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# How does brief motivational intervention works? A mediation analysis

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# Background

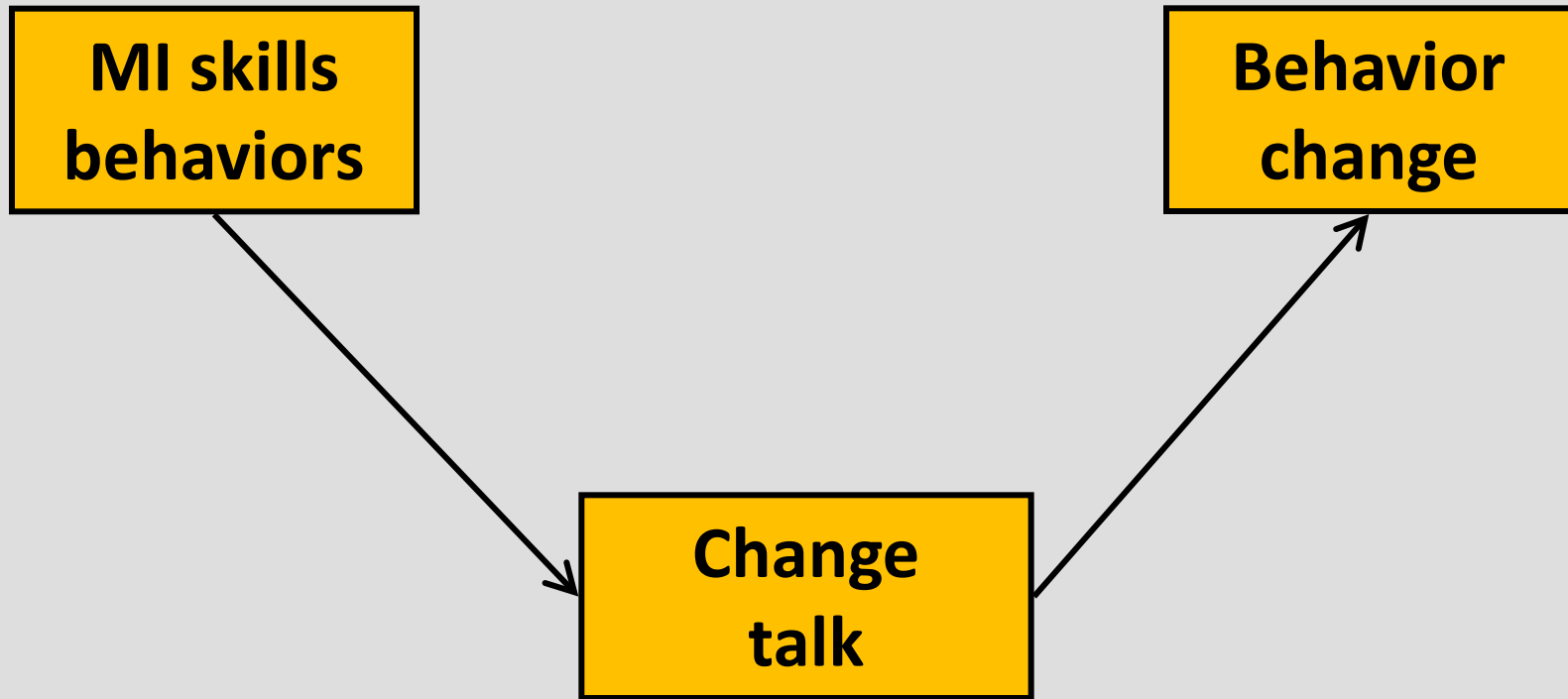
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- Does brief intervention works?
  - Some evidence, but a lot of remaining questions
- Only little is known about **how** it works
- Understanding the process of BMI might help adapt or develop more effective interventions

# Main hypothesis for MI process

(Moyers & Martin, 2006)

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# Empirical validation

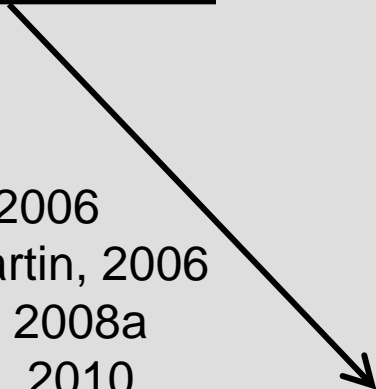
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**MI skills  
behaviors**

**Behavior  
change**

- Catley et al, 2006
- Moyers & Martin, 2006
- Gaume et al, 2008a
- Gaume et al., 2010

**Change  
talk**



# Empirical validation

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**MI skills  
behaviors**

**Behavior  
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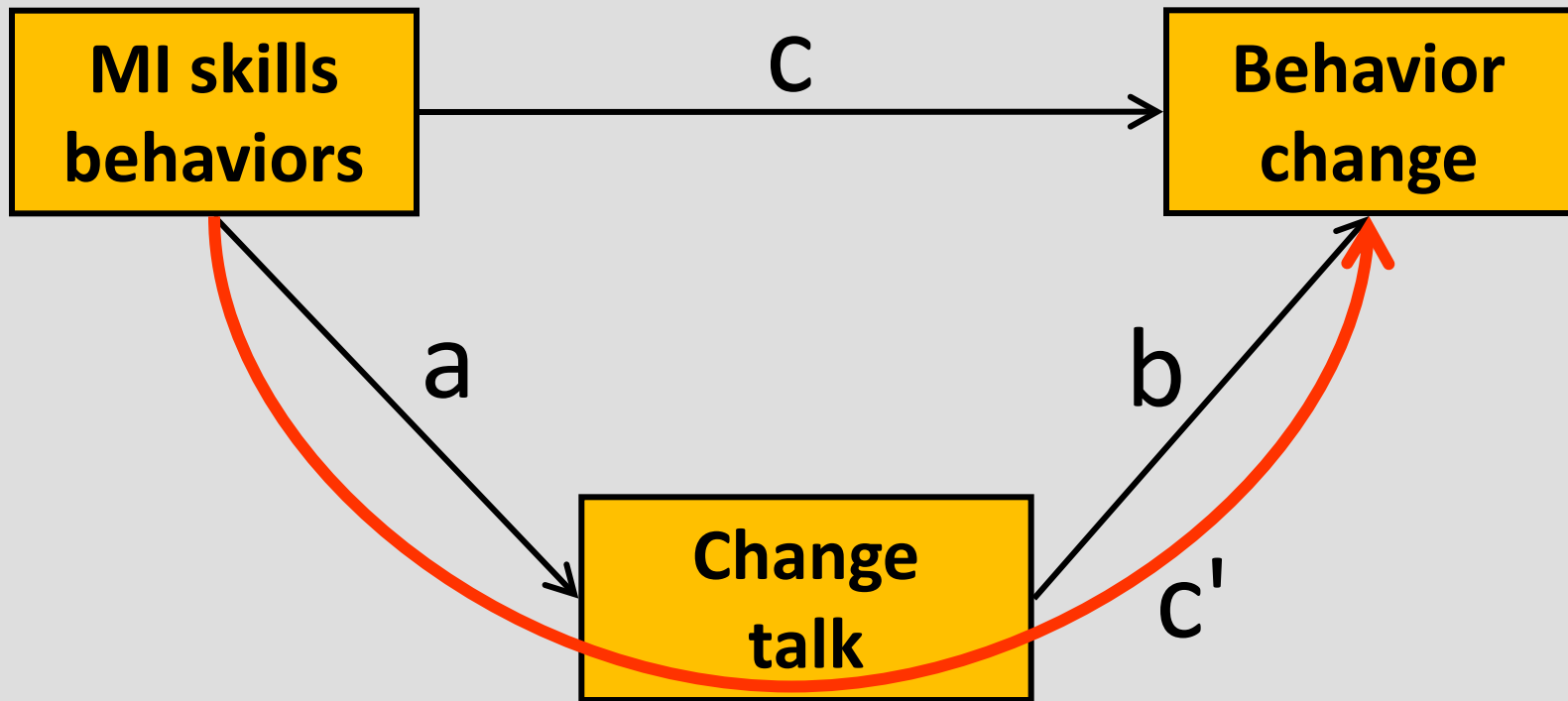
**Change  
talk**

- Catley et al, 2006
- Moyers & Martin, 2006
- Gaume et al, 2008a
- Gaume et al., 2010

- Amrhein et al, 2003
- Strang & McCambridge, 2004
- Moyers et al, 2007
- Gaume et al, 2008b
- Baer et al, 2008
- Hodgins et al, 2009
- Bertholet et al, 2010

# Mediation

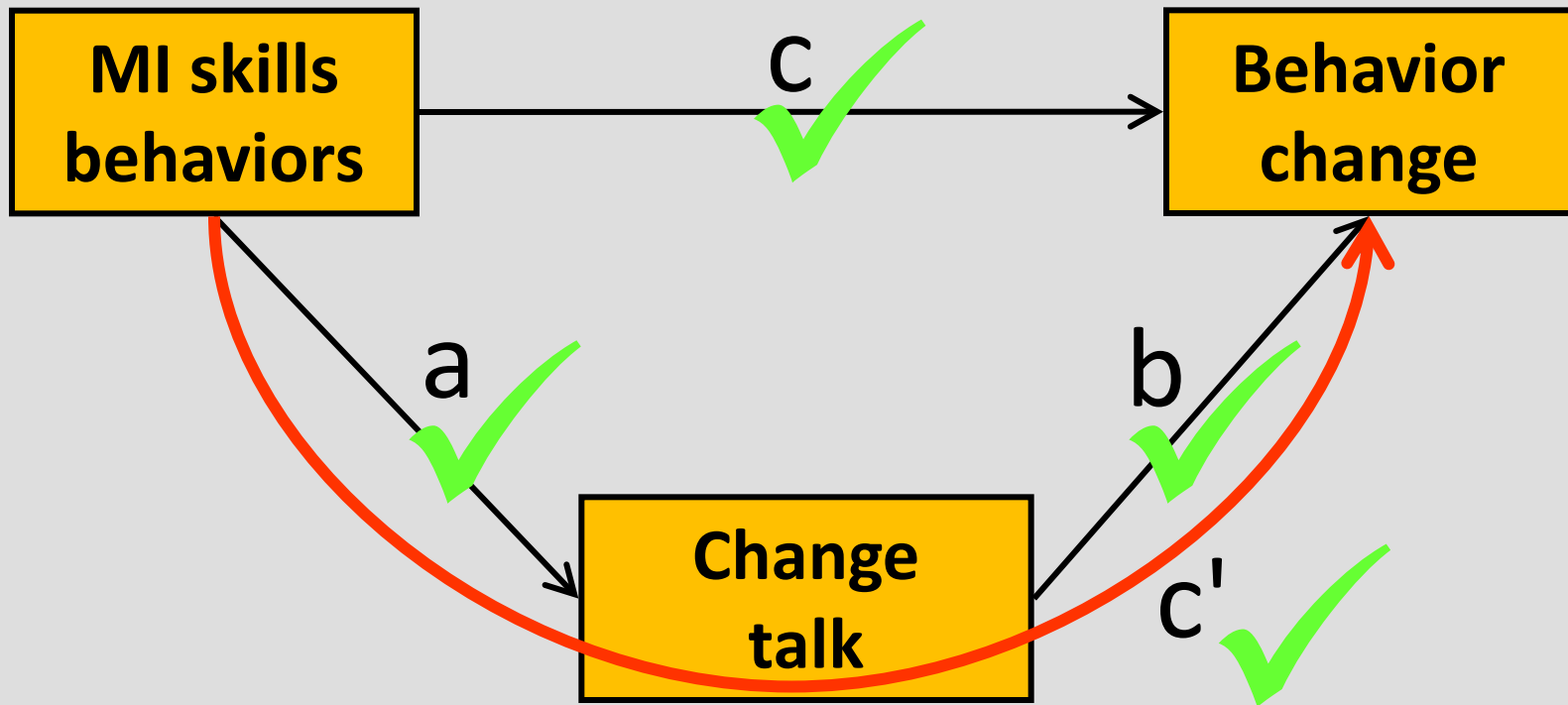
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# Mediation – Empirical validation

(Moyers et al. 2009, Project MATCH data)

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# Working alliance

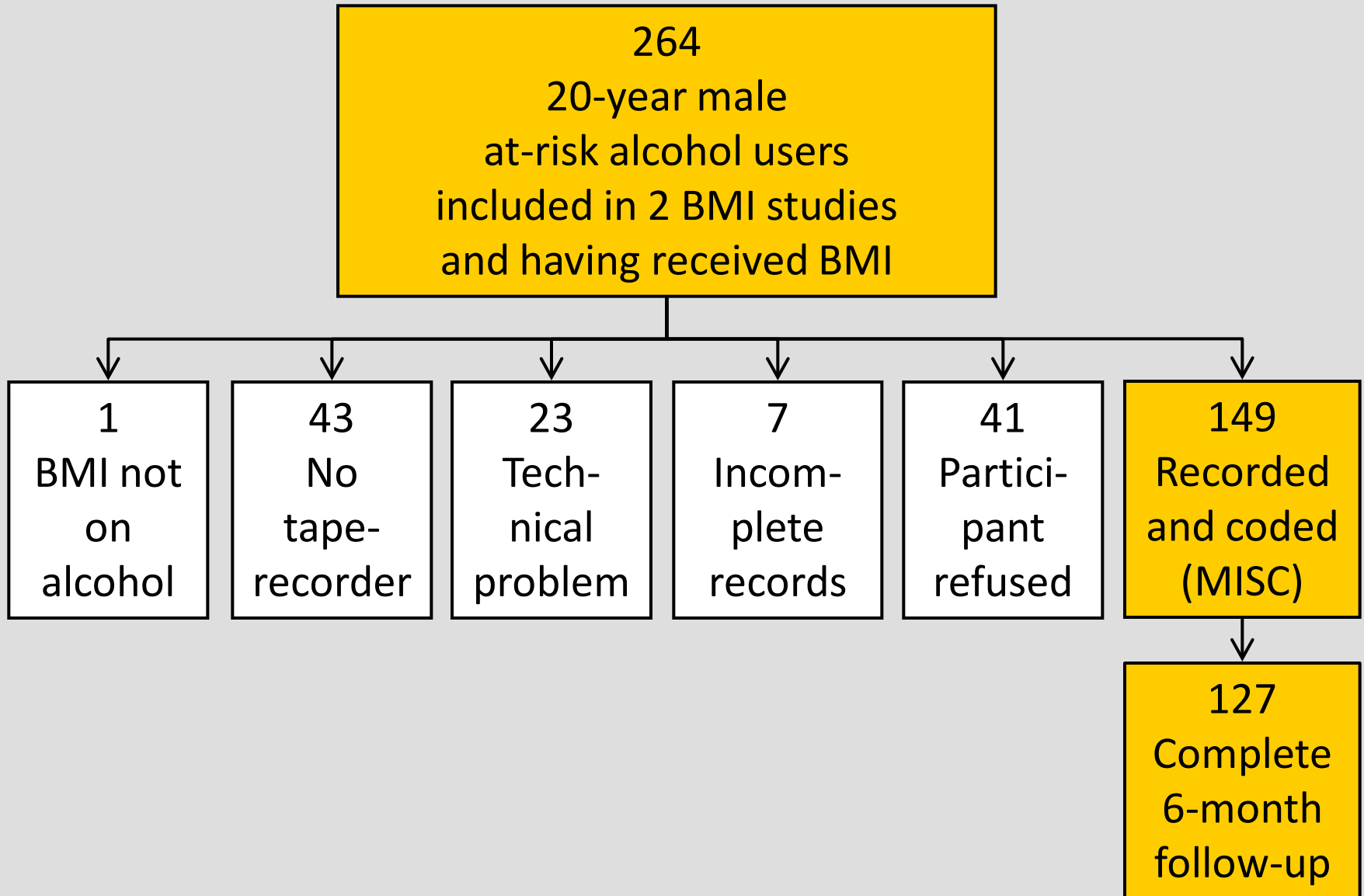
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- Quality of the therapeutic relationship is a significant predictor of psychotherapy and counseling outcomes (Horvath & Symonds 1991; Martin et al. 2000)
- Substance abuse treatment (Meier et. 2005)
  - consistent predictor of engagement and retention in treatment
  - early improvements during treatment
- 1 study on BMI (Feldstein & Forcehimes, 2007, college drinkers)
  - no relationship of alliance with outcomes
  - ! study underpowered (N=35)

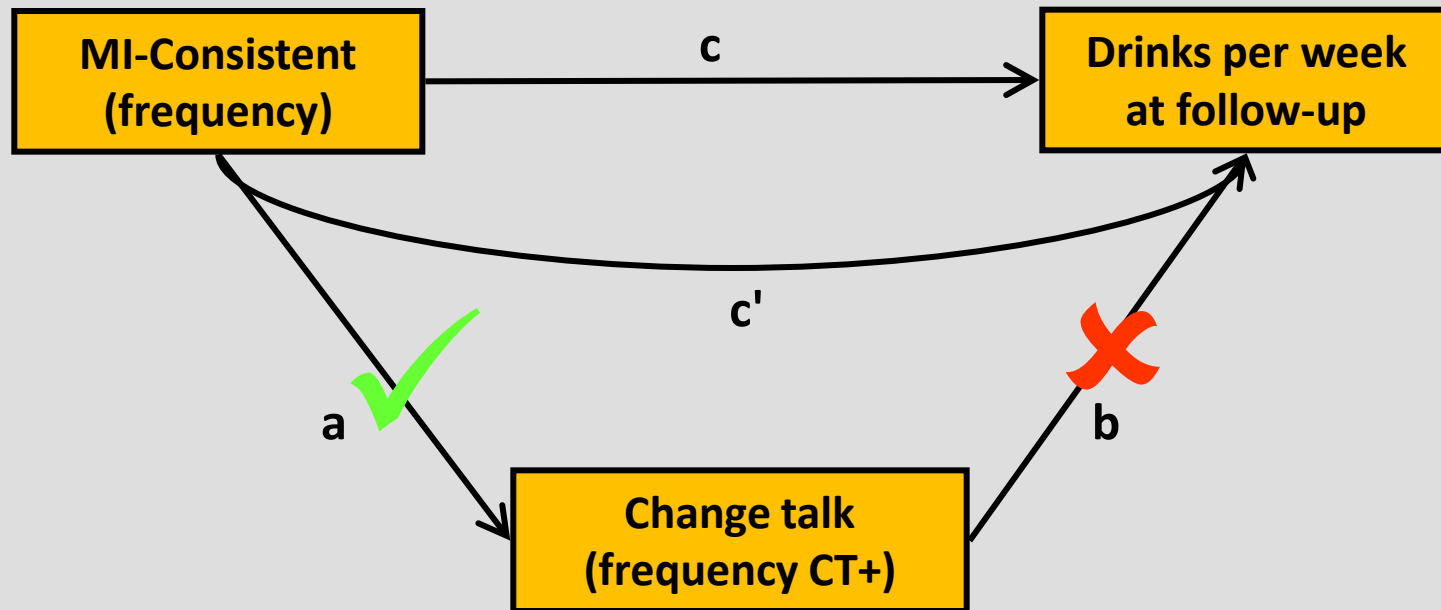


# Subjects inclusion profile

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# Model 1



## Linear regression

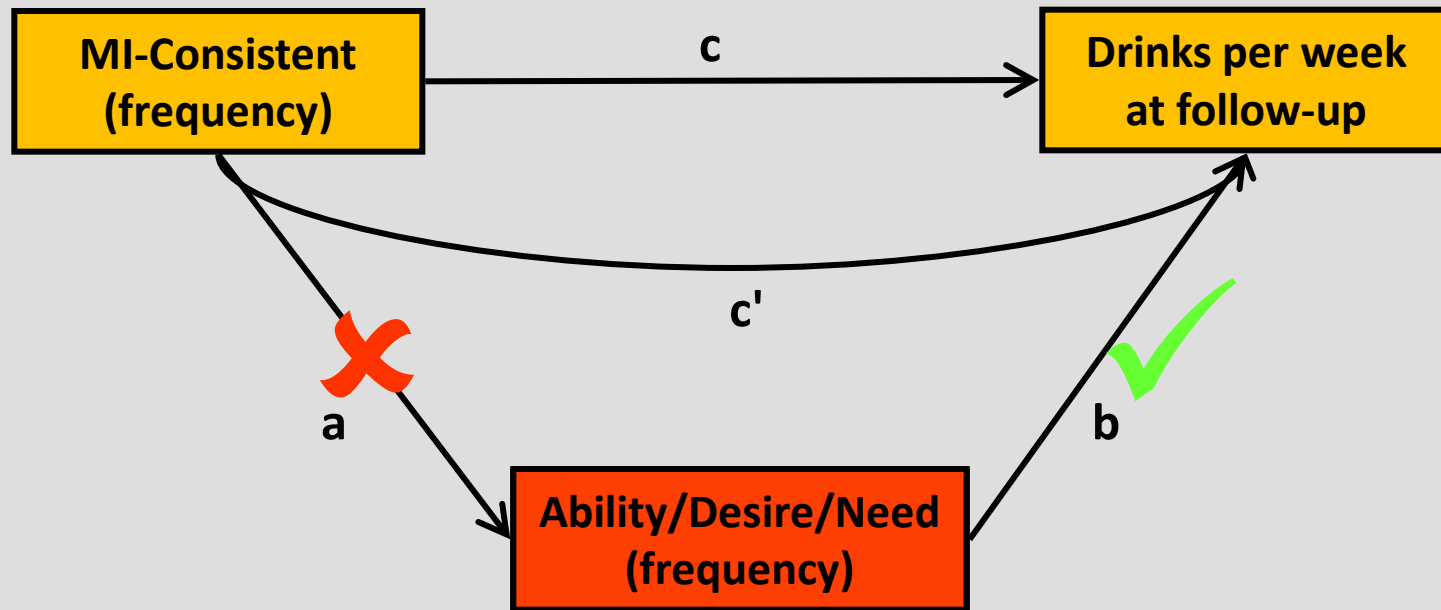
CT freq	Coef.	SE	z	P>z	[95% CI]
MICO freq	<b>0.54</b>	0.10	5.31	<b>&lt;0.01</b>	0.34 0.74
_constant	14.48	6.71	2.16	0.03	1.19 27.77

→ Consistent with previous findings  
(sequential relationship)

## Baseline adjusted negative binomial regression

DW@6m	Coef.	SE	z	P>z	[95% CI]
DW@BL	0.03	0.00	7.32	<0.01	0.02 0.04
CT freq	<b>0.00</b>	<b>0.00</b>	<b>0.90</b>	<b>0.37</b>	<b>0.00 0.01</b>
_constant	1.83	0.15	12.12	0.00	1.54 2.13

# Model 2



Linear regression

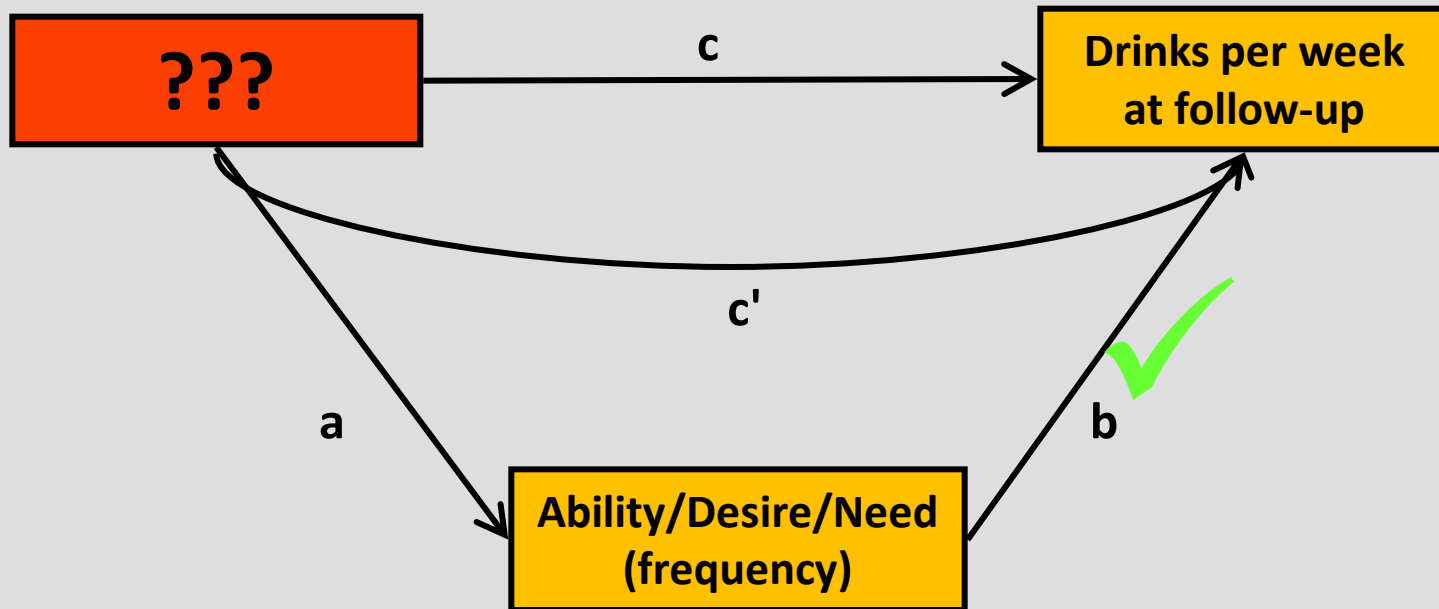
AND	Coef.	SE	z	P>z	[95% CI]
MICO freq	0.00	0.01	0.28	0.78	-0.01 0.01
_constant	-0.96	0.37	-2.58	0.01	-1.69 -0.22

Baseline adjusted negative binomial regression

DW@6m	Coef.	SE	z	P>z	[95% CI]
DW@BL	0.03	0.00	7.87	<0.01	0.03 0.04
ADN	<b>-0.17</b>	0.05	<b>-3.60</b>	<b>&lt;0.01</b>	<b>-0.27 -0.08</b>
_constant	1.77	0.10	17.12	0.00	1.57 1.97

→ According to previous findings (Gaume et al., submitted)

# Model 3

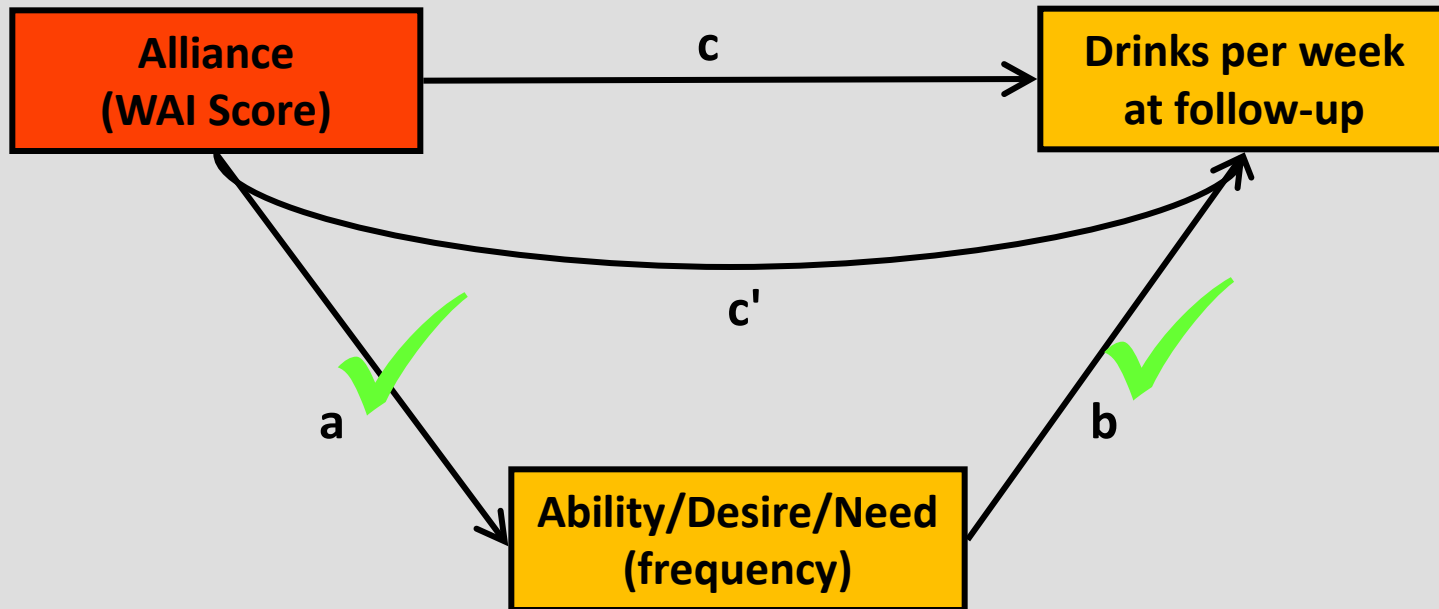


Baseline adjusted negative binomial regression

DW@6m	Coef.	SE	z	P>z	[95% CI]
DW@BL	0.03	0.00	7.87	<0.01	0.03 0.04
ADN	<b>-0.17</b>	0.05	-3.60	<b>&lt;0.01</b>	-0.27 -0.08
_constant	1.77	0.10	17.12	0.00	1.57 1.97

→ According to previous findings  
(Gaume et al., submitted)

# Model 3



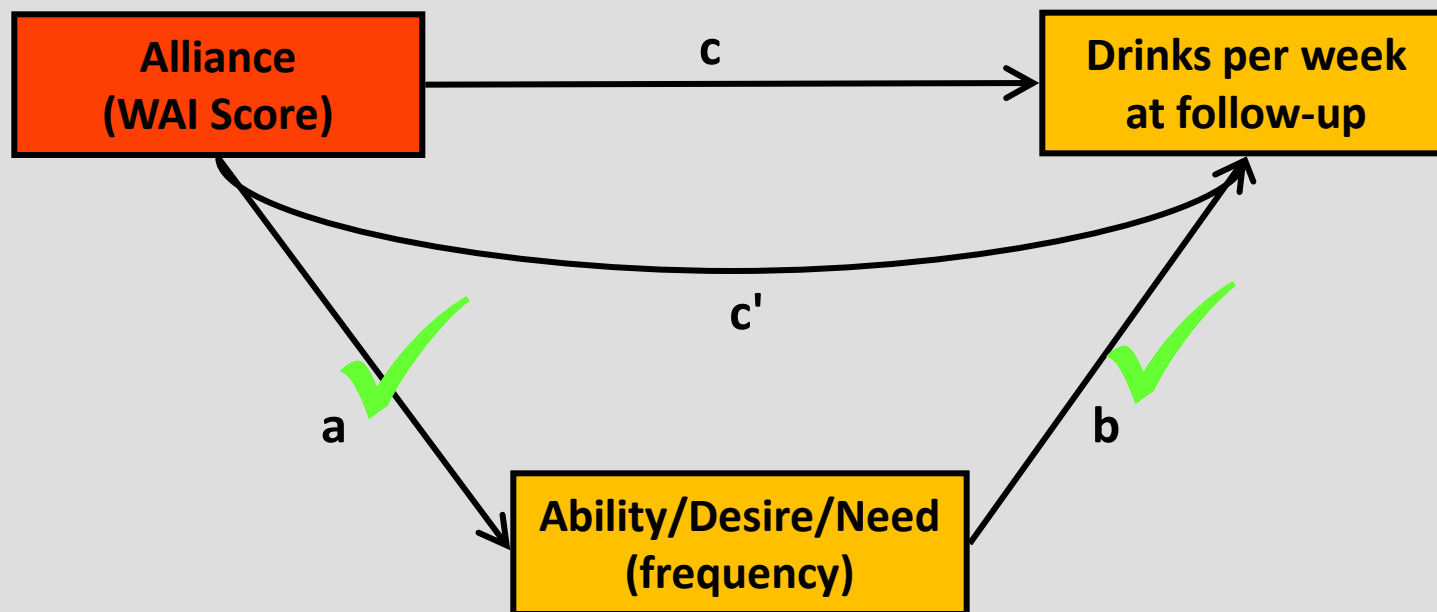
Negative binomial regression						
ADN freq	Coef.	SE	z	P>z	[95% CI]	
Score WAI	<b>0.0394</b>	0.02	2.14	<b>0.03</b>	0.00	0.08
_constant	-3.01	1.19	-2.53	0.01	-5.35	-0.68

Baseline adjusted negative binomial regression						
DW@6m	Coef.	SE	z	P>z	[95% CI]	
DW@BL	0.03	0.00	7.87	<0.01	0.03	0.04
ADN	<b>-0.17</b>	0.05	-3.60	<b>&lt;0.01</b>	-0.27	-0.08
_constant	1.77	0.10	17.12	0.00	1.57	1.97

→ According to previous findings (Gaume et al., submitted)

C- Baseline adjusted negative binomial regression						
DW@6m	Coef.	SE	z	P>z	[95% CI]	
DW@BL	0.03	0.00	7.55	<0.01	0.03	0.04
Score WAI	0.0046	0.01	0.71	0.48	-0.01	0.02
_constant	1.65	0.42	3.90	0.00	0.82	2.47

C' - Baseline adjusted negative binomial regression						
DW@6m	Coef.	SE	z	P>z	[95% CI]	
DW@BL	0.04	0.00	7.78	<0.01	0.03	0.04
ADN freq	-0.1104	0.05	-2.28	0.02	-0.21	-0.02
Score WAI	0.0077	0.01	1.20	0.23	0.00	0.02
_constant	1.50	0.42	3.60	0.00	0.68	2.32



Mediated effect :

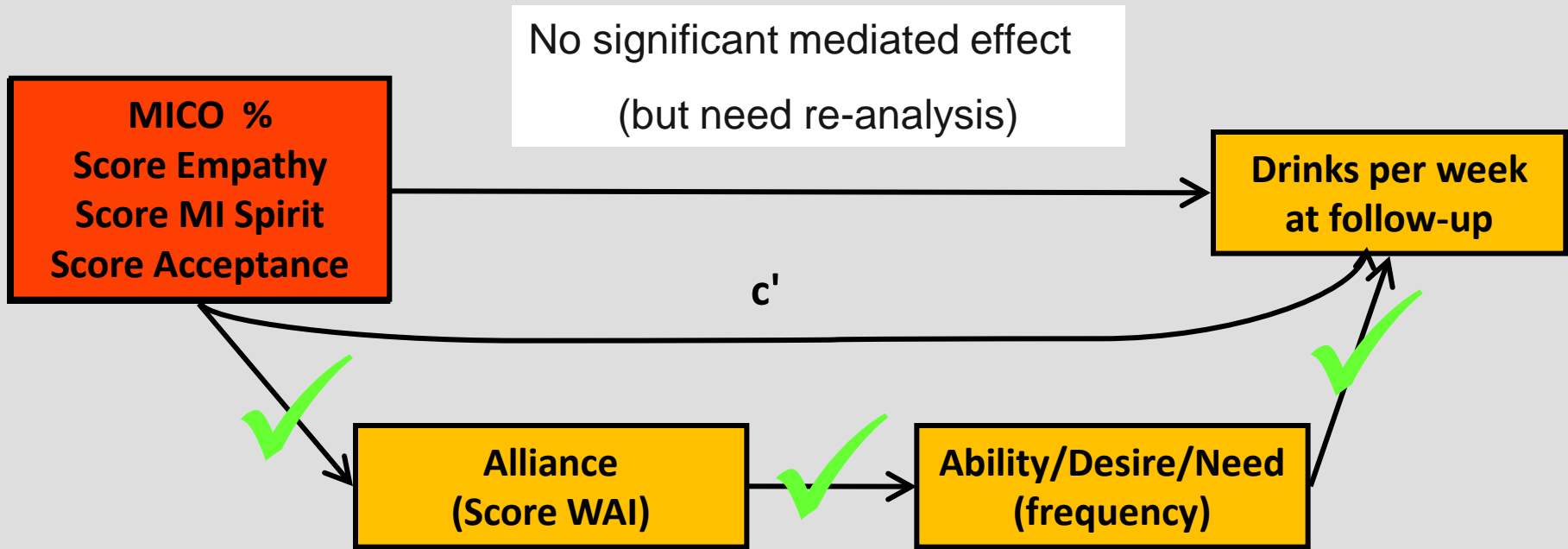
$$\text{Model 1 : } DW = B02 + c'WAI + BADN + e2$$

$$\text{Model 2 : } ADN = B03 + AWAI + e3$$

$$\text{Med. Effect} = BADN * AWAI = -0.1104 * 0.0394 = -0.0043$$

95% CI = [-0.0108 - -0.0002] → significant, but weak

# Model 4



Negative binomial regressions (4 models)

Score WAI	Coef.	SE	z	P>z	[95% CI]
MICO %	<b>0.03</b>	0.01	2.80	<b>0.01</b>	0.01 0.05
empathy	<b>0.11</b>	0.02	6.02	<b>&lt;0.01</b>	0.07 0.14
acceptance	<b>0.13</b>	0.02	7.86	<b>&lt;0.01</b>	0.09 0.16
MI spirit	<b>0.16</b>	0.02	10.06	<b>&lt;0.01</b>	0.13 0.20

# Discussion

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- We did not observe the mediation hypothesized in the MI literature (MI skills – change talk – outcome)
- Working alliance was an important predictor of an operative ingredient in our BMI: Ability/Desire/Need to change talk
- Weak but significant mediated effect
- Some important MI skills were related to working alliance and thus indirectly to A/D/N change talk and outcomes, but there was no evidence of mediation



# Discussion

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- Working alliance seems to be an important construct in BMI process
- BMI providers and trainers should keep in mind the quality of the relationship with the client
- Alliance should be integrated in future research on BMI process

**Thank you for your attention!**

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