

# Frontiers of Innovation

## Portfolio Project Completion Report: A Tool for Fast-Cycle Iteration and Shared Learning

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### Purpose

As you come to the conclusion of the current project, we want to extend our deep appreciation for your work and dedication toward achieving breakthrough outcomes for children and families facing adversity. It is with an eye toward fast-cycle learning that we provide this tool as an opportunity for your team to reflect on and share what you have learned about your program over the course of this project, particularly with respect to the components of the [IDEAS Impact Framework™](#). If your team plans to continue the development and evaluation process (independently or in partnership with FOI) the questions below are designed to help you chart a course forward. This tool is also intended to facilitate shared learning, as it is structured to capture key lessons learned from your project that can be shared with the broader FOI community with the goal of advancing our collective work and accelerating the innovation process. In line with our guiding principle of co-creation, we encourage you to reflect on these questions as a team so that the learning from everyone’s perspective can be captured.

**Submission Guidelines:** Please complete the report below and include all attachments in an email with the subject line “FOI Portfolio Project Completion Report” to your Center Project Lead. The report should be submitted no later than 45 days following the end of your Project Period. Contact your Center Project Lead with any questions you may have about the report.

**Please keep your responses within approximately 250 words per question and use font size 12.**

# 1 **FOI Portfolio Project Completion Report**

## 2 **Name of Project**

3 Action Team on Triadic Attachment and Child Health (ATTACH) Phase II  
4

## 5 **Project Period**

6 *Please provide the start date and end date as stated in the contract for this FOI portfolio project.*  
7 *If the project period was extended, please use the extended end date.*  
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9 The timeline for the contract of ATTACH Phase II was November 1, 2017 – October 31, 2019.

## 10 **Project Team Membership**

11 *Please list the team members who played a key role in this project, including each individual's*  
12 *name, institution or organization, and role on the team (e.g., developer, researcher,*  
13 *practitioner, community member). Please also name your Center Project Lead.*  
14

- 15 • Dr. Nicole Letourneau, ATTACH Principal Investigator/Center Project Lead, Faculty of  
16 Nursing and Cumming School of Medicine (Pediatrics, Psychiatry & Community Health  
17 Sciences), University of Calgary, Calgary, AB  
18
- 19 • Dr. Martha Hart, ATTACH Co-Principal Investigator/Center Project Lead, Faculty of  
20 Nursing, University of Calgary, Calgary, AB  
21
- 22 • Dr. M. Auffrey (ATTACH Co-Principal Investigator), Executive Director of Discovery  
23 House, Calgary, AB (location where ATTACH Phase II pilot studies #6 and #7 were  
24 conducted)  
25
- 26 • Dr. C. Donnelly (ATTACH Co-Principal Investigator), Executive Director of Calgary Urban  
27 Project Society, Calgary, AB (location where ATTACH Phase II pilot studies #4 and #5  
28 were conducted)  
29
- 30 • Ms. Shannon Doram (ATTACH Co-Principal Investigator), President and CEO of YMCA  
31 Calgary, Calgary, AB  
32
- 33 • Dr. Lubna Anis, ATTACH Facilitator, Faculty of Nursing, University of Calgary, Calgary, AB  
34
- 35 • Ms. Joanna Piekarski, ATTACH Facilitator, Calgary Urban Project Society, Calgary, AB  
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- 42
- Ms. Virginia Xavier, ATTACH Research Assistant, Faculty of Nursing, University of Calgary, Calgary, AB
  - Mr. Jason Novick, ATTACH Research Assistant, Cumming School of Medicine (Pediatrics), University of Calgary, Calgary, AB

### 43 Project Description

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1. Please provide a *brief* description of the completed project, including information about the program implemented, the population served, and the implementation setting(s). Be sure to indicate the project type or study design used (i.e., planning and development project; feasibility study, pilot study, later stage study).

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The primary objective of the completed project was to test the effectiveness of the Attachment and Child Health (ATTACH) intervention, which focused on improving reflective function and children’s attachment security for mothers and children who had been exposed to toxic stressors (i.e. parental violence, depression, substance abuse, and socioeconomic adversity). For Phase II of this study, two randomized controlled trials (RCTs; pilot studies #4 and #6) were conducted with women and children who resided within inner-city agencies in Calgary, Alberta serving low-income families (Calgary Urban Project Society (CUPS)) and families affected by parental violence (Discovery House (DH)). Quasi-experimental studies (pilot studies #5 and #7) were conducted based on leveraged funding from another foundation in order to provide the ATTACH intervention to control group participants from each RCT.

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The intervention comprised a 10 week brief psychoeducational parenting program with dyadic (mother and child) and triadic (mother, child, and co-parenting support person) components to foster parental RF through practice. The first RCT and quasi-experimental study were conducted with mothers and children <36 months of age at CUPS, with ATTACH team facilitators and staff members delivering intervention. The second RCT and quasi-experimental study were conducted with mothers and children <6 years of age at DH, with ATTACH team facilitators delivering the intervention.

### 68 Timeline

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2. We understand that external factors and/or team decisions can impact a project’s timeline. If the timeline for this project diverged from the projected timeline, please describe how so and why. What did you learn from that?

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Challenges at CUPS included several participants who had lost custody of their children Midway through ATTACH pilot study #5. Also, ATTACH facilitators were required to do home visits in order to obtain the data.

77 Challenges at DH included problems with recruitment. Firstly, there were privacy  
78 restrictions on being able to directly contact participants. Accordingly, ATTACH  
79 facilitators had to work through DH personnel to recruit. After several months of non-  
80 stop efforts, this proved to be ineffective, so changes within the DH protocol were made  
81 in order to allow ATTACH facilitators to directly contact participants via mom's groups  
82 which DH organized. This in turn was effective, and ATTACH facilitators were to recruit  
83 all participants within a two-week timeframe. Secondly, given that DH is a safe home for  
84 women who experience domestic violence, none of the biological fathers or male  
85 partners were able to partake in the study as they were not allowed on the premises.  
86 Thirdly, some of the participants that lived outside of the facility had challenges  
87 accessing the DH premise. Fourthly, there were language barriers that had to be  
88 addressed.

89  
90 That said, all challenges were met effectively and the ATTACH team was successful in  
91 acquiring most of the required data.

92 *The following questions are related to the three components of the IDEAS Impact Framework.*  
93 *Please visit the [website](#) for more information on each component.*

## 94 Evaluation

95 *Note: Planning and development projects skip this section.*

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97 3. Please describe the process that was used to gather information. Include a) what  
98 information was gathered (i.e., measures and tools used) and in what format (e.g.,  
99 paper or digital); b) who gathered it and how; and c) when and where the process took  
100 place. Note key lessons learned about the feasibility of the evaluation process and any  
101 significant adaptations that were made to the original evaluation plan.

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103 a) The following outcome questionnaires were administered to participants by paper:

- 104  
105 • Five Facet Mindfulness Questionnaire (FFMQ) as a measure of caregiver self-  
106 regulation
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108 • Behaviour Rating Inventory of Executive Function - Preschool Version (BRIEF-P)  
109 as a measure of child executive function
- 110  
111 • Behaviour Rating Inventory of Executive Function - Adult Version (BRIEF-A) as a  
112 measure of caregiver executive function
- 113  
114 • Centre for Epidemiologic Studies Depression Scale (CES-D) as a measure of  
115 caregiver depressive symptoms

- 116 • Child Behaviour Checklist (CBCL) as a measure of caregivers' perceptions of child  
117 behavioural problems
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- 119 • Parental Reflective Functioning Questionnaire (PFRQ) as a measure of caregiver  
120 reflective function
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- 122 • Reflective Functioning Questionnaire (RFQ) as a measure of caregiver self-  
123 regulation
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- 125 • Social Support Effectiveness Questionnaire (SSE-Q) as a measure of caregiver  
126 perceptions of social support from the co-parent
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- 128 • Ages and Stages Questionnaire, Third Edition (ASQ-3) as a measure of caregiver  
129 perception of children's cognitive and socio-emotional development
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131 The following observational measures were used:

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- 133 • Nursing Child Assessment Teaching Scale (NCATS) as a measure of mother-child  
134 relationship quality (data not reported here)
- 135
- 136 • Strange Situation Procedure (SSP) as a measure of mother-child attachment  
137 (data not reported here)
- 138

139 b) Dr. Hart, Dr. Anis, and Ms. Xavier administered the questionnaires and facilitated the  
140 observational procedures with participants. Dr. Hart and Dr. Anis also conducted the  
141 interviews with participants.

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143 c) The questionnaires were administered to all participants at DH and CUPS prior to and  
144 after the ATTACH intervention occurred. At these same locations and the Owerko  
145 Centre at the Alberta Children's Hospital Research Institute, the observational  
146 procedures and PDIs were conducted with all participants prior to and after the  
147 intervention, and the AAls were conducted with all participants prior to the  
148 intervention. The high completion rates for the questionnaires, observations, and  
149 interviews ensured that the evaluation process for the ATTACH study was feasible. As a  
150 result, no significant adaptations needed to be undertaken to the original evaluation  
151 plan.

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- 153 4. Please describe the process that was used to recruit participants. Provide information  
154 about the community you recruited from, and indicate how many participants were  
155 recruited and how many completed the program. Note key lessons learned about the  
156 recruitment process and about participants who did and did not complete the program.

157  
158 Staff members at the participating inner-city agencies (DH and CUPS) undertook  
159 convenience sampling in order to recruit participants for ATTACH. A sample of 14  
160 mothers, each with one participating infant/young child less than 36 months of age,  
161 participated in the first RCT at CUPS. This sample was randomly divided into a treatment  
162 group ( $n = 7$ ) and a control group ( $n = 7$ ). A sample of 20 mothers, each with one  
163 participating infant/young child less than 6 years of age, participated in the second RCT  
164 at DH. This sample was randomly divided into a treatment group ( $n = 10$ ) and a control  
165 group ( $n = 10$ ). Quasi-experimental studies were conducted based on leveraged funding  
166 from another foundation in order to provide the ATTACH intervention to control group  
167 participants from each RCT. All of the participants completed the ATTACH program.  
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169 Overall, recruitment was a challenging process, as there were several prospective  
170 participants who did not attend recruitment appointments and were therefore ineligible  
171 to participate.  
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173 5. Please indicate the number of participants that were part of the evaluation and describe  
174 them in terms of the demographic information and any other FOI core measures  
175 collected (such as ACES\*and/or BRIEF\*\* scores before starting the program). How does  
176 this group of participants compare with the community you intended to serve? Was  
177 there anything about the project participants that surprised you or that you did not  
178 expect?

179 \*Adverse Childhood Experiences Survey; \*\*Behavior Rating Inventory of Executive Function.  
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181 One unexpected occurrence was that ATTACH facilitators became aware of at least two  
182 participants who were HIV positive. Second, some participants were suicidal, which  
183 ATTACH facilitators had to appropriately deal with according to the organization's  
184 protocol. ATTACH facilitators were pleasantly surprised at how all participants really  
185 enjoyed being a part of the ATTACH study and the low attrition that was achieved due  
186 to the enjoyment of the intervention.  
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#### 188 **Pilot Study #4**

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190 A total of 14 caregivers participated in pilot study #4 at CUPS, of which 13 were mothers  
191 and 1 was a grandparent of the participating children. The mean age of caregiver  
192 participants was 30.78 years ( $SD = 7.55$ ) at enrolment. The majority of these participants  
193 spoke English as a first language (78.57%), were single (71.43%), were born in Canada  
194 (71.43%), and had attained a high school diploma as their highest level of education  
195 (42.86%). The most common ethnicity was Caucasian (64.29%) and the majority of  
196 caregivers were working full-time (57.14%). Regarding the FOI core measures which  
197 were collected at the pre-assessment phase, caregiver participants in this pilot study  
198 indicated a moderate average level of social support, in accordance with the SSE-Q total

199 score ( $M = 50.00$ ,  $SD = 21.00$ ). On average, caregiver participants experienced four ACEs  
200 during the first 18 years of their lives and were currently experiencing 6 out of the 28  
201 difficult life circumstances indicated by the questionnaire. Please refer to table 1 for the  
202 caregiver demographic characteristics from pilot study #4.

203  
204 Each caregiver from pilot study #4 selected one child to participate in this evaluation, of  
205 which a total of 8 male and 6 female children participated. Children were on average  
206 24.98 months of age ( $SD = 6.60$ ) at enrolment. All of the children spoke English as a  
207 primary language, and the majority were Caucasian (64.29%). In accordance with the  
208 subscale cut-off scores of the CBCL, on average children did not demonstrate  
209 problematic behaviours related to emotional reactivity ( $M = 3.29$ ), anxiety/depression  
210 ( $M = 3.00$ ), somatic complaints ( $M = 2.03$ ), withdrawal ( $M = 2.89$ ), sleep ( $M = 1.67$ ),  
211 attention ( $M = 1.66$ ), and aggression ( $M = 6.17$ ) at pre-assessment. Children's  
212 development was also on schedule at enrolment, with the average ASQ-3 subscale  
213 scores above the cut-offs for communication ( $M = 43.00$ ), gross motor skills ( $M = 53.00$ ),  
214 fine motor ( $M = 43.00$ ), problem solving ( $M = 45.00$ ), and personal-social skills  
215 ( $M = 50.00$ ). Please refer to table 2 for the child demographic characteristics from pilot  
216 study #4.

### 217 218 **Pilot Study #6**

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220 A total of 20 caregivers participated in pilot study #6 at DH, of which all were mothers of  
221 the participating children. The mean age of caregiver participants was 31.55 years  
222 ( $SD = 4.96$ ) at enrolment. The majority of these participants spoke English as a first  
223 language (85.00%), were single (95.00%), were born in Canada (65.00%), and had  
224 attained some college as their highest level of education (40.00%). The most common  
225 ethnicity was Aboriginal (35.00%) and the majority of caregivers were unemployed/not  
226 in the workforce (70.00%). Regarding the FOI core measures which were collected at the  
227 pre-assessment phase, caregiver participants in this pilot study indicated a moderate  
228 average level of social support, in accordance with the SSE-Q total score ( $M = 44.00$ ,  $SD$   
229  $= 18.00$ ). On average, caregiver participants experienced five ACEs during the first 18  
230 years of their lives and were currently experiencing 7 out of the 28 difficult life  
231 circumstances indicated by the questionnaire. Please refer to table 3 for the caregiver  
232 demographic characteristics from pilot study #6.

233  
234 Each caregiver from pilot study #6 selected one child to participate in this evaluation, of  
235 which a total of 9 male and 11 female children participated. Children were on average  
236 34.30 months of age ( $SD = 17.49$ ) at enrolment. The majority of children spoke English  
237 as a primary language (85.00%). The most common ethnicities were Caucasian (25.00%)  
238 and mixed race (25.00%). In accordance with the subscale cut-off scores of the CBCL, on  
239 average children did not demonstrate problematic behaviours related to emotional

240 reactivity ( $M = 3.00$ ), anxiety/depression ( $M = 3.00$ ), somatic complaints ( $M = 2.00$ ),  
241 withdrawal ( $M = 2.00$ ), sleep ( $M = 2.00$ ), attention ( $M = 3.00$ ), and aggression ( $M = 8.00$ )  
242 at pre-assessment. Children's development was also on schedule upon enrolment, with  
243 the average ASQ-3 subscale scores above the cut-offs for communication ( $M = 41.00$ ),  
244 gross motor skills ( $M = 46.00$ ), fine motor ( $M = 43.00$ ), problem solving ( $M = 46.00$ ), and  
245 personal-social skills ( $M = 46.00$ ). Please refer to table 4 for the child demographic  
246 characteristics from pilot study #6.

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#### 248 **Comparisons Between Pilot Studies #4 and #6**

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250 While statistics pertaining to the demographics of the community who reside at CUPS  
251 and DH are not available, these two samples presumably share similarities regarding the  
252 predominant marital status, employment status, and highest level of education of these  
253 communities.

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255 Chi-square tests were performed for each of these aforementioned sociodemographic  
256 variables to examine differences between caregivers who participated at CUPS (pilot  
257 study #4) and DH (pilot study #6). At the .10 level ( $p < .10$ ), there were no significant  
258 differences pertaining to caregivers' age, primary language, highest level of education,  
259 employment status, and whether caregivers were born in Canada. Caregivers who  
260 participated at CUPS were more likely to be Caucasian compared to those who  
261 participated at DH ( $\chi^2 = 7.201$ ,  $df = 1$ ,  $p = 0.007$ ); and single compared to those who  
262 participated at DH ( $\chi^2 = 3.036$ ,  $df = 1$ ,  $p = 0.081$ ).

263

264 Chi-square tests were also performed for each of these aforementioned  
265 sociodemographic variables to examine differences between children who participated  
266 at CUPS (pilot study #4) and DH (pilot study #6). At the .10 level ( $p < .10$ ), there were no  
267 significant differences pertaining to children's' gender. Children who participated at  
268 CUPS were more likely to be Caucasian compared to those who participated at DH  
269 ( $\chi^2 = 5.247$ ,  $df = 1$ ,  $p = 0.022$ ). Children who participated at DH were more likely to  
270 speak English as a first language compared to those who participated at CUPS  
271 ( $\chi^2 = 3.174$ ,  $df = 1$ ,  $p = 0.075$ ).

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273 *The questions below ask about the possible types of information projects might gather to*  
274 *investigate their theory of change at different stages (i.e., feasibility study, pilot study, later*  
275 *stage study). They are designed to help you describe what you learned from the information you*  
276 *gathered for this project, including observations, findings, and insights or hypotheses for further*  
277 *exploration. Note that most projects do not gather all types of information, but instead focus on*  
278 *the information that is most relevant and appropriate for the study design of the project. Write*  
279 *"not applicable" for the types of information that you did not gather. As you describe what you*  
280 *learned, please keep in mind the limitations of the study design you used for this project.*

281 *Indicate whether what you observed was aligned with what you anticipated, and reflect on why*  
282 *this may or may not have been the case. Where appropriate, provide information obtained from*  
283 *the FOI Data Analysis Tool, including effect sizes and figures.*

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285 6.

286 a) Did you gather information about program feasibility and acceptability? If so,  
287 what information did you gather and what did you learn?

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289 ATTACH facilitators used a checklist for each ATTACH session and received  
290 participant feedback at the end of the intervention.

291

292 b) Did you gather information about program strategies? If so, what information  
293 did you gather and what did you learn? If you gathered information about  
294 fidelity of implementation describe it here.

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296 Again, we used the checklist which helped guide information on fidelity.

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298 c) Did you gather information about program targets? If so, what information did  
299 you gather and what did you learn?

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301 Not per se other than measurable data.

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303 d) Did you gather information about program outcomes? If so, what information  
304 did you gather and what did you learn?

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306 For the purpose of reporting program outcomes, the .10 level ( $p < .10$ ) was used  
307 to report statistically significant outcomes. Cohen's  $d$  values of 0.20, 0.40, and  
308 0.70 are representative of small, medium, and large effect sizes, respectively.  
309 Please refer to Appendix A for the theory of change (TOC) and the strength of  
310 evidence for each outcome measure. Please refer to Appendix B for tables which  
311 display the results of the program outcomes. Please refer to Appendix C for  
312 graphs which display the results of the program outcomes.

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### 314 **Randomized Controlled Trials**

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316 Table 5 displays the results for the sample which undertook the ATTACH  
317 intervention during pilot studies #4 and #6 (the RCTs). For the combined sample,  
318 independent samples t-tests revealed that caregivers within the treatment group  
319 reported children demonstrated the following at post-assessment, for which  
320 large effect sizes were observed:

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- Significantly augmented (improved) fine motor skills (ASQ-3 fine motor subscale score ( $M = 48.93$ ,  $SD = 15.46$ ) compared to children within the control group ( $M = 35.94$ ,  $SD = 16.65$ ) ( $p = 0.036$ ,  $t = 2.20$ ,  $d = 0.81$ ).
  - Significantly augmented (improved) problem solving skills (ASQ-3 problem solving subscale score  $M = 51.79$ ,  $SD = 9.52$ ) compared to children within the control group ( $M = 41.25$ ,  $SD = 17.17$ ) ( $p = 0.051$ ,  $t = 2.04$ ,  $d = 0.76$ ).

331 Caregivers within the treatment group also demonstrated significantly improved  
332 parental reflective functioning skills regarding interest and curiosity (PRFQ  
333 subscale score  $M = 5.71$ ,  $SD = 0.63$ ) compared to parents within the control  
334 group ( $M = 5.14$ ,  $SD = 1.07$ ) at post-assessment ( $p = 0.081$ ,  $t = 1.80$ ,  $d =$   
335  $0.65$ ). A medium effect size was observed for this comparison.

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337 Figure 1 displays the significant independent samples t-tests for pilot study #4.  
338 Figure 2a, Figure 2b, and Figure 2c display the significant independent samples  
339 t-tests for pilot study #6. Figure 3a, Figure 3b, and Figure 3c display the  
340 significant independent samples t-tests for pilot studies #4 and #6 combined.

### 341 Quasi-Experimental Studies

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344 Table 6a and Table 6b display the results for the sample which undertook the  
345 ATTACH intervention during pilot studies #5 and #7 (the quasi-experimental  
346 studies). For the combined sample paired samples t-tests revealed that  
347 caregivers reported children demonstrating the following:

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- A significant decrease in anxious/depressed behavior at post-assessment (CBCL anxious/depressed subscale  $M = 1.46$ ,  $SD = 1.45$ ) compared to pre-assessment ( $M = 2.38$ ,  $SD = 1.80$ ) ( $p = 0.046$ ,  $t = 2.22$ ,  $d = 0.62$ ). A medium effect size was observed.
  - A significant decrease in attention problems at post-assessment (CBCL attention problems subscale score  $M = 1.46$ ,  $SD = 1.61$ ) compared to pre-assessment ( $M = 2.46$ ,  $SD = 2.60$ ) ( $p = 0.021$ ,  $t = 0.74$ ,  $d = 0.74$ ). A large effect size was observed.
  - A significant decrease in sleep problems at post-assessment (CBCL sleep problems subscale score  $M = 0.92$ ,  $SD = 1.32$ ) compared to pre-assessment ( $M = 1.92$ ,  $SD = 2.45$ ) ( $p = 0.084$ ,  $t = 1.88$ ,  $d = 0.52$ ). A medium effect size was observed.

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- A significant decrease in aggressive behavior at post-assessment (CBCL aggressive behaviour subscale score  $M = 4.62$ ,  $SD = 4.35$ ) compared to pre-assessment ( $M = 7.08$ ,  $SD = 7.24$ ) ( $p = 0.096$ ,  $t = 1.81$ ,  $d = 0.50$ ). A medium effect size was observed.
  - A significant decrease in externalizing problems at post-assessment (CBCL externalizing problems total score  $M = 6.08$ ,  $SD = 5.48$ ) compared to pre-assessment ( $M = 9.54$ ,  $SD = 9.45$ ) ( $p = 0.040$ ,  $t = 2.31$ ,  $d = 0.64$ ). A medium effect size was observed.

374 Caregivers also reported that children demonstrated the following:

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- A significant augmentation (improvement) in communication skills from pre-assessment (ASQ-3 communication subscale score  $M = 45.71$ ,  $SD = 11.91$ ) to post-assessment ( $M = 52.14$ ,  $SD = 12.35$ ) ( $p = 0.013$ ,  $t = -2.86$ ,  $d = 0.76$ ). A large effect size was observed.
  - A significant augmentation (improvement) in problem solving skills from pre-assessment (ASQ problem solving subscale score  $M = 53.21$ ,  $SD = 12.49$ ) to post-assessment ( $M = 42.50$ ,  $SD = 18.05$ ) ( $p = 0.014$ ,  $t = -2.84$ ,  $d = 0.76$ ). A large effect size was observed.
  - A significant augmentation (improvement) in personal skills from pre-assessment (ASQ personal skills subscale score  $M = 55.00$ ,  $SD = 9.20$ ) to post-assessment ( $M = 50.71$ ,  $SD = 8.51$ ) ( $p = 0.097$ ,  $t = -1.79$ ,  $d = 0.48$ ). A medium effect size was observed.

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391 Finally, caregivers reported the following:

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- Significantly increased negative effects of co-parent social support from pre-assessment (SSE-Q negative social support subscale score  $M = 14.15$ ,  $SD = 5.06$ ) to post assessment ( $M = 17.38$ ,  $SD = 4.03$ ) ( $p = 0.014$ ,  $t = -2.88$ ,  $d = 0.80$ ). A large effect size was observed.
  - Significantly increased overall co-parent social support from pre-assessment (SSE-Q social support total score  $M = 55.54$ ,  $SD = 11.66$ ) to post- assessment ( $M = 47.08$ ,  $SD = 18.43$ ) ( $p = 0.074$ ,  $t = -1.95$ ,  $d = 0.54$ ). A medium effect size was observed.

- 403
- Significantly increased parental reflective functioning skills regarding  
404 interest and curiosity from pre-assessment (PRFQ subscale score  $M =$   
405  $5.19$ ,  $SD = 1.18$ ) to post-assessment (PRFQ interest and curiosity subscale  
406 score  $M = 5.90$ ,  $SD = 0.80$ ) ( $p = 0.065$ ,  $t = -2.04$ ,  $d = 0.56$ ). A medium effect  
407 size was observed.
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409 Figure 4 displays the significant paired samples t-tests for pilot study #5. Figure  
410 5a and Figure 5b display the significant paired samples t-tests for pilot study #7.  
411 Figure 6a, Figure 6b, and Figure 6c display the significant independent samples  
412 t-tests for pilot studies #5 and #7 combined.

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414 Unexpectedly, changes in children's self-regulation skills were not significant for  
415 any of the pilot studies. For future data collection, we will utilize a measure  
416 that's more sensitive towards capturing this concept. In addition, we will  
417 consider the timing of assessments, whereby some skills might take longer for  
418 children and caregiver to develop, beyond when questionnaires were  
419 administered to caregivers at post-assessment. For example, for future data  
420 collection we plan to undertake 3 month delayed post-assessments.

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422 As part of the original TOC, we expected the ATTACH intervention to influence  
423 caregiver's depression and children's social-emotional adjustment and executive  
424 functioning. These outcome measure were removed from the original TOC, given  
425 the preliminary nature of these results and how these outcome measures  
426 weren't measured for a sufficient period of time.

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428 There were no significant differences in outcome measures in accordance with  
429 the study site. Future analyses will examine parent-infant interaction and  
430 attachment.

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- 432 e) Did you gather information about program moderators? If so, what information  
433 did you gather and what did you learn?
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435 We did collect data on child sex, depression severity and mothers' attachment  
436 pattern that we have not yet examined. We also collected data on mothers' and  
437 children's epigenome to see if intervention impacts, especially on immune cell  
438 epigenetics, may be observed. Our future research will explore children's  
439 differential (genetic) susceptibility to environmental intervention.

440

441 **Theory of Change**

442 7. Please describe if and how your theory of change has been or could be revised based on  
443 learning from this project. What are some potential next steps for continuing to  
444 investigate your theory of change?

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446 We had to shrink our TOC to be more parsimonious and manageable. For example,  
447 caregiver’s depression and children’s social-emotional adjustment and executive  
448 functioning were removed.

449 **Program and Materials Development**

450 8. Describe any changes made to your program materials as part of this project and  
451 identify potential next steps for further development. How are these potential next  
452 steps informed by what you learned from this project? If your team completed a  
453 Materials Review and/or Materials Development Plan at the beginning of this project,  
454 please reflect on the progress made towards the stated goals.

455  
456 In regards to training in-house ATTACH facilitators, we added a more in-depth checklist  
457 for session step-by-step guide of questions that facilitators should ask participants in  
458 order to give trainees a refined detailed checklist so that they would not forget  
459 important elements of the session.

460 **Summary of Lessons Learned**

461 9. Please summarize what you consider to be the 3-5 main takeaways or lessons learned  
462 that emerged from this project. Feel free to use bullet points.

- 463
- 464 • The process of recruiting participants was challenging as a result of prospective  
465 participants who did not attend recruitment appointments.
  - 466
  - 467 • Working with agencies who had different experience levels with research  
468 represented a challenge and opportunity for partnership building. We had to be  
469 very innovative in helping agencies to understand recruitment.
  - 470
  - 471 • At the conclusion of the ATTACH intervention, caregivers within the treatment  
472 group of the RCTs reported that children demonstrated significantly augmented  
473 cognitive development compared to caregivers within the control group.  
474 Caregivers within the treatment group also reported a significant increase in  
475 parental reflective functioning.
  - 476
  - 477 • The caregivers who undertook the quasi-experiment studies reported that  
478 children demonstrated a significant augmentation in cognitive development and

479 a significant decrease in behavioural problems from pre-assessment to post-  
480 assessment. Caregivers also reported an increase in parental reflective  
481 functioning, an increase in executive function, and an increased perception of  
482 social support from the co-parent.

## 483 Potential Next Steps

484 10. What is your current thinking about the potential next steps for implementing and  
485 evaluating this program? Please describe how the potential next steps you identified are  
486 informed by what you learned over the course of this project.

487  
488 Overall, we observed that the ATTACH intervention contributed to significant increases  
489 in caregiver's RF, executive functioning, and perception of social support. The ATTACH  
490 intervention also contributed to a significant increase in children's cognitive  
491 development and a significant decrease in children's behavioural problems.

492  
493 We have much additional data to evaluate and publish including information on parent-  
494 child interaction, attachment, and epigenetics. We intend to scale the ATTACH program  
495 to additional sites across Canada, if successful with our large (\$1 million CDN) grant in  
496 review. We also hope to test the program with 4 – 5 intervention sessions with a  
497 normative sample at the YWCA Hub facility in Calgary, Alberta. Staff members at this  
498 YWCA location have expressed interest in assisting with the facilitation of intervention  
499 sessions. Given the finding that the ATTACH intervention improves parenting quality and  
500 child development, we plan to continue undertaking ATTACH pilot studies with  
501 vulnerable mothers at inner-city agencies within Calgary into the future.

502  
503 We have commercialized the program and hope to have agencies seek us out for  
504 training.

505  
506 11. Describe the FOI staff support that you received over the course of the project, including  
507 workshops and email/phone consultation. Please share what aspects of this support you  
508 found most helpful. Are there any additional supports that would have been beneficial?

509  
510 The ATTACH team had monthly three hour phone conferences with an FOI advisor.  
511 During these helpful exchanges, the FOI advisor assisted in fleshing out the pros and  
512 cons that ATTACH facilitators encountered. The FOI advisor also provided guidance on  
513 keeping the theory of change model at the forefront of the study.

## 514 Learning Community

515 12. Please describe the most meaningful interactions you may have had with other  
516 members of the FOI community, including other portfolio project teams. What did you  
517 find most valuable about the interaction(s)?

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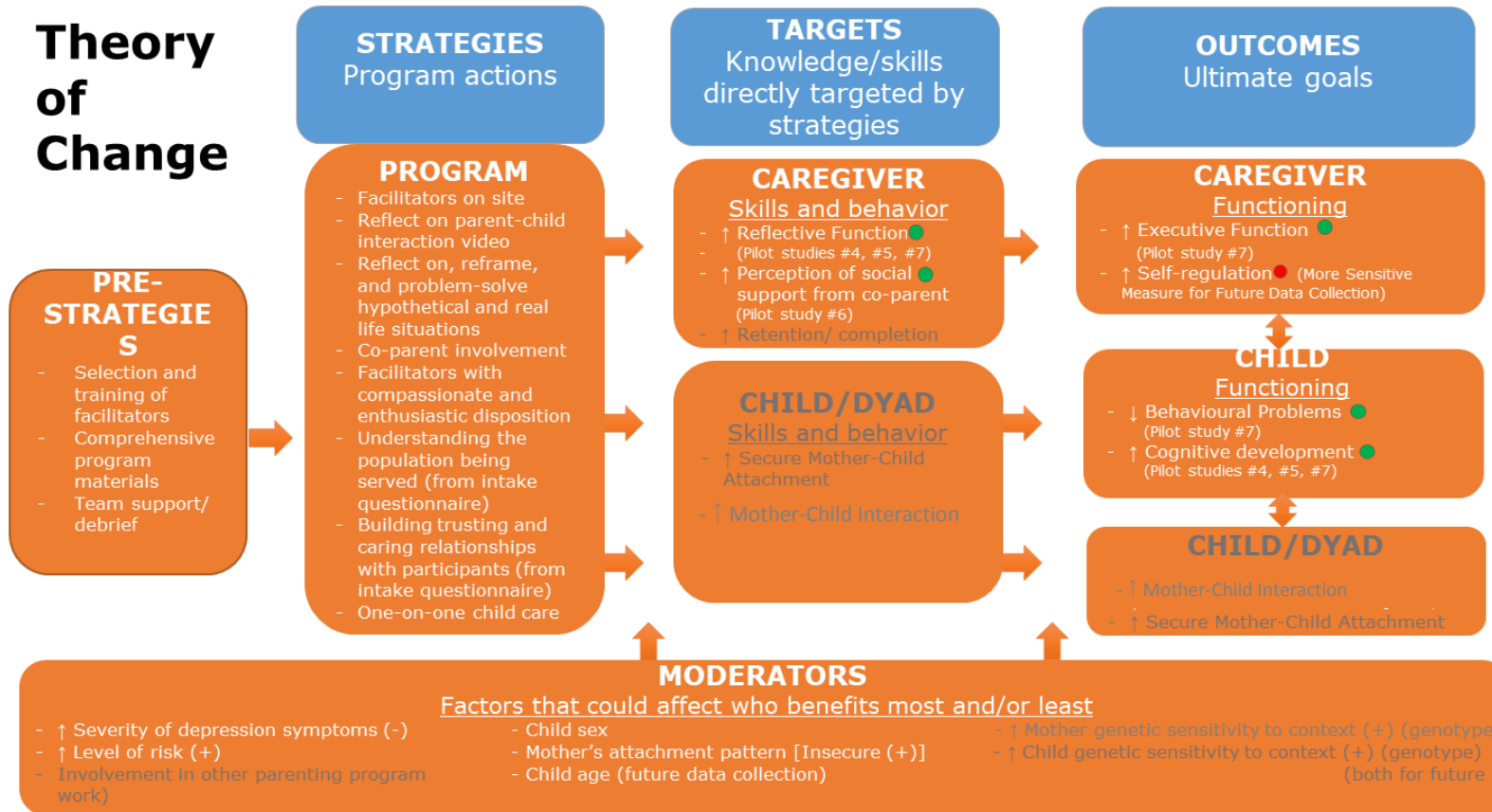
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Meetings with the CEOs of the inner-city agencies were very illuminating. The DH was at a lower level of experience in evidence-based practice and thus required a lot of support to help the senior leadership to “trickle down” to the service providers. CUPS has been an outstanding mentor to DH.

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Appendix A – Theory of Change



N.B. Grey text was NOT be part of FOI evaluation.

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- Strong evidence of change (d>.7 and significant)
- Weak or no evidence of change

530 Appendix B – Tables

531

532 Table 1 – Caregiver Demographics for Pilot Study #4 (Pre-

533 Assessment)

	<i>n</i>	Percent or Mean	<i>SD</i>
<b>Age (Years)</b>		30.78	7.55
<b>Relationship to Child</b>			
Mother	13	92.86	
Grandparent	1	7.14	
<b>Ethnicity</b>			
Aboriginal	1	7.14	
African	1	7.14	
Caucasian	9	64.29	
Hispanic	1	7.14	
Mixed race	2	14.29	
<b>Primary Language</b>			
English	11	78.57	
Other	3	21.43	
<b>Born in Canada</b>			
No	4	28.57	
Yes	10	71.43	
<b>Education</b>			
Some high school	4	28.57	
High school diploma	6	42.86	
Some college	4	28.57	
<b>Marital Status</b>			
Partnered	4	28.57	
Single	10	71.43	
<b>Employment Status</b>			

Full-time	8	57.14
Maternity leave	1	7.14
Unemployed/not in the workforce	4	28.57
Missing	1	7.14

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570 Table 2 – Child Demographics for Pilot Study #4  
571 (Pre-Assessment)

	<i>n</i>	Percent or Mean	<i>SD</i>
<b>Age (Months)</b>		24.98	6.60
<b>Gender</b>			
Male	8	57.14	
Female	6	42.86	
<b>Ethnicity</b>			
African	2	14.29	
Aboriginal	1	7.14	
Caucasian	9	64.29	
Mixed Race	2	14.29	
<b>Primary Language</b>			
English	14	100.00	

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591 Table 3 – Caregiver Demographics for Pilot Study #6 (Pre-  
592 Assessment)

	<i>n</i>	<b>Percent or Mean</b>	<i>SD</i>
<b>Age (Years)</b>		31.55	4.96
<b>Relationship to Child</b>			
Mother	20	100.00	
<b>Ethnicity</b>			
Aboriginal	7	35.00	
Afghani	1	5.00	
African	2	10.00	
Asian	2	10.00	
Caucasian	5	25.00	
Hispanic	1	5.00	
Mixed race	2	10.00	
<b>Primary Language</b>			
English	17	85.00	
Other	3	15.00	
<b>Born in Canada</b>			
No	7	35.00	
Yes	13	65.00	
<b>Education</b>			
Less than high school	2	10	
Some high school	4	20.00	
High school diploma	6	30.00	
Some college	8	40.00	
<b>Marital Status</b>			
Partnered	1	5.00	
Single	19	95.00	
<b>Employment Status</b>			

Part-time	4	20.00
Other	1	5.00
Full-time student	1	5.00
Unemployed/not in the workforce	14	70.00

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596 Table 4 – Child Demographics for Pilot Study #6  
597 (Pre-Assessment)

	<i>n</i>	Percent or Mean	<i>SD</i>
<b>Age (Months)</b>		30.78	17.49
<b>Gender</b>			
Male	9	45.00	
Female	11	55.00	
<b>Ethnicity</b>			
Afghani	1	5.00	
African	2	10.00	
Aboriginal	2	10.00	
Asian	2	10.00	
Caucasian	5	25.00	
Hispanic	1	5.00	
Mixed Race	5	25.00	
Pacific Island	2	1.00	
		0	
<b>Primary Language</b>			
English	17	85.00	
Non-English	3	15.00	

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613 Table 5: Between-Group Comparisons of Outcome Measures for Randomized Controlled Trials

	<i>n</i>	Control M ( <i>SD</i> )	Treatment M ( <i>SD</i> )	<i>t</i>	<i>p</i>	<i>d</i>
<b><u>Pilot Study #4</u></b>						
ASQ-3 (Fine Motor Skills Subscale)	14	37.14 (13.80)	52.86 (6.98)	-2.69	0.020*	1.44
PRFQ (Interest and Curiosity in Mental States Subscale)	14	5.24 (0.51)	5.80 (0.44)	-2.21	0.047*	1.17
<b><u>Pilot Study #6</u></b>						
SSE-Q (Information Social Support Subscale)	20	9.75 (9.75)	12.50 (3.14)	-1.84	0.095*	0.38
<b><u>Combined (Pilot Studies #4 and #6)</u></b>						
ASQ-3 (Fine Motor Subscale)	34	35.94 (16.65)	48.93 (15.46)	2.20	0.036*	0.81
ASQ-3 (Problem Solving Skills Subscale)	34	41.25 (17.17)	51.79 (9.52)	2.04	0.051*	0.76
PRFQ (Interest and Curiosity in Mental States Subscale)	34	5.14 (1.07)	5.71 (0.63)	1.80	0.081*	0.65

614 \**p*<.10615 Note: ASQ-3 = Ages and Stages Questionnaire, Third Edition; PRFQ = Parental Reflective  
616 Functioning Questionnaire; SSE-Q = Social Support Effectiveness Questionnaire

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631 Table 6a: Within-Group Comparisons of Outcome Measures for Quasi-Experimental Studies

	<i>n</i>	Pre- Assessment M ( <i>SD</i> )	Post- Assessment M ( <i>SD</i> )	<i>t</i>	<i>p</i>	<i>d</i>
<b><u>Pilot Study #5</u></b>						
ASQ-3 (Problem Solving Subscale)	14	48.33 (8.16)	57.50 (4.18)	-2.45	0.058*	1.00
PRFQ (Pre-Mentalizing Subscale)	14	2.30 (0.62)	1.53 (0.68)	2.93	0.043*	1.31
<b><u>Pilot Study #7</u></b>						
SSE-Q (Negative Social Support Subscale)	20	13.75 (5.28)	16.75 (4.77)	-2.05	0.080*	0.72
CBCL (Sleep Problems Subscale)	20	2.50 (2.87)	0.88 (1.35)	2.03	0.082*	0.72
CBCL (Attention Problems Subscale)	20	3.25 (3.05)	2.00 (1.77)	2.37	0.049*	0.84
CBCL (Aggressive Behaviour Subscale)	20	8.25 (7.81)	4.38 (4.53)	2.68	0.031*	0.95
CBCL (Externalizing Problems Total Score)	20	11.50 (10.59)	6.38 (6.16)	2.93	0.022*	1.04
BRIEF-A Total Score	20	35.50 (36.70)	27.25 (33.30)	2.59	0.036*	0.92
ASQ-3 (Communication Subscale)	20	44.38 (13.21)	50.63 (13.21)	-2.76	0.028*	0.97
ASQ-3 (Problem Solving Subscale)	20	38.13 (22.51)	50.00 (15.81)	-1.92	0.097*	0.68

632 \* $p < .10$ 

633 Note: ASQ-3 = Ages and Stages Questionnaire; PRFQ = Parental Reflective Functioning

634 Questionnaire SSE-Q = Social Support Effectiveness Questionnaire; CBCL = Child Behaviour

635 Checklist; P; BRIEF-A = Behaviour Rating Inventory of Executive Function for Adults

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637 Table 6b: Within-Group Comparisons of Outcome Measures for Quasi-Experimental Studies

	<i>n</i>	Pre- Assessment M ( <i>SD</i> )	Post- Assessment M ( <i>SD</i> )	<i>t</i>	<i>p</i>	<i>d</i>
<b>Combined (Pilot Studies #5 and #7)</b>						
SSE-Q (Negative Social Support Subscale)	34	14.15 (5.06)	17.38 (4.03)	-2.88	0.014*	0.80
SSE-Q Total Score	34	47.08 (18.43)	55.54 (11.66)	-1.95	0.074*	0.54
CBCL (Anxious/Depressed Subscale)	34	2.38 (1.80)	1.46 (1.45)	2.22	0.046*	0.62
CBCL (Sleep Problems Subscale)	34	1.92(2.46)	0.92 (1.32)	1.88	0.084*	0.52
CBCL (Attention Problems Subscale)	34	2.46 (2.60)	1.46 (1.61)	2.66	0.021*	0.74
CBCL (Aggressive Behaviour Subscale)	34	7.08 (7.24)	4.62 (4.35)	1.81	0.096*	0.50
CBCL (Externalizing Problems Total Score)	34	9.54 (9.45)	6.08 (5.48)	2.31	0.040*	0.64
ASQ-3 (Communication Skills Subscale)	34	45.71 (11.91)	52.14 (12.35)	-2.86	0.013*	0.76
ASQ-3 (Problem Solving Skills Subscale)	34	42.50(18.05)	53.21 (12.49)	-2.84	0.014*	0.76
ASQ-3 (Personal Skills Subscale)	34	50.71 (8.51)	55.00 (9.20)	-1.79	0.097*	0.48
PRFQ (Interest and Curiosity Subscale)	34	5.19 (1.18)	5.90 (0.80)	-2.04	0.065*	0.56

638 \* $p < .10$ 

639 Note: SSE-Q = Social Support Effectiveness Questionnaire; CBCL = Child Behaviour Checklist;  
 640 ASQ-3 = Ages and Stages Questionnaire; PRFQ = Parental Reflective Functioning Questionnaire

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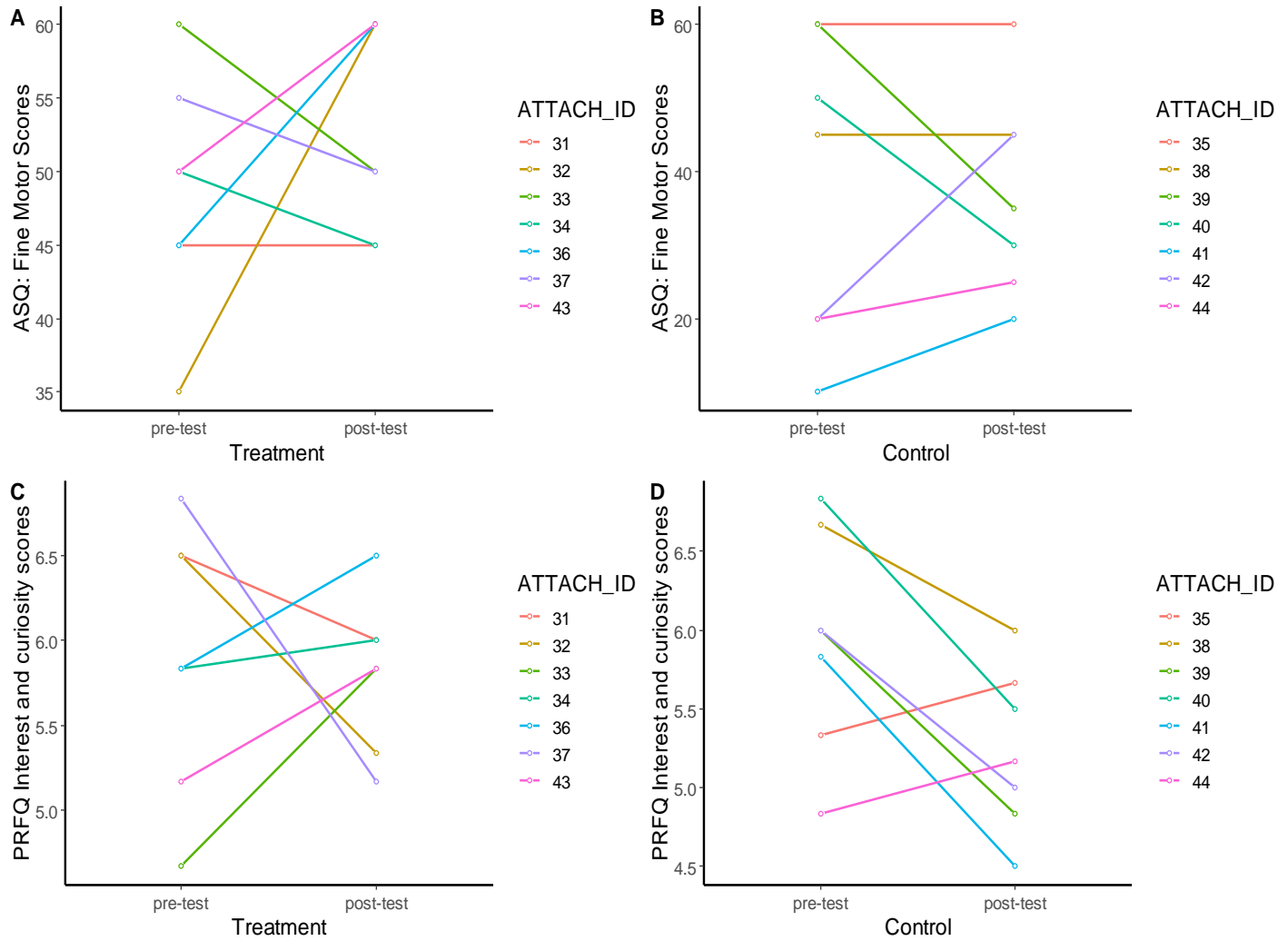
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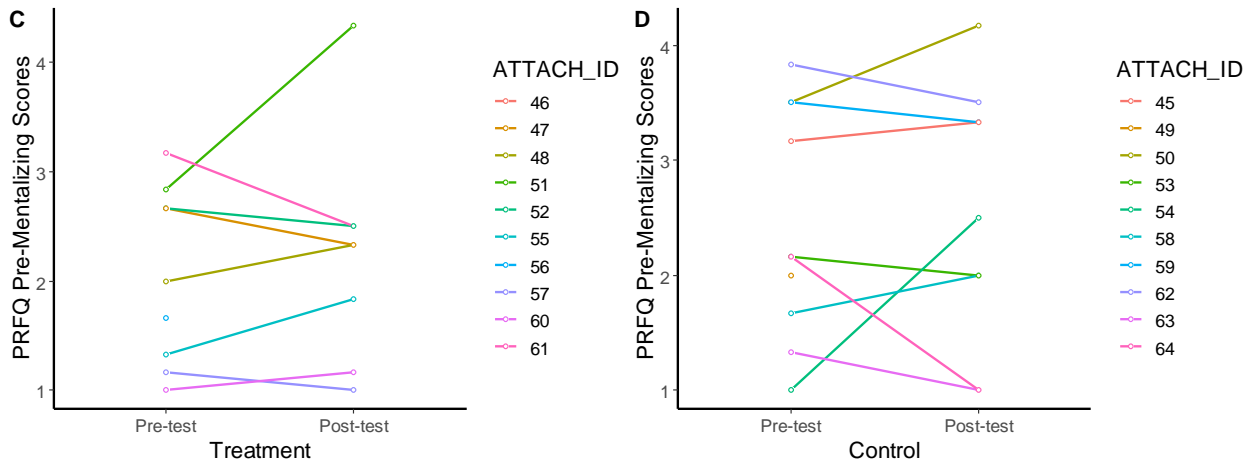
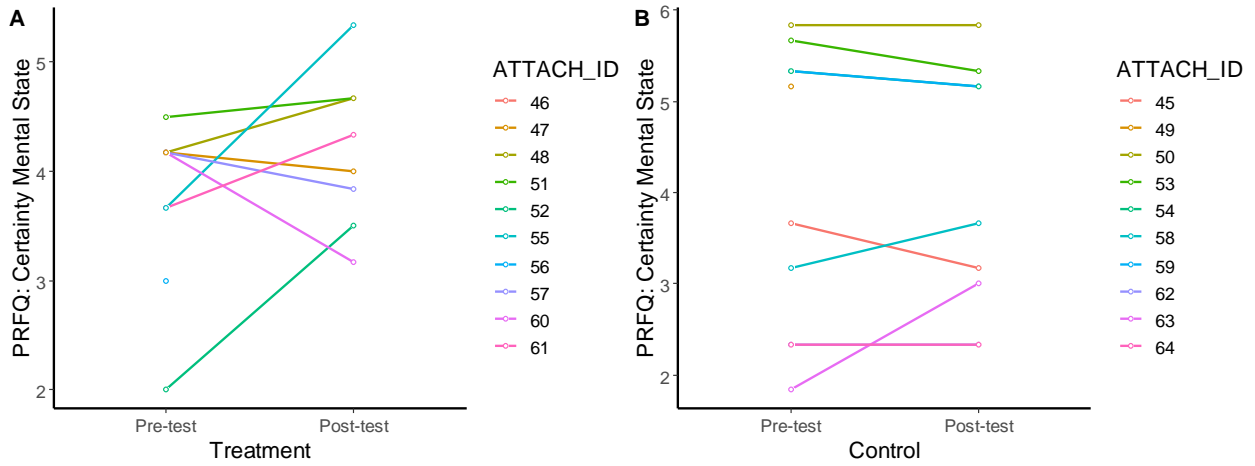
Figure 1: Significant Results for the Randomized Controlled Trials – Pilot Study #4



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Figure 2a: Significant Results for the Randomized Controlled Trials – Pilot Study #6

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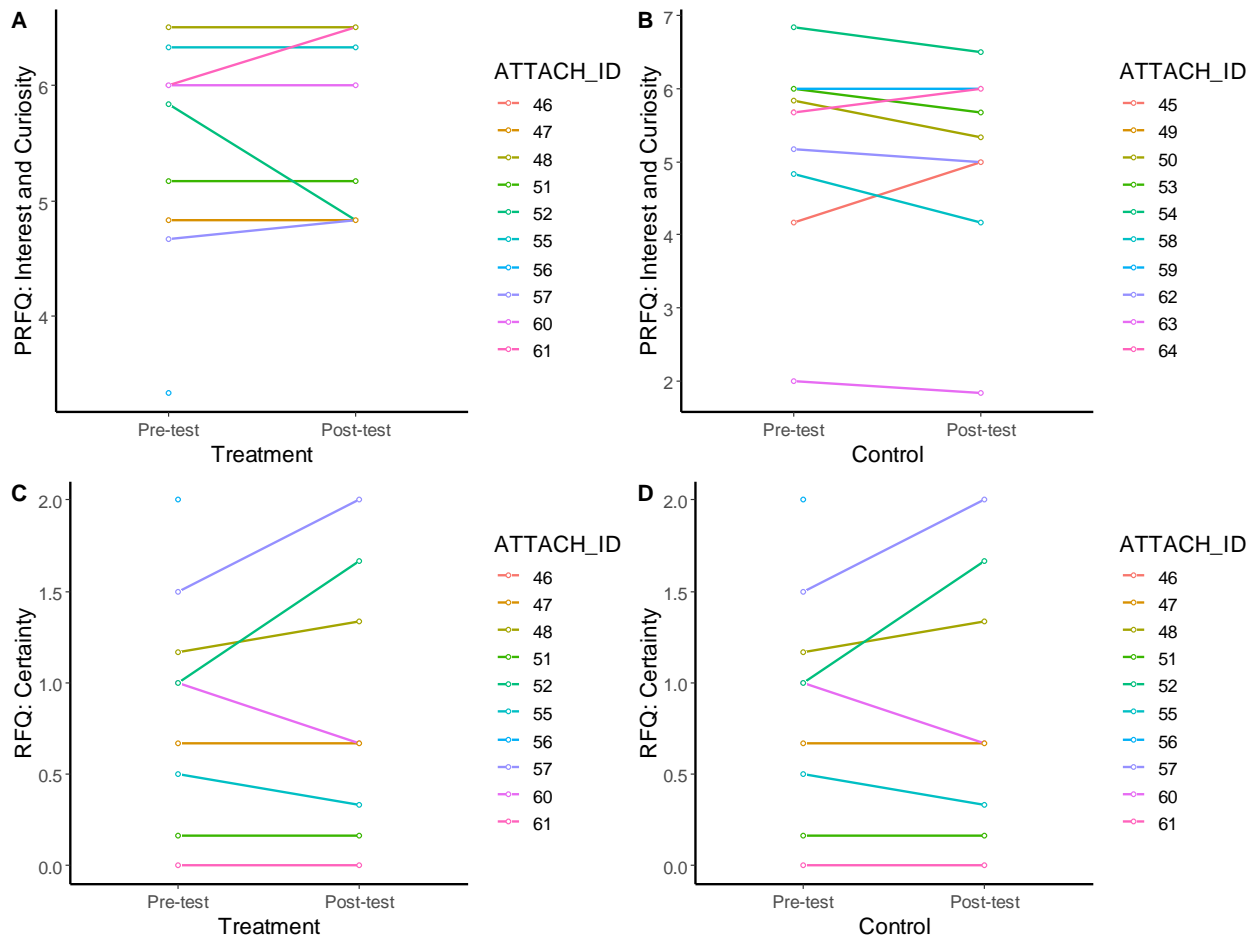
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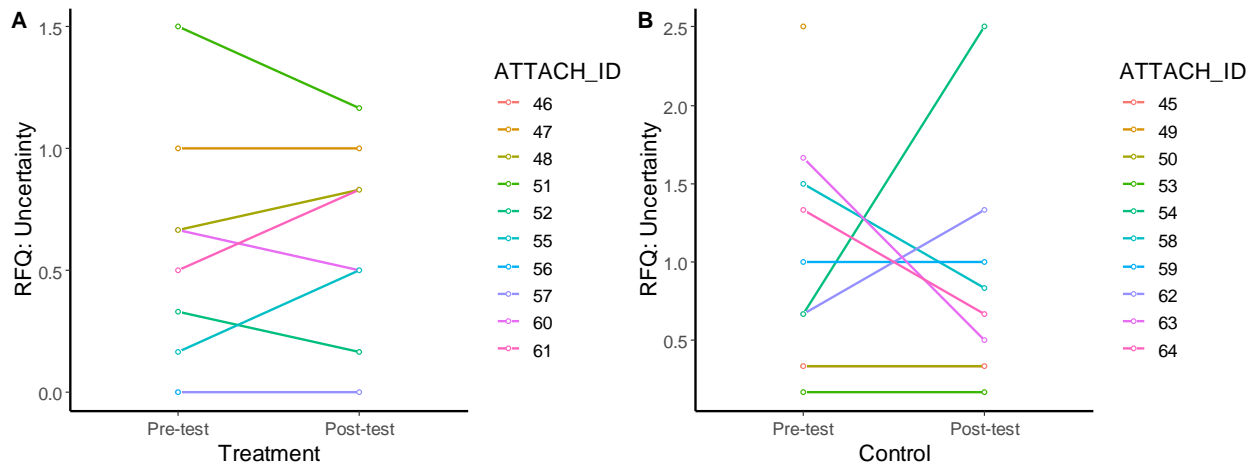
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681 Figure 2b: Significant Results for the Randomized Controlled Trials – Pilot Study #6



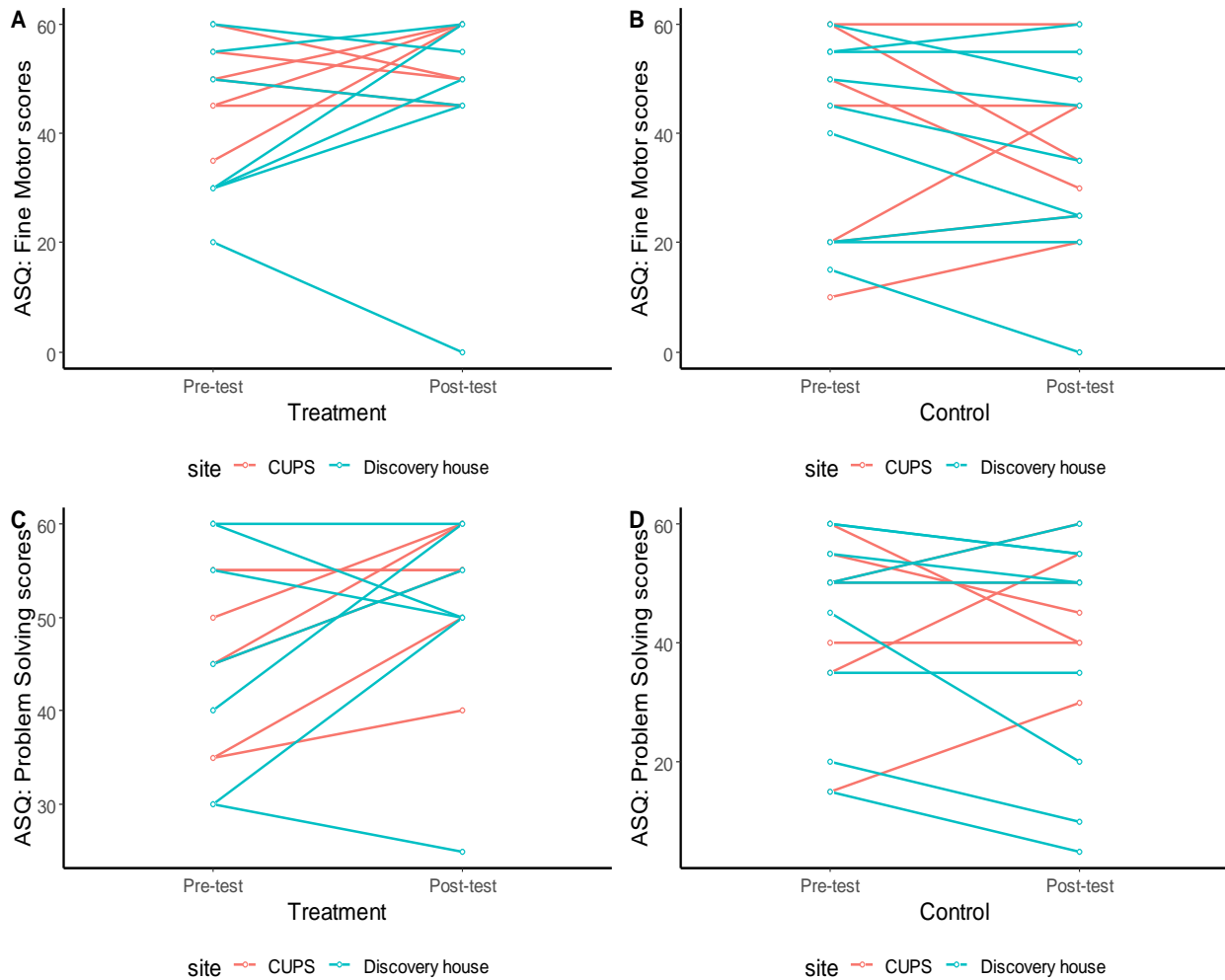
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698 Figure 2c: Significant Results for the Randomized Controlled Trials – Pilot Study #6



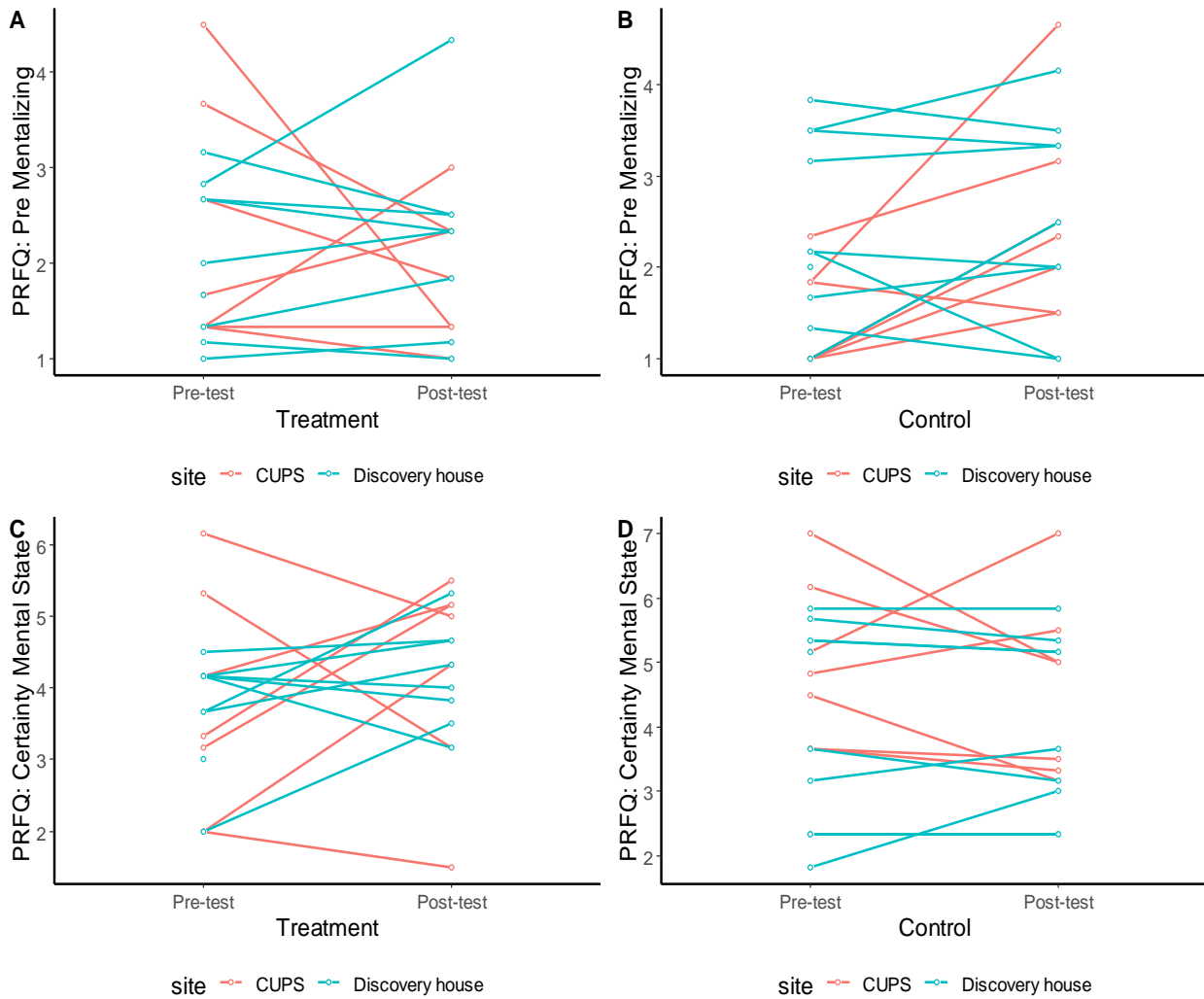
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716 Figure 3a: Significant Results for the Randomized Controlled Trials – Pilot Studies #4 & #6  
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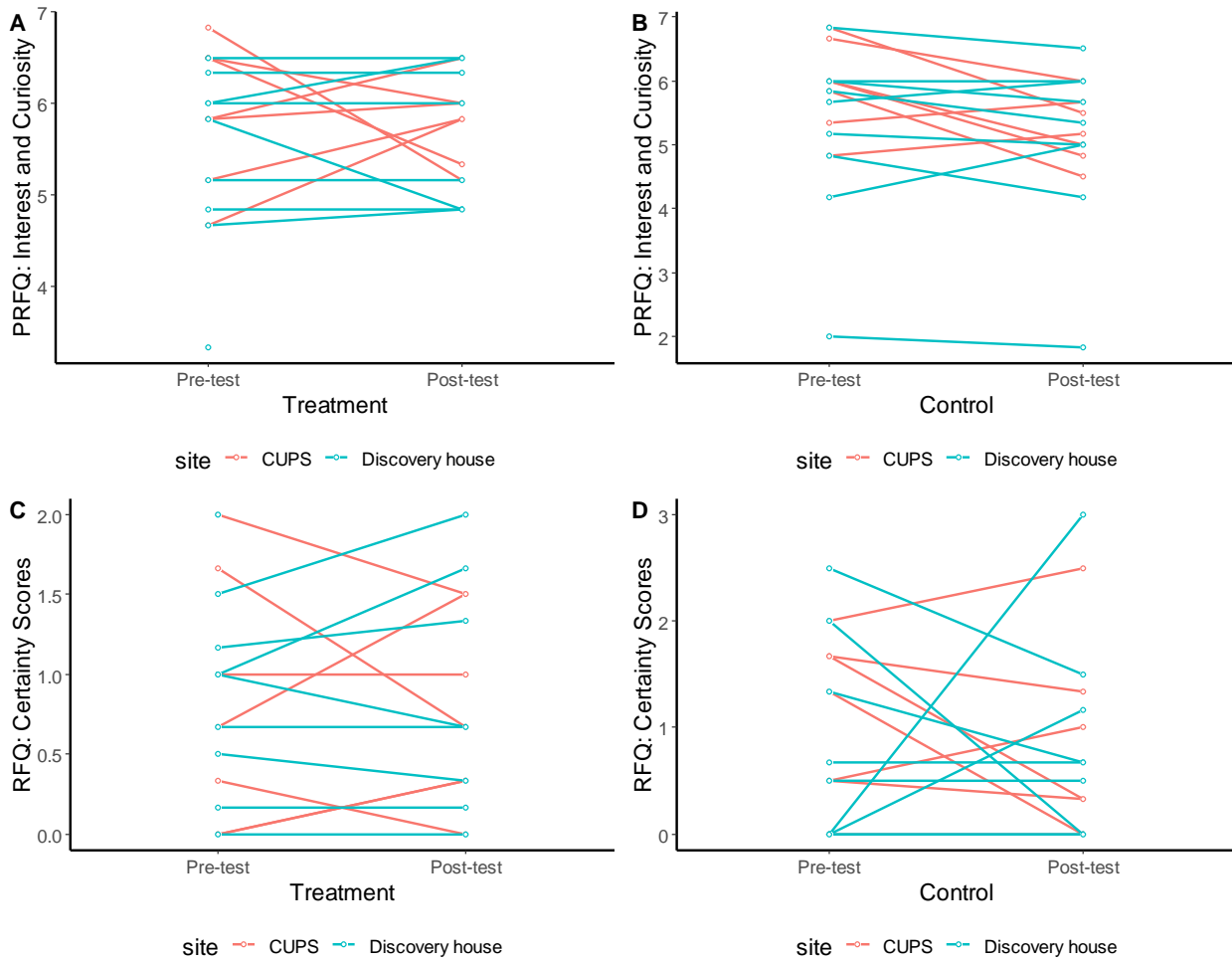
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729 Figure 3b: Significant Results for the Randomized Controlled Trials – Pilot Studies #4 & #6



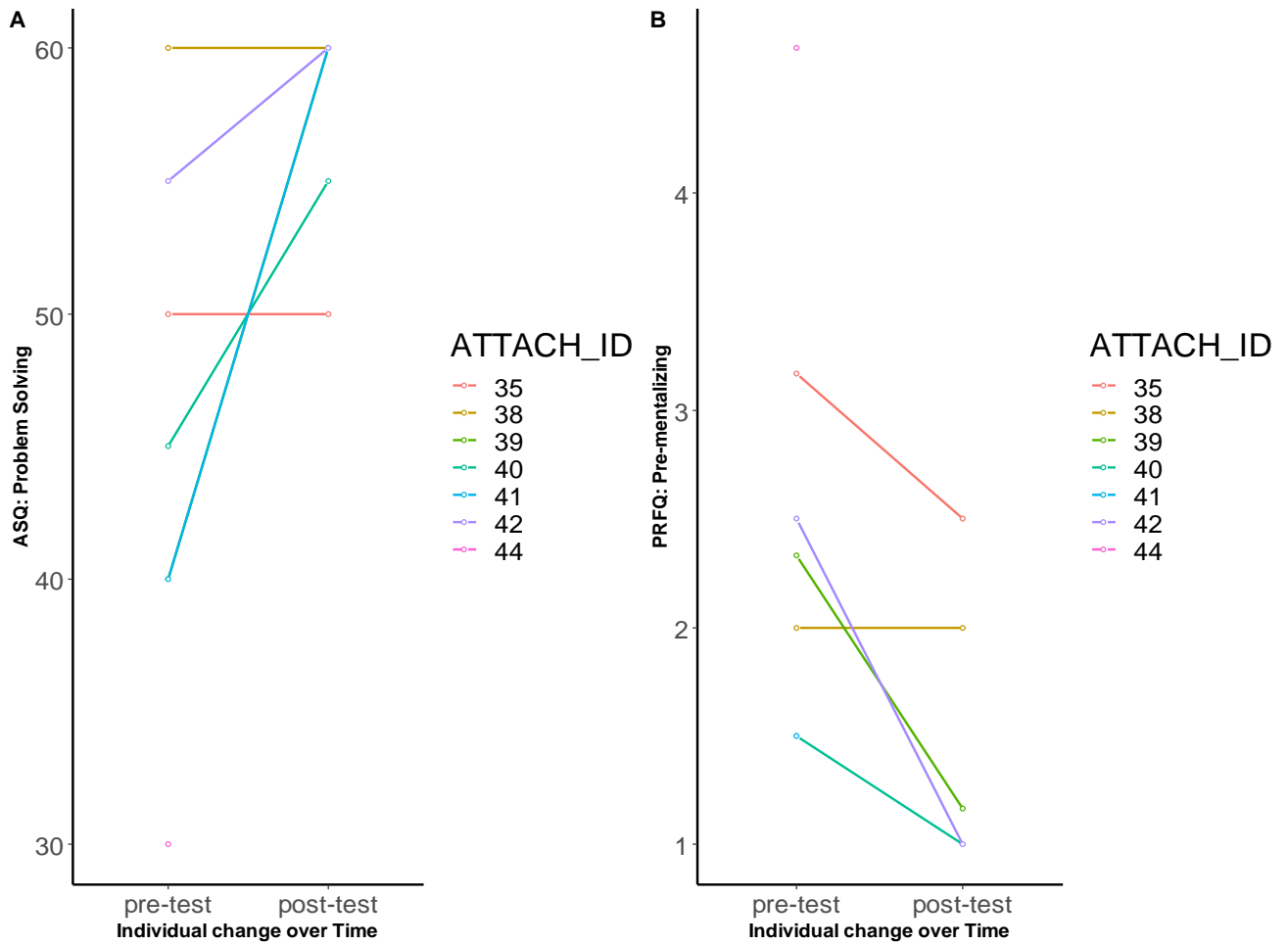
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743 Figure 3c: Significant Results for the Randomized Controlled Trials – Pilot Studies #4 & #6



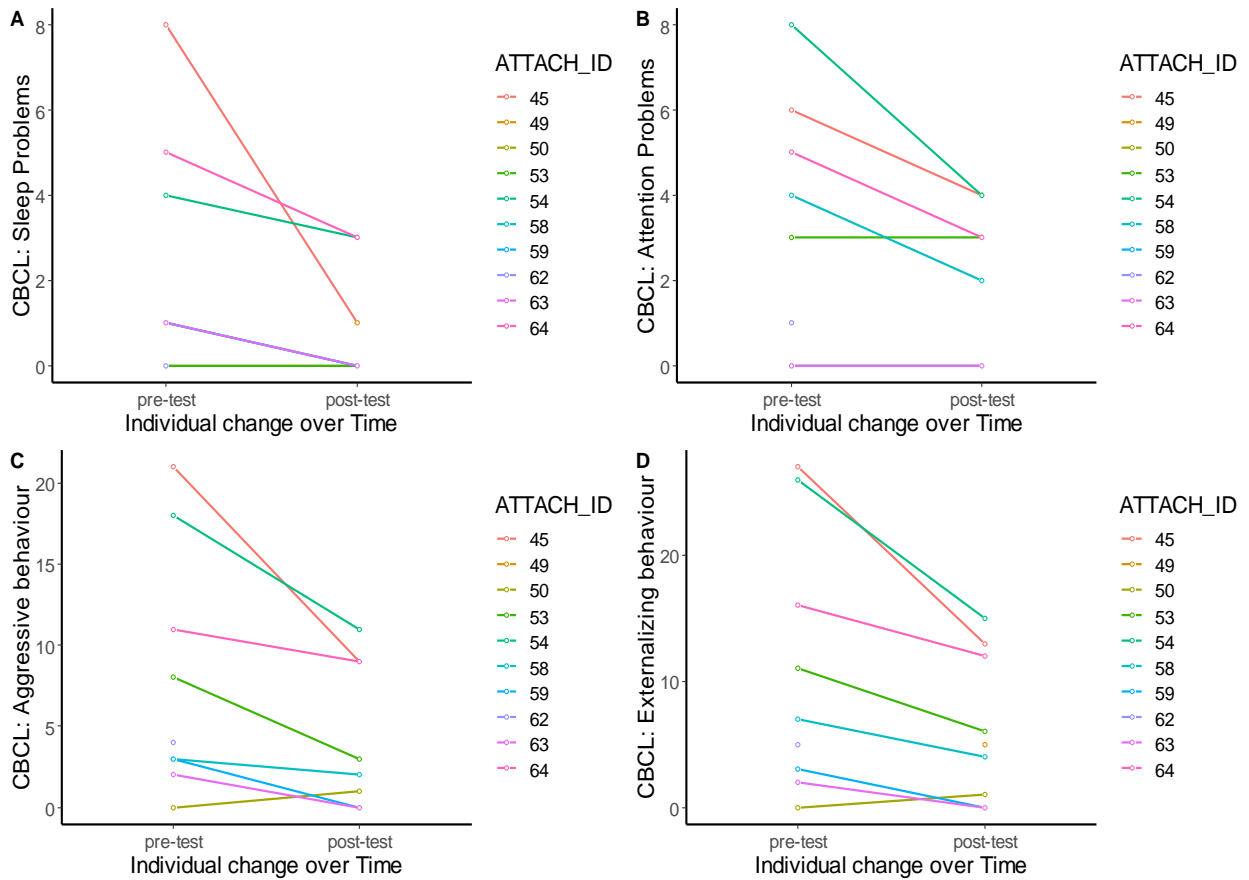
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759 Figure 4: Significant Results for the Quasi-Experimental Studies – Pilot Study #5



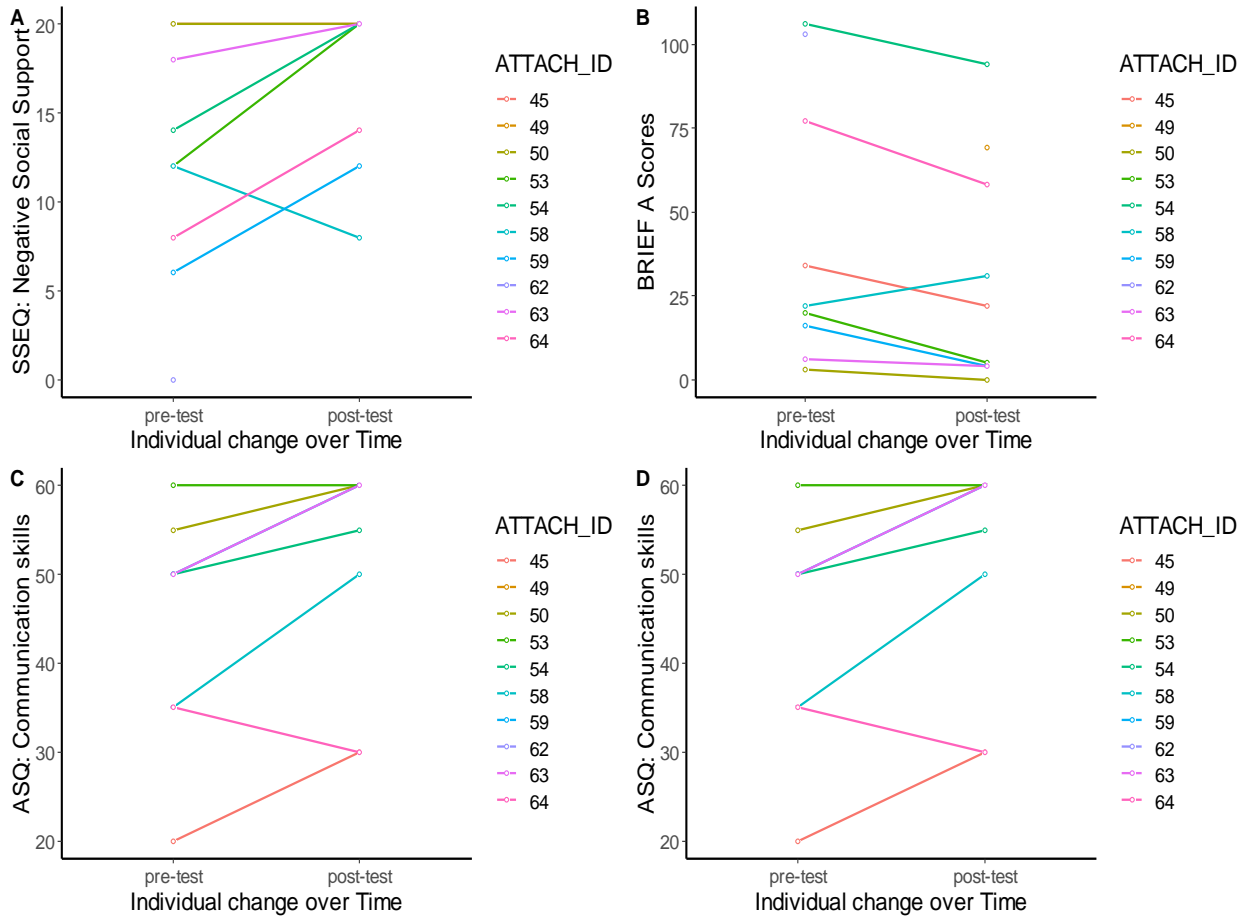
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776 Figure 5a: Significant Results for the Quasi-Experimental Studies – Pilot Study #7



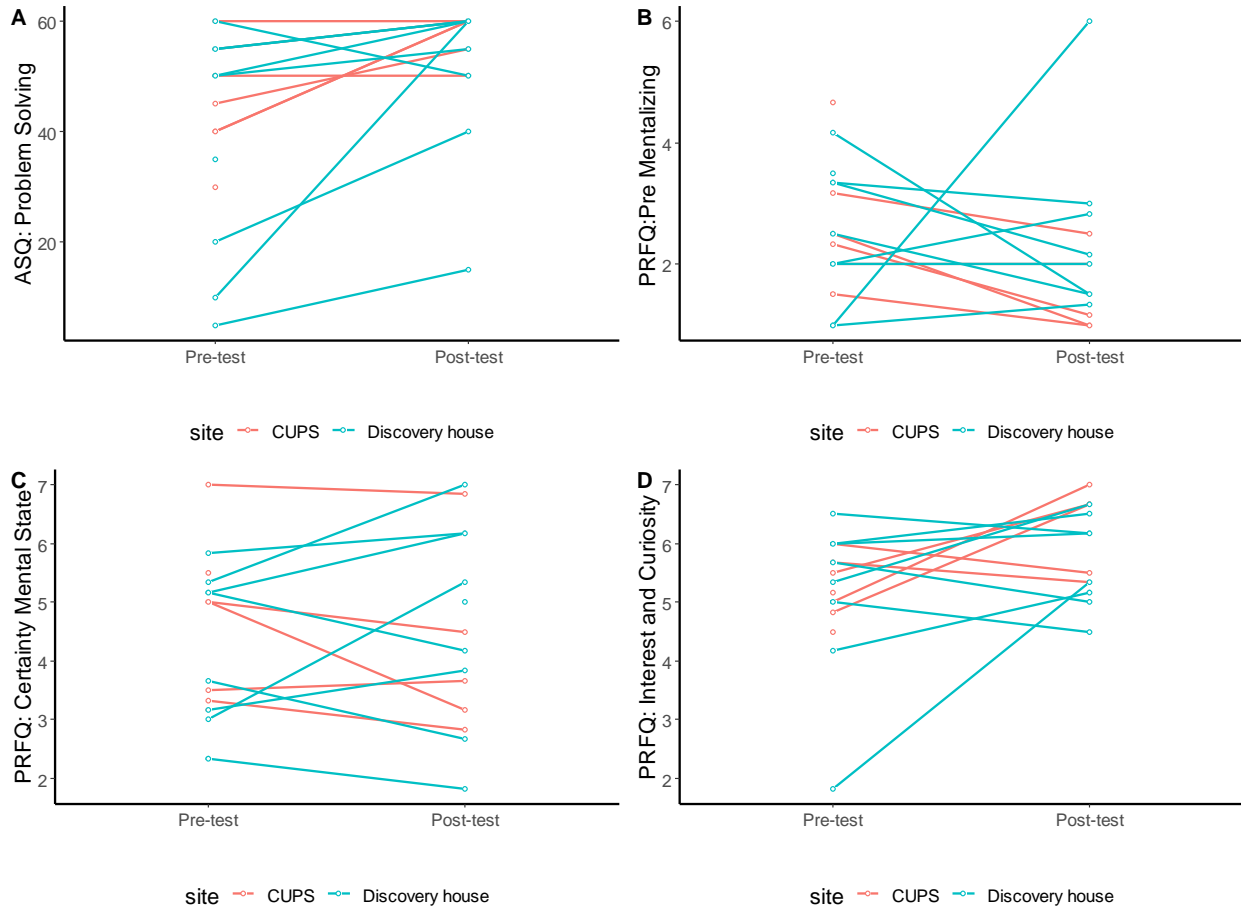
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796 Figure 5b: Significant Results for the Quasi-Experimental Studies – Pilot Study #7



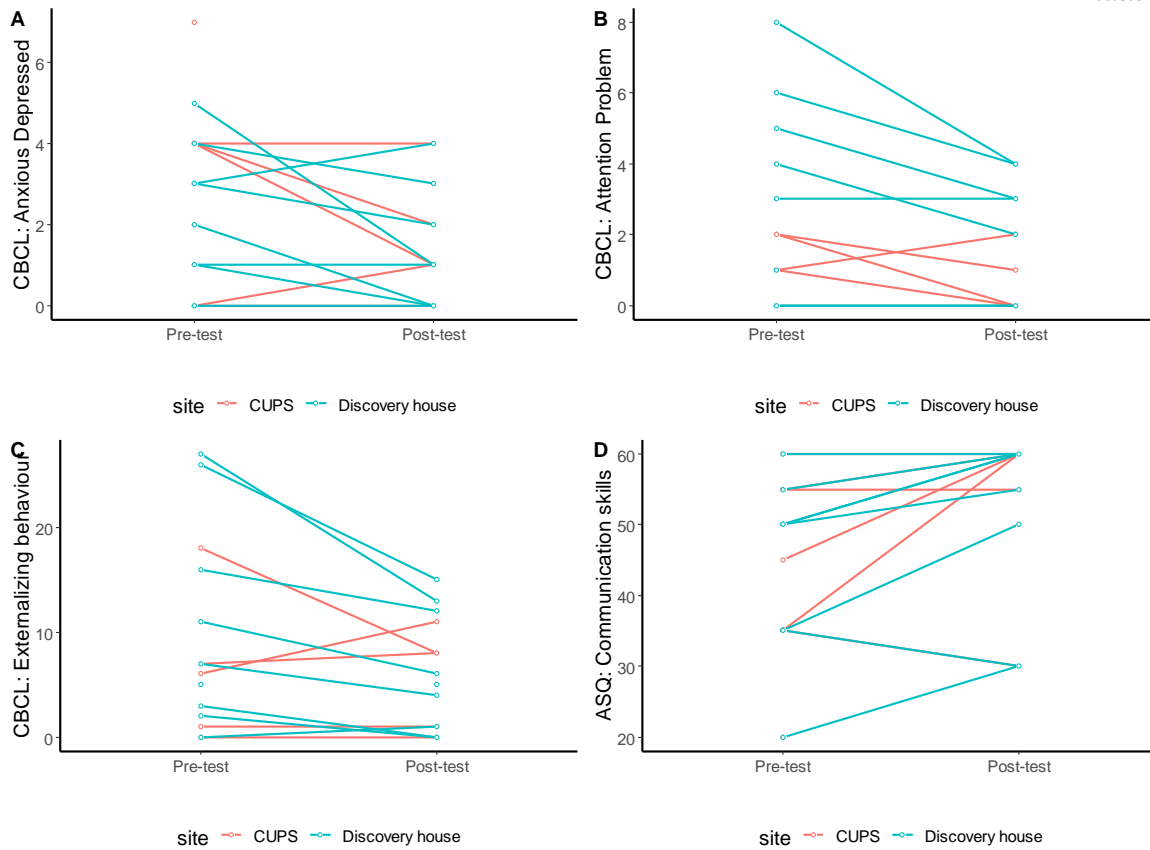
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815 Figure 6a: Significant Results for the Randomized Controlled Trials – Pilot Studies #5 & #7



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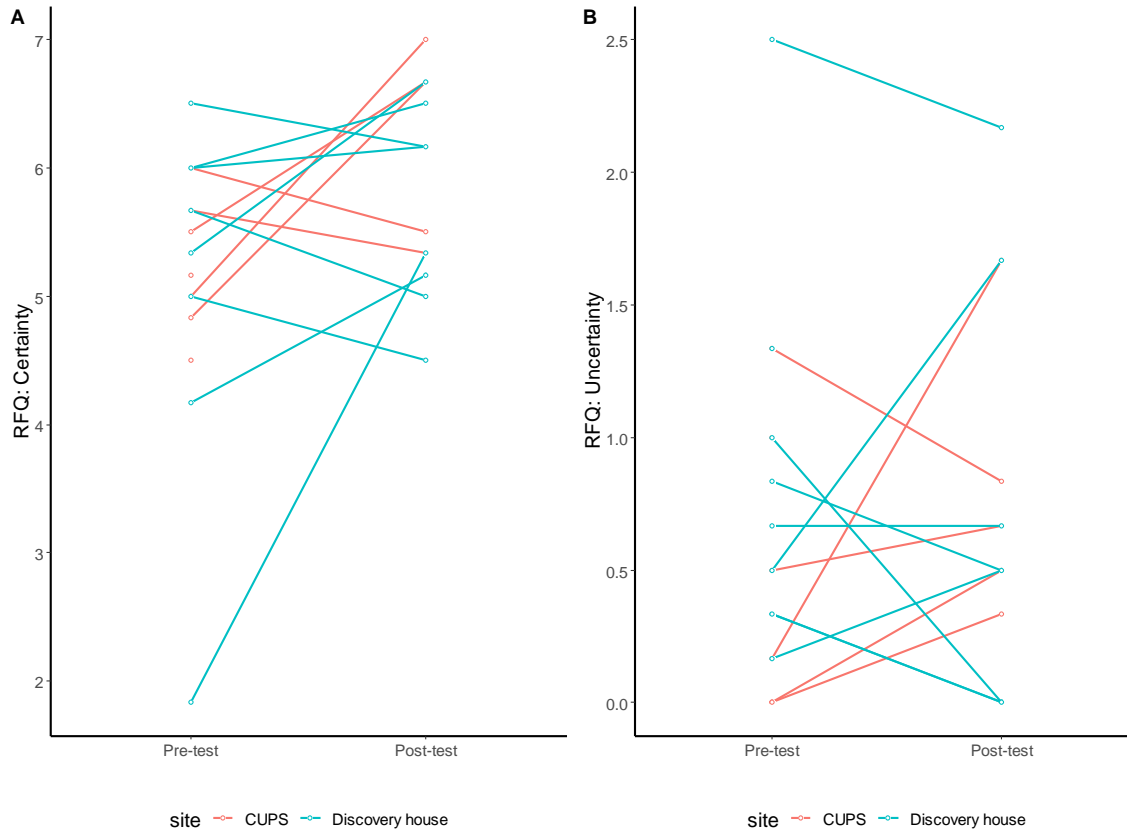
832 Figure 6b: Significant Results for the Randomized Controlled Trials – Pilot Studies #5 & #7



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873 Figure 6c: Significant Results for the Randomized Controlled Trials – Pilot Studies #5 & #7 874



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