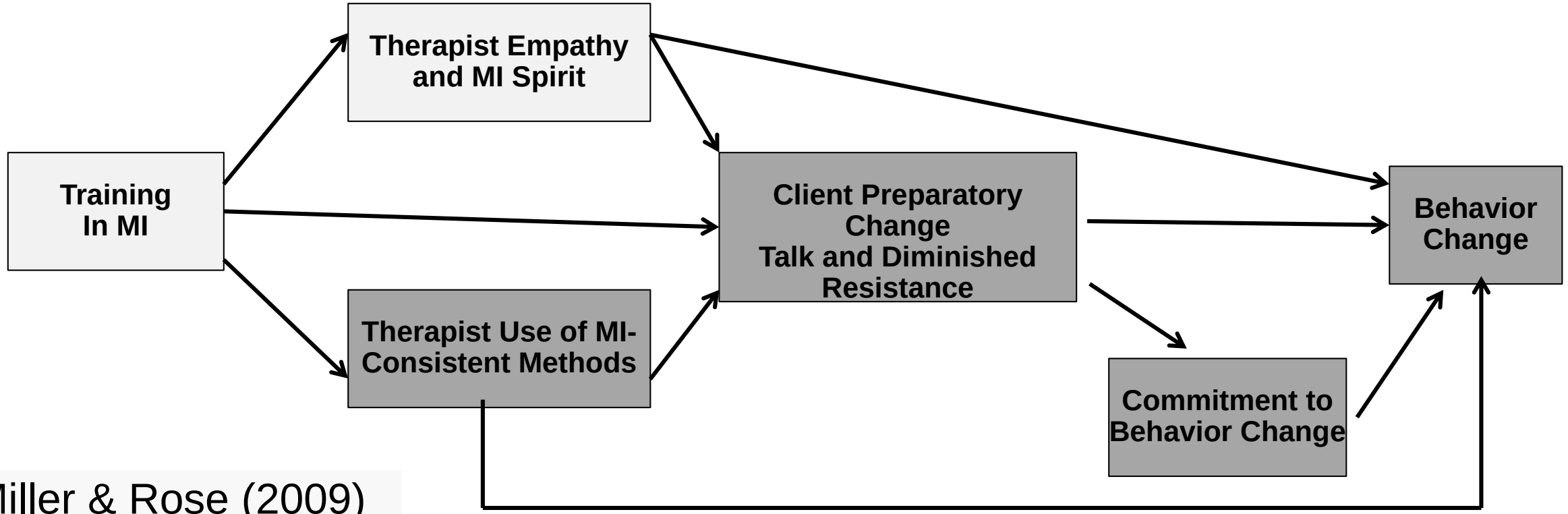
# Background: Meta-analysis – what it is and what it isn't

- 'Apples and Oranges' are bad and good;
- Tests for statistical heterogeneity tell us if the population effect size has been specified.
- Using a random effects model for the pop. effect size will give us flexibility;
- A random effects model assumes both known and unknown sources of variability.
- So, if heterogeneity of the random effects effect size is observed, informative moderators can be tested.

# Background: Meta-path-analysis and the conditional process model

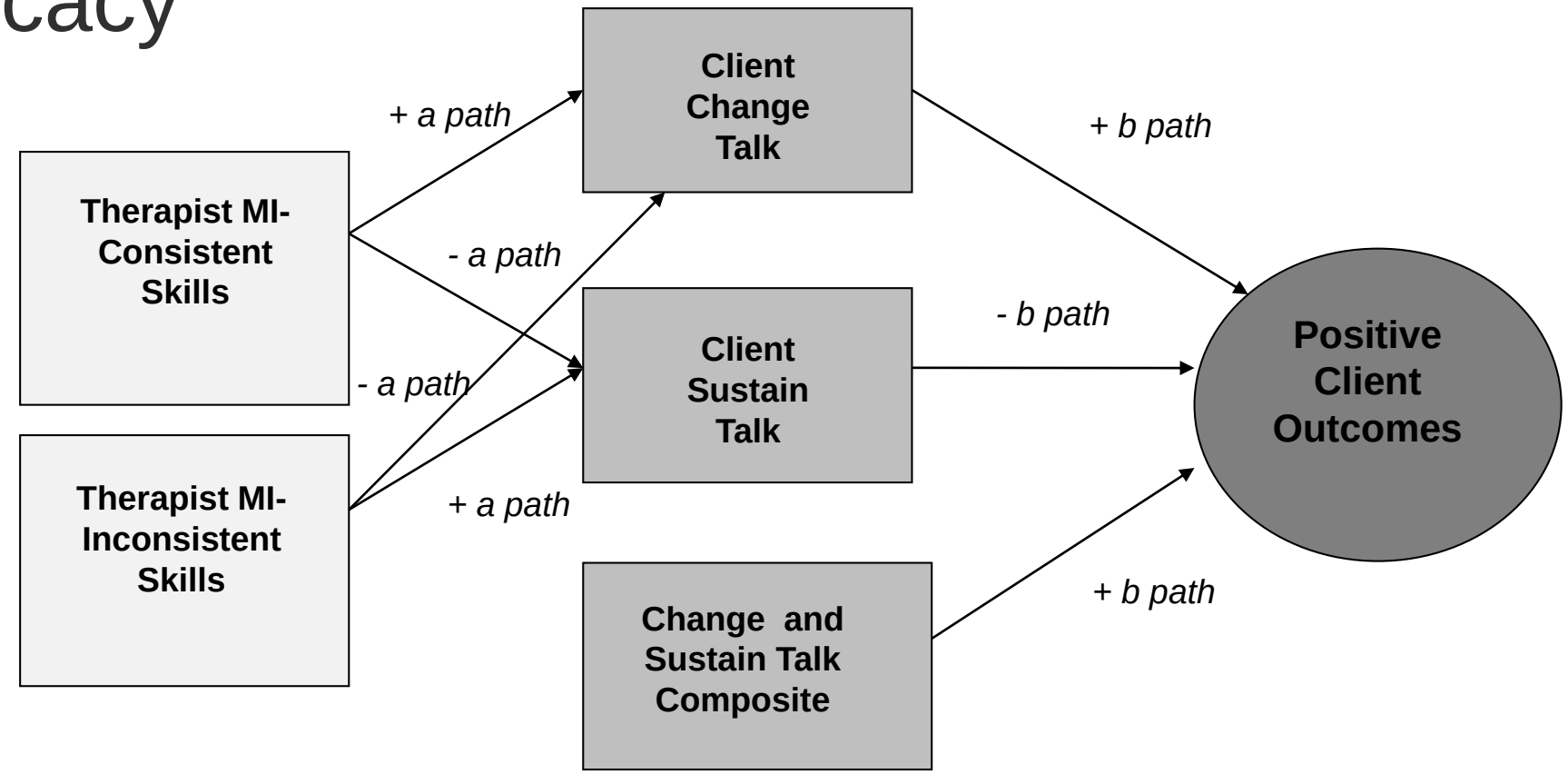
- In 1994 Eagly & Wood described the approach of aggregate path analysis.
- The method extends the traditional bivariate model of meta-analysis to multiple links in a causal chain.
- When a given path effect size is heterogeneous, moderators of effect variability can be tested.
- When this method is used in a meta-path-analysis, we are referring to a meta-conditional-path-model.

# Toward a Theory of Motivational Interviewing




Miller & Rose (2009)

# Testing the Theory of MI 1: The Technical Model of MI Efficacy

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***Notes.*** *A* 7 Correlational paths examined. B Measures were within-session frequencies of observed therapist and client behaviors. C A sample of studies examined a composite measure of change and sustain talk.

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# The Technical Hypothesis of Motivational Interviewing: A Meta-Analysis of MI's Key Causal Model

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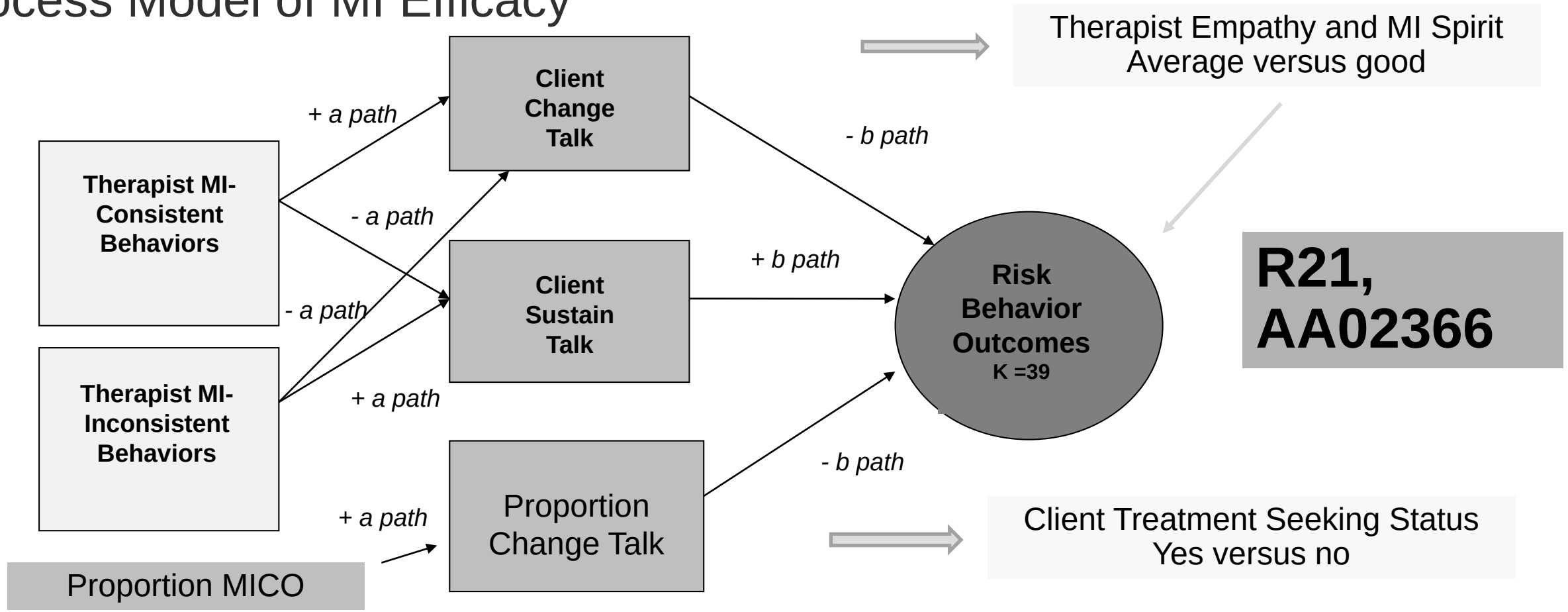
*Objective:* The technical hypothesis of motivational interviewing (MI) posits that therapist-implemented MI skills are related to client speech regarding behavior change and that client speech predicts client outcome. The current meta-analysis is the first aggregate test of this proposed causal model. *Method:* A systematic literature review, using stringent inclusion criteria, identified 16 reports describing 12 primary studies. We used review methods to calculate the inverse-variance-weighted pooled correlation coefficient for the therapist-to-client and the client-to-outcome paths across multiple targeted behaviors (i.e., alcohol or illicit drug use, other addictive behaviors). *Results:* Therapist MI-consistent skills were correlated with more client language in favor of behavior change (i.e., change talk; $r = .26$, $p < .0001$), but not less client language against behavior change (i.e., sustain talk; $r = .10$, $p = .09$). MI-inconsistent skills were associated with less change talk ($r = -.17$, $p = .001$) as well as more sustain talk ($r = .07$, $p = .009$). Among these studies, client change talk was not associated with follow-up outcome ($r = .06$, $p = .41$), but sustain talk was associated with worse outcome ($r = -.24$, $p = .001$). In addition, studies examining composite client language (e.g., an average of negative and positive statements) showed an overall positive relationship with client behavior change ($r = .12$, $p = .006$; $k = 6$). *Conclusions:* This meta-analysis provides an initial test and partial support for a key causal model of MI efficacy. Recommendations for MI practitioners, clinical supervisors, and process researchers are provided.

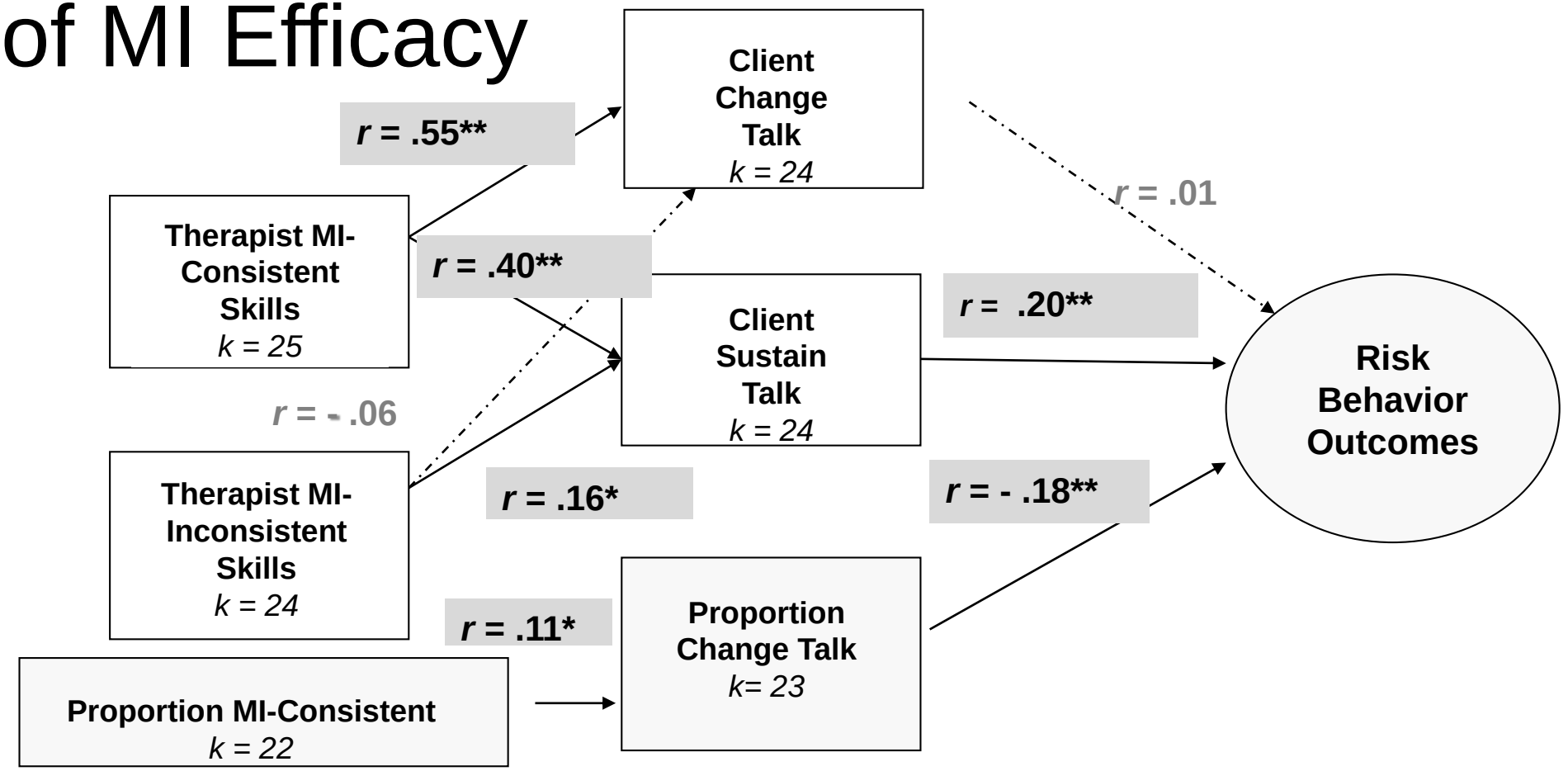
*Keywords:* motivational interviewing, change talk, sustain talk, meta-analysis, therapy process

# Testing the Theory of MI 2: The Technical, Relational and Conditional Process Model of MI Efficacy




***Notes.*** [A] 12 Correlational paths examined. [B] Measures were within-session frequencies of observed therapist and client behaviors. [C] Added proportion measures (proportion MICO; proComplex Reflection; Reflection to Question ratio; proportion change talk; MISC, Houck et al., 2013; Miller et al., 2003; 2008).

# Results 1: Partial Support for the Technical Model of MI Efficacy




***Notes.*** *k* = Number of studies; ** *p* < .001; * *p* < .01

MICO > CT

MICO > ST

MIIN > ST

MIIN CT

CT Outcome

ST> Outcome

ProMICO > ProCT

ProREC > ProCT

ProCT > Outcome

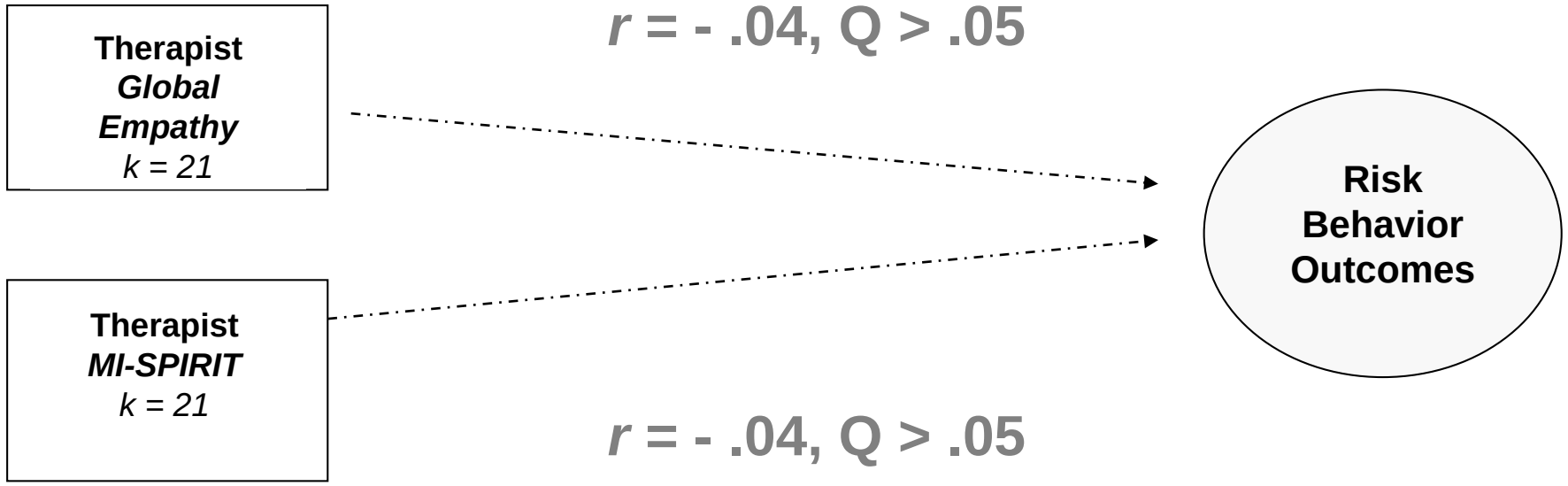
QtoR > Outcome

# Taking the Long View

# Long view 1: Technical Hypothesis

- The 2017 meta confirmed most paths supported in previous reviews by Magill et al., 2014, Romano & Peters, 2016, and Pace et al., 2017;
- In this study, Proportion MI-consistent skills was associated with proportion change talk, and proportion change talk was associated with risk behavior reduction;
- But effect sizes are small. SO we must ask - are we missing key process variables of interest and/or are we averaging away key population or contextual differences in how MI works?
- Is it time for a Change Talk Summit? In other words, are there conceptual or methodological reasons for the mixed predictive validity of this variable?

# Results 2: Relational Hypothesis Unsupported

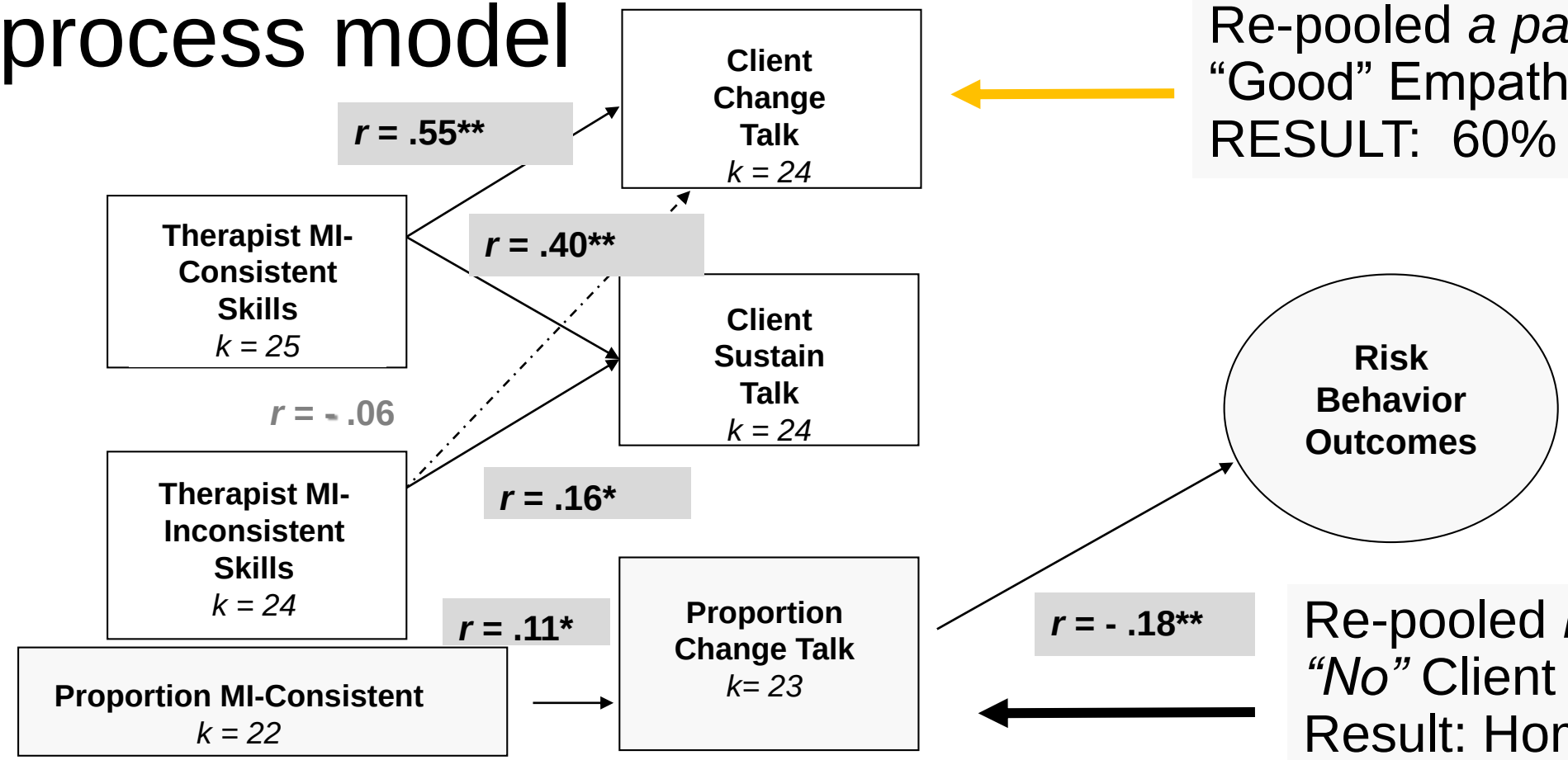



***Notes.*** *k* = Number of studies

# Long view 2: Relational Hypothesis

- The Relational Hypothesis, on average, was not supported.
- The finding is consistent with Pace et al., 2017, and for the most part Romano & Peters 2016.
- Should we conclude the relationship does not matter in MI?
- Or have we not found the right way to study the relationship in MI?
- The MISC uses 5-point ordinal measures with great face validity, good reliability, but restricted range in RCT samples.
- So is it a lack of true predictive validity or a ceiling effect?

# Results 3: Partial Support for the conditional process model




Re-pooled *a path* by "Average" V "Good" Empathy and MI Spirit.
RESULT: 60% reduction in Q

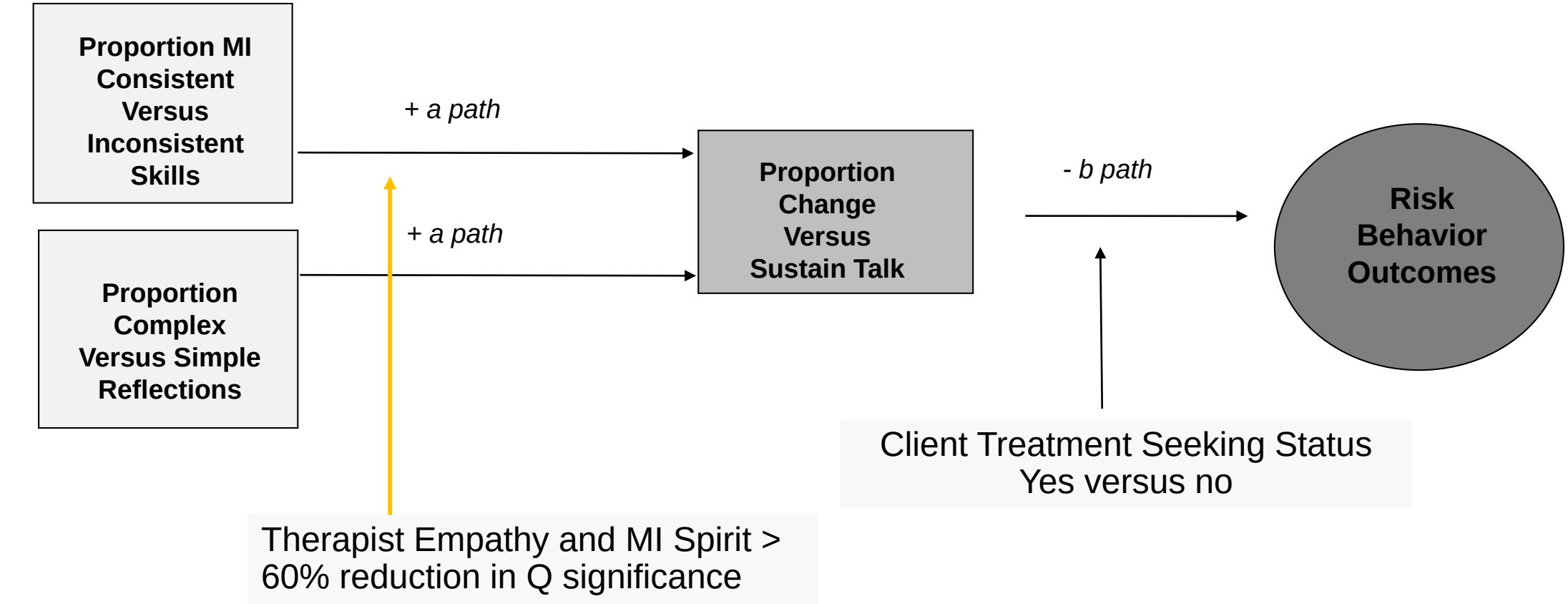
Re-pooled *b path by "Yes" V "No"* Client Treatment Seeking
Result: Homogeneity

***Notes.*** *k* = Number of studies; ** $p < .001$; * $p < .05$

# Long view 3 & 4: Technical Process Conditional on Relational and Client Level Factors

- Heterogeneity was reduced by re-pooling therapist to client *a paths* by relational performance (good v average Empathy/Spirit), but the magnitude of effects did not differ substantively between sub-groups.
- Similarly, while homogeneity was achieved by re-pooling the proportion change talk to outcome (*b path)* effect sizes, the magnitude did not differ in treatment seeking versus non treatment seeking samples.
- So, variability was explained, but sub-group effect sizes did not have more of a story to tell than the overall pooled effect size.
- In SUM effect sizes are moderate at the a path and small at the b path. And small overall for proportion indicator a and b path.

# Meta-Analytic Review: Take Home Model!



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# It takes a village to raise a meta-analysis

**CONTRIBUTING AUTHORS**

*Apodaca; Atkins; Baer; Barnett; Bertholet; Borsari; Campbell; Catley; D'Amico; Davis; Feldstein-Ewing; Flickinger; Gaume; Hallgren; Hodgins; Houck; Imel; Kahler; Kaplan; Keeley; Klonek; Knittle; Kuerbis; Lee; Martino; Mastroleo; McCambridge; Morgenstern; Neighbors; Moyers; Roy-Byrne; Saitz; Santa-Ana; Smith-Carey; Tollison; Walters.*

Thank you!

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