Centre de recherche sur les services éducatifs et communautaires

Centre for Research on Educational and Community Services

Université d'Ottawa | University of Ottawa

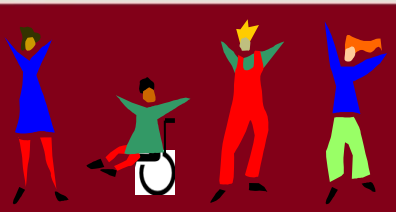
Can academic tutoring help children in care to catch up in reading and math?
A randomized effectiveness trial

Robert J. Flynn

School of Psychology
& Centre for Research on Educational and Community Services
University of Ottawa (Canada)

Oviedo, Spain
October 18, 2012

uOttawa



Ontario Association of Children's Aid Societies
The voice of child welfare in Ontario

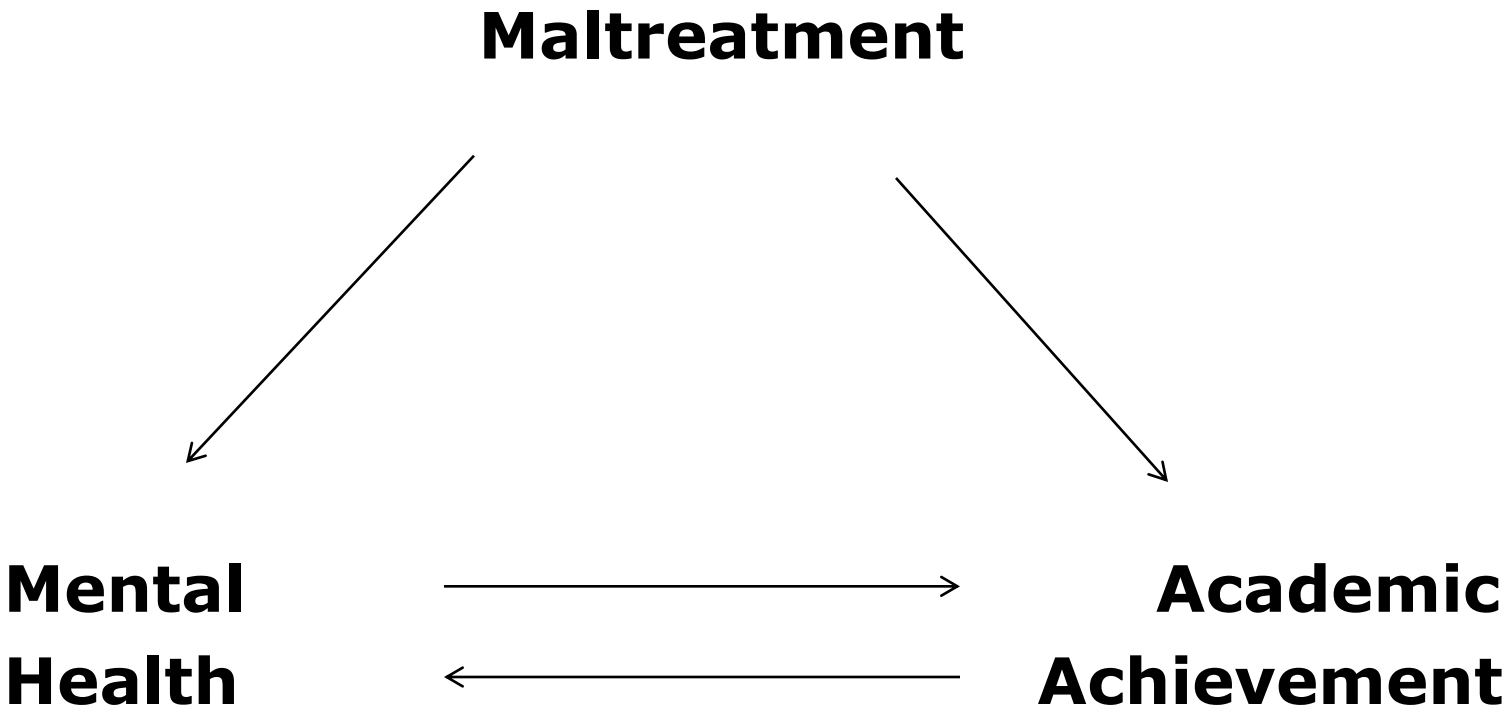
Canada & Ontario

Overview of our study of effects of tutoring in reading & math

- **Presentation is for both practitioners & researchers**
- **A randomized effectiveness ("real world") trial of individual tutoring with foster children**
- **Sample:**
  - ***At pre-test:*** Of 77 foster children, aged 6-13, 42 were randomly assigned to individual tutoring and 35 to a wait-list control group (who received tutoring during next school year)
  - ***At post-test:*** 30 foster children in tutoring group and 34 in wait-list control group were compared in terms of their gains in reading and math
- **Tutoring intervention:** 30 weeks (3 hrs/week) of individual direct-instruction tutoring by the children's foster parents
- **Our 2 key questions, for both practice & research:**
  - ***1. Does individual tutoring help children in foster care to catch up in reading & math?*** (Flynn et al., 2012)?
  - ***2. Does tutoring have similar effects for girls & boys?***

uOttawa

Why **is child maltreatment often related to poorer academic achievement & mental health? (Slade & Wissow, 2007)**



Problem of low educational achievement of young people in care: Research in USA

Young people in care (Trout et al., 2008):

- Are 3 times more likely to be in special education
- Up to 80% said by teachers to be at risk academically & performing below grade level
- Most in low or low-average range on measures of academic achievement
- Many require intensive academic assistance

Problem of low educational achievement of young people in care: Research in UK

Jackson (2007):

- Widespread educational under-performance
- Little research being conducted on reasons for the "huge and persistent gap in attainment between care leavers and others"
- More attention needed to key role of foster parents & other carers in improving children's educational performance
- Care system needs to put greater emphasis on educational achievement

Problem of low educational achievement of young people in care: Research in Canada

- Canadian studies have results similar to those in USA & UK
- Flynn & Biro (1998): young people in care had higher rates of suspension and grade retention than peers in general population
- Flynn et al. (2004): In sample of young people in care:
  - **10-15 years of age:** 80% scored in same range as lowest third of general Canadian population on parental ratings of reading, spelling, and math
  - **5-9 years of age:** 78% scored in same range of lowest third of Canadian population (same criteria)

Urgent need for effective educational interventions for young people in care

(Review by Forsman & Vinnerljung, 2012)

- **Foster children's educational performance is *often far below their potential***
- **Only 11 evaluated interventions found:**
  - 3 with pre-post experimental design (RCT)
  - 3 with pre-post quasi-experimental design
  - 5 with pre-post (but no comparison group) design
- **9 of the 11 interventions produced positive results**

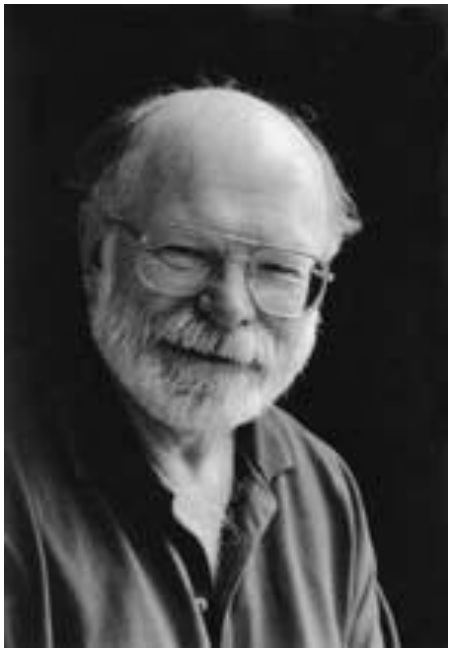
Practice & Research Question 1: *Does individual tutoring help children in foster care to catch up in reading & math?* (Flynn et al., 2012)

- **Forsman & Vinnerljung's review (2012):**
  - Tutoring comprised 5/11 evaluated interventions
  - Tutoring produced positive results in 4/5 studies

- **Campbell Collaboration review (Ritter et al., 2006; 2009):**
  - Tutoring by parents & other adult volunteers produced positive effects in general population:
    - Global reading: $d = 0.26$
    - Reading oral fluency: $d = 0.30$
    - Reading letters & words: $d = 0.41$

Our individual, direct-instruction tutoring study:
The intervention

Micheal Maloney's Direct-Instruction Educational Model:
Teach Your Children Well



Michael Maloney
Quinte Learning Centre
Belleville, Ontario, Canada

TeachYourChildrenWell.ca

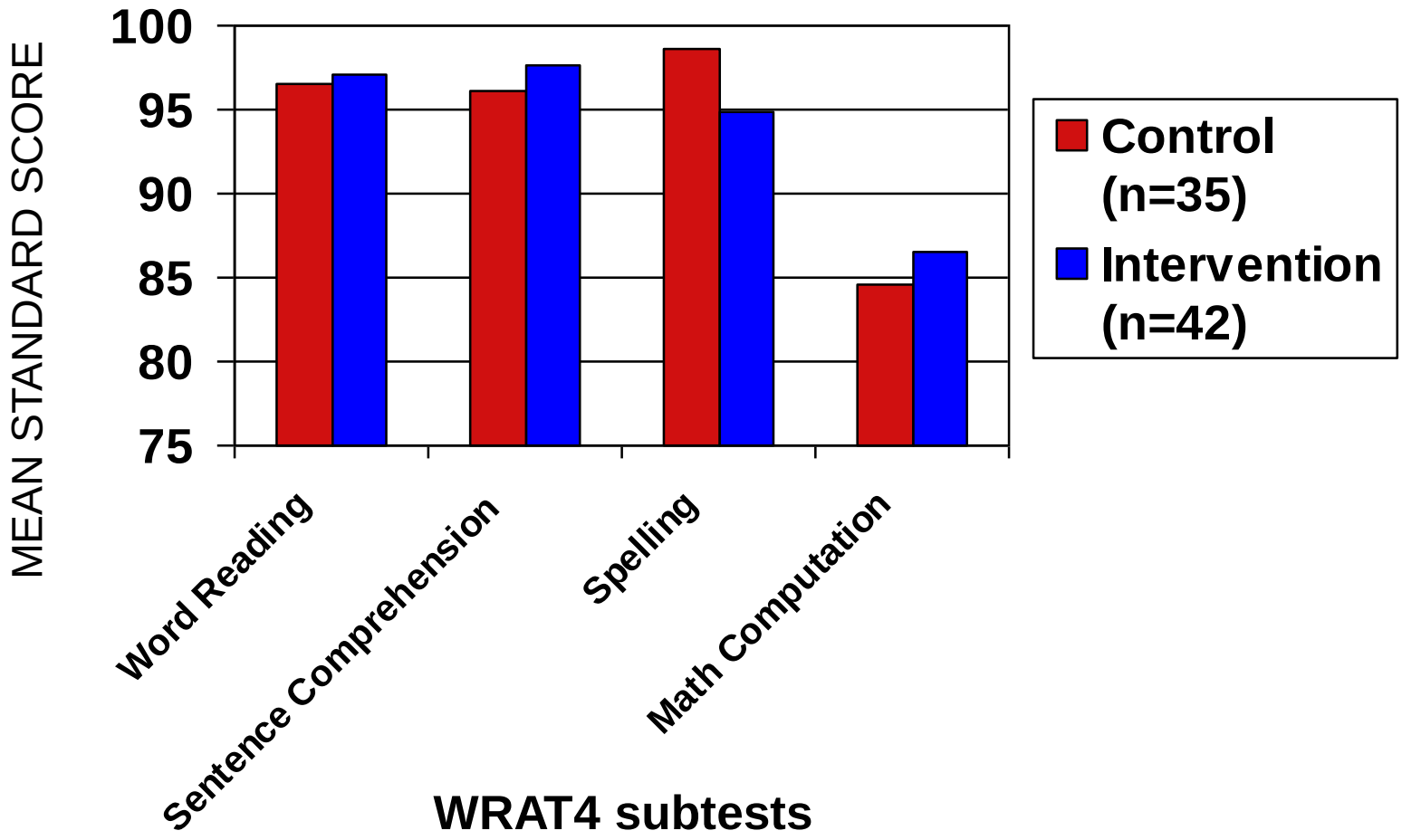
Methodology of our tutoring study

- **Participants (*N* = 77 foster children):**
  - Children in foster care (grades 2-7, ages 6-13) and their foster parents (tutors)
  - Randomly assigned to control or intervention groups
- **2008-2009 school year:**
  - Wait-list control group (*n* = 35)
  - Intervention group (*n* = 42): Tutoring by foster parents, using Maloney's TYCW method, for 30 weeks, 3 hrs/week
- **2009-2010 school year:**
  - Wait-list control children received tutoring intervention the following year

Methodology (continued)

- **Main outcome measures:**
  - **Wide Range Achievement Test *(WRAT4):***
    - Word reading, sentence comprehension, reading composite, spelling, & math computation
  - **Conners' short form *(CADS-P):***
    - Attention & hyperactivity subscales
  - **Child Behavior Checklist *(CBCL):***
    - Internalizing and externalizing behaviour subscales

Results at pre-test (Sept.-Oct., 2008), on Wide Range Achievement Test (WRAT4)



Year 1 results at post-test (June, 2009):

- **Foster children reassessed at post-test:**
  - $N = 64$
  - 30 children who had actually received the tutoring intervention
  - 34 children in WL control group

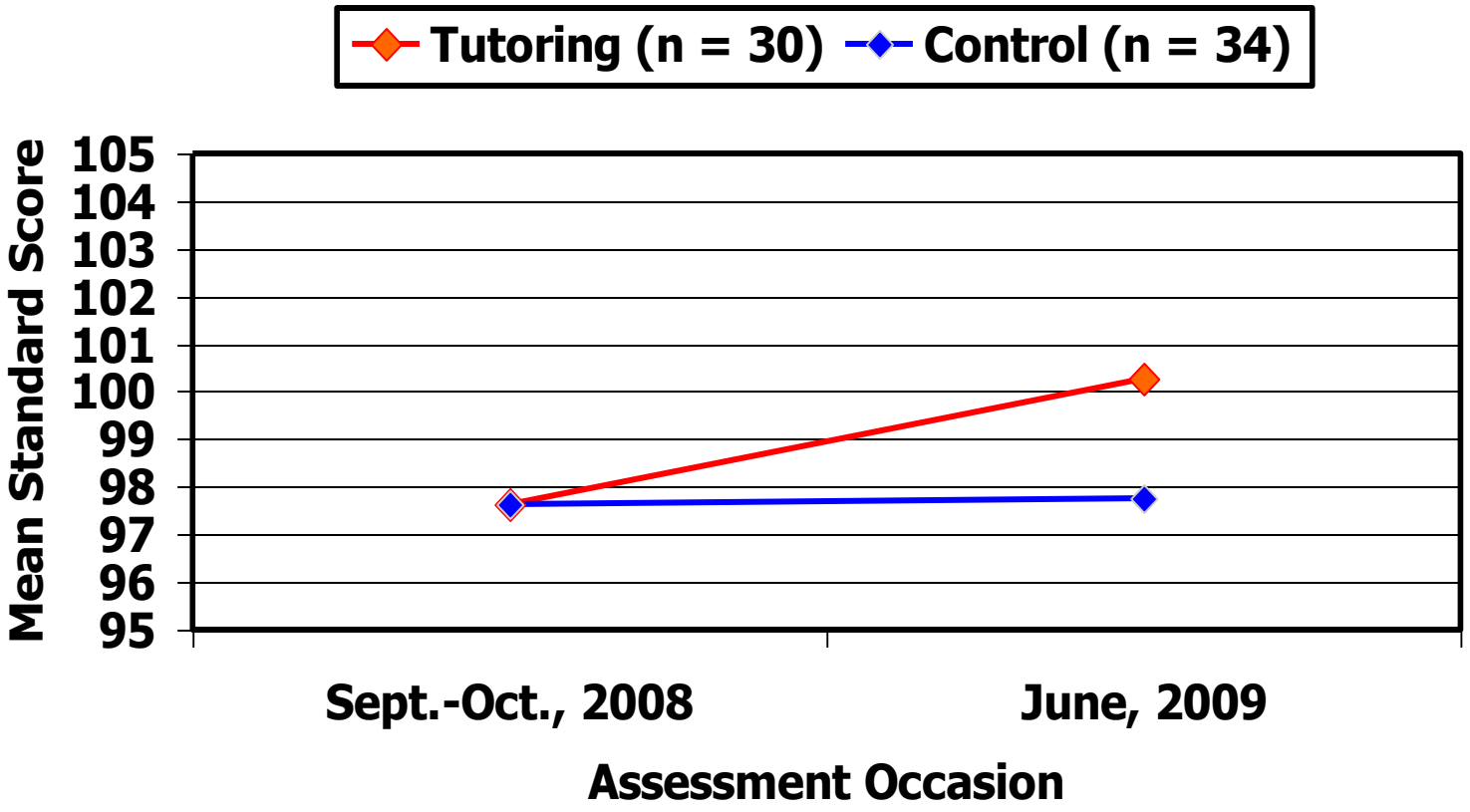
- **Intervention and control groups were still equivalent:**
  - None of 35 comparisons at posttest between groups' pre-test scores were statistically significant ($p < .05$)

Results, but first, a note on "effect sizes"

- **An "effect size":**
  - Here, equals the difference between the post-test means of the tutoring (intervention) and WL control groups
  - Known as Hedges' ***g*** or Cohen's ***d*** (which are virtually identical)

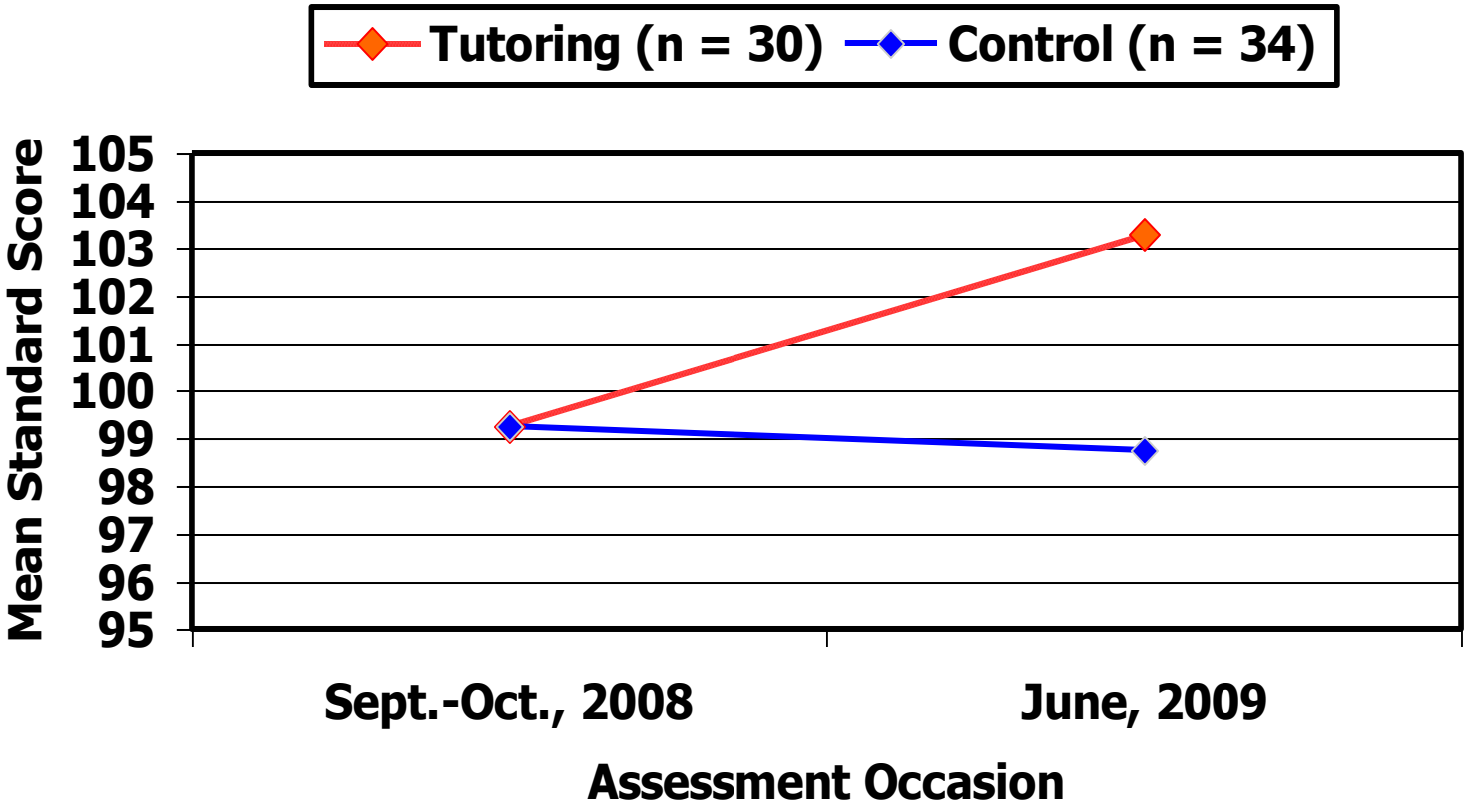
- **How big is an effect size?** A ***g*** or ***d*** of:
  - **0.2 = small**
  - **0.25 = substantively important**
  - **0.5 = medium**
  - **0.8 = large**

WRAT4 Word Reading: Results at end of year 1 (*N* = 64)



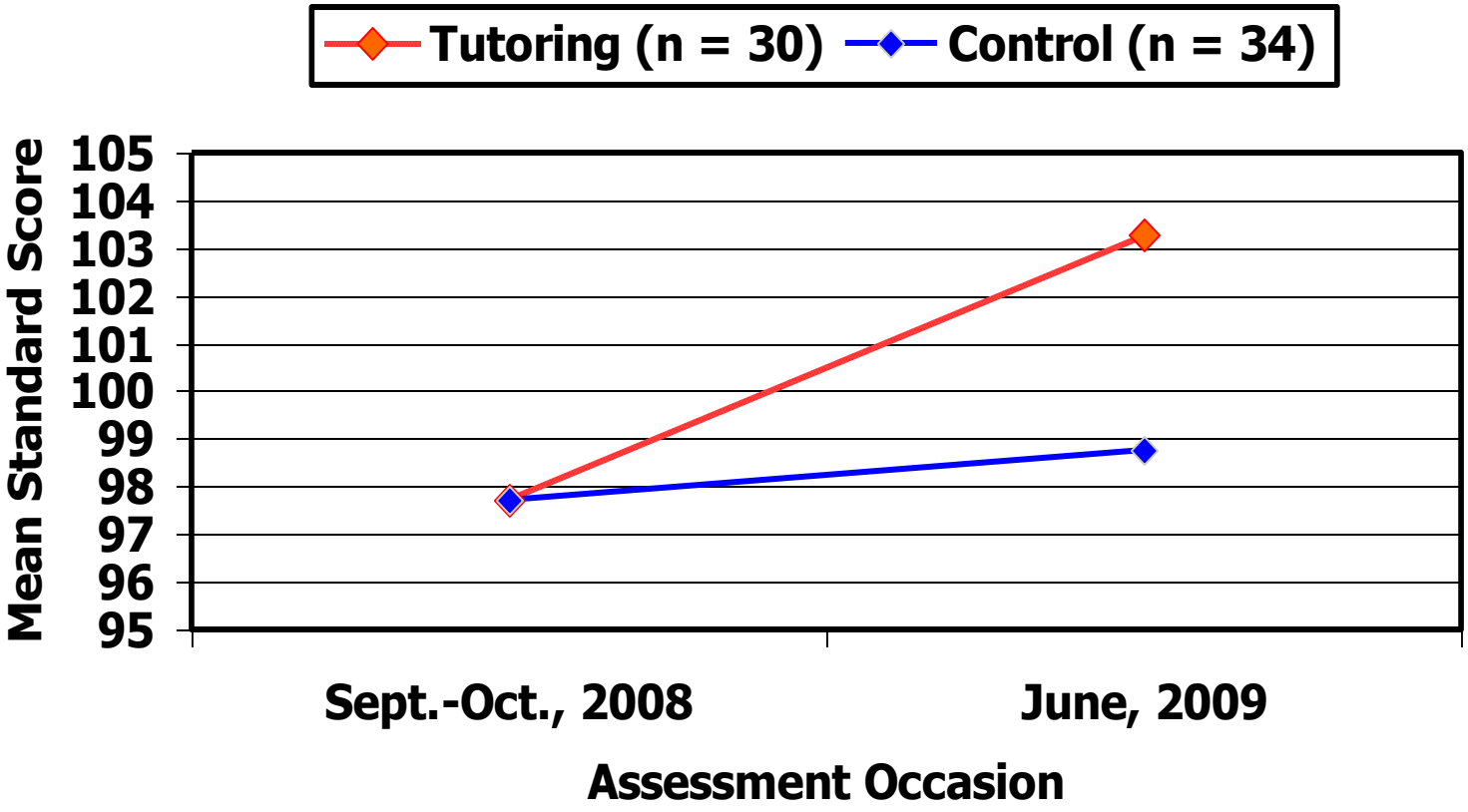
(*g* = .19, *p* = .19, 1-tailed, *ns*;
post-test scores adjusted for pre-test scores)

WRAT4 Reading Comprehension: Results at end of year 1 (*N* = 64)



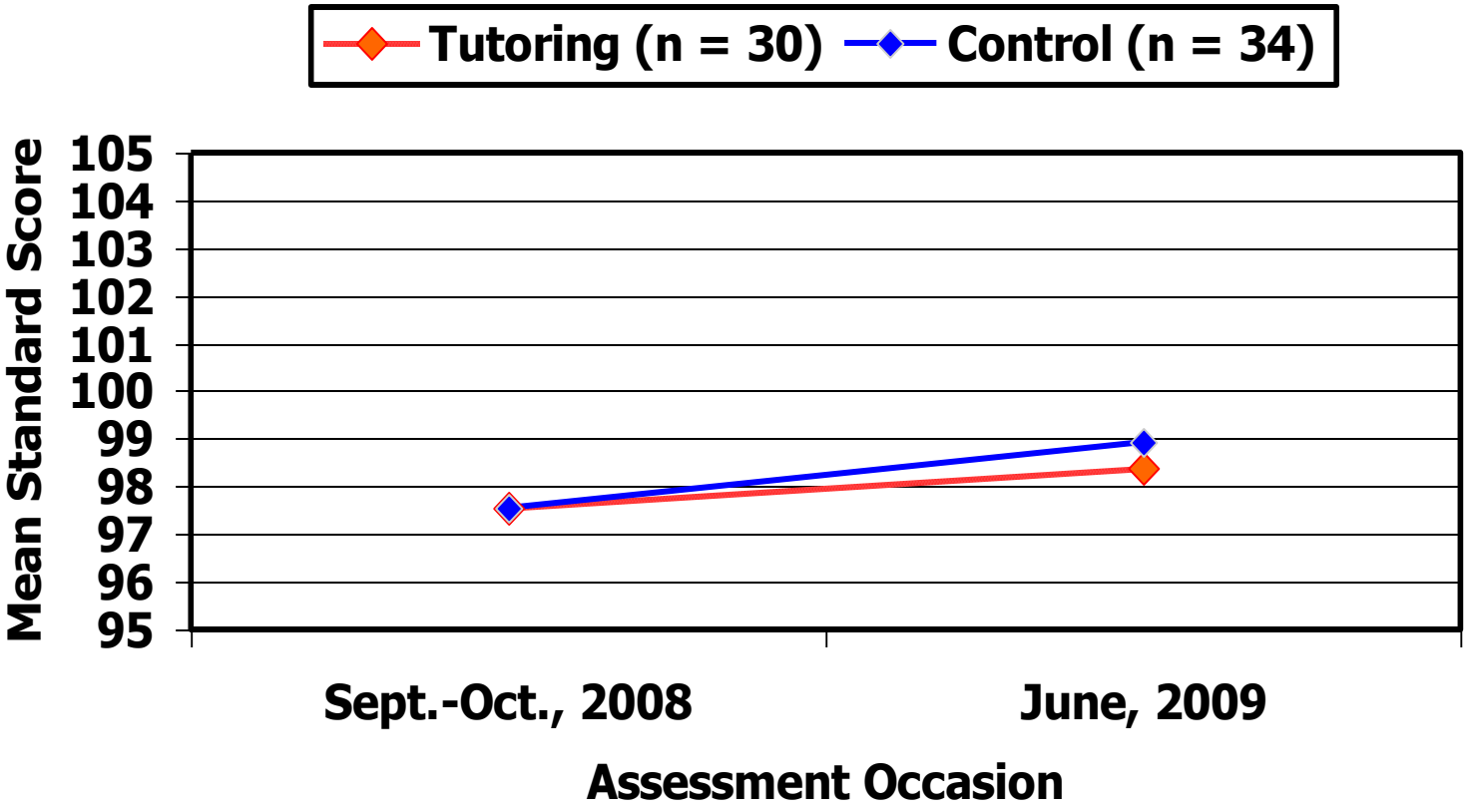
(*g* = .38, *p* = .035, 1-tailed;
post-test scores adjusted for pre-test scores

WRAT4 Reading Composite: Results at end of year 1 (*N* = 64)



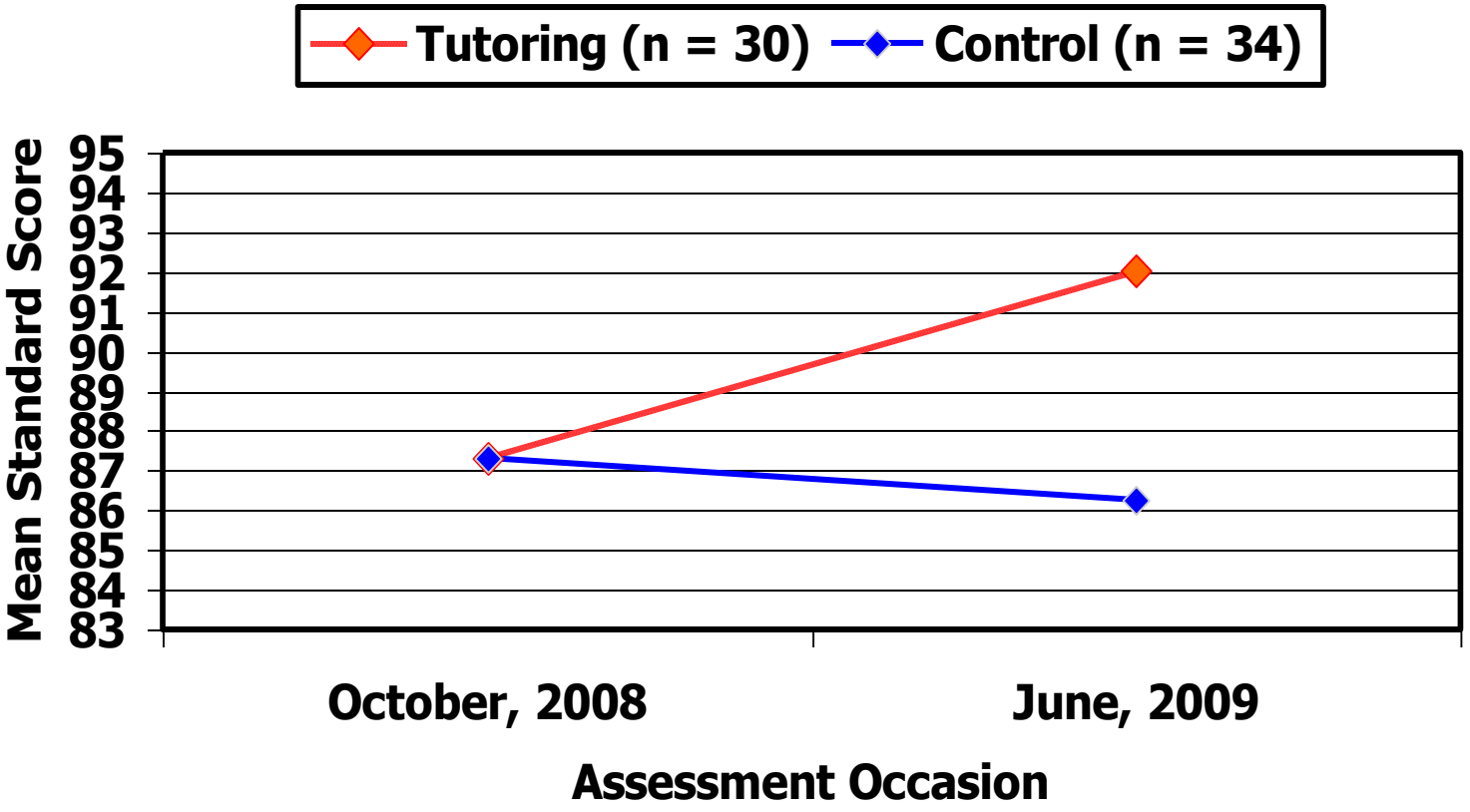
(*g* = .29, *p* = .096, 1-tailed;
post-test scores adjusted for pre-test scores

WRAT4 Spelling: Results at end of year 1 (*N* = 64)



(*g* = -.08, *p* = .37, 2-tailed, *ns*;
post-test scores adjusted for pre-test scores)

WRAT4 Math Computation: Results at end of year 1 (*N* = 64)



(*g* = .46, *p* = .009, 1-tailed;
post-test scores adjusted for pre-test scores)

Conclusion to practice & research question 1

- Tutoring enabled foster children in the sample as a whole to make statistically significant and substantively important gains in:
  - **Reading - Sentence Comprehension: *g* = 0.38**
  - **Reading - Reading Composite: *g* = 0.29**
  - **Math - Math Computation: *g* = 0.46**

- Effect sizes were comparable to those found in studies of tutoring in general population

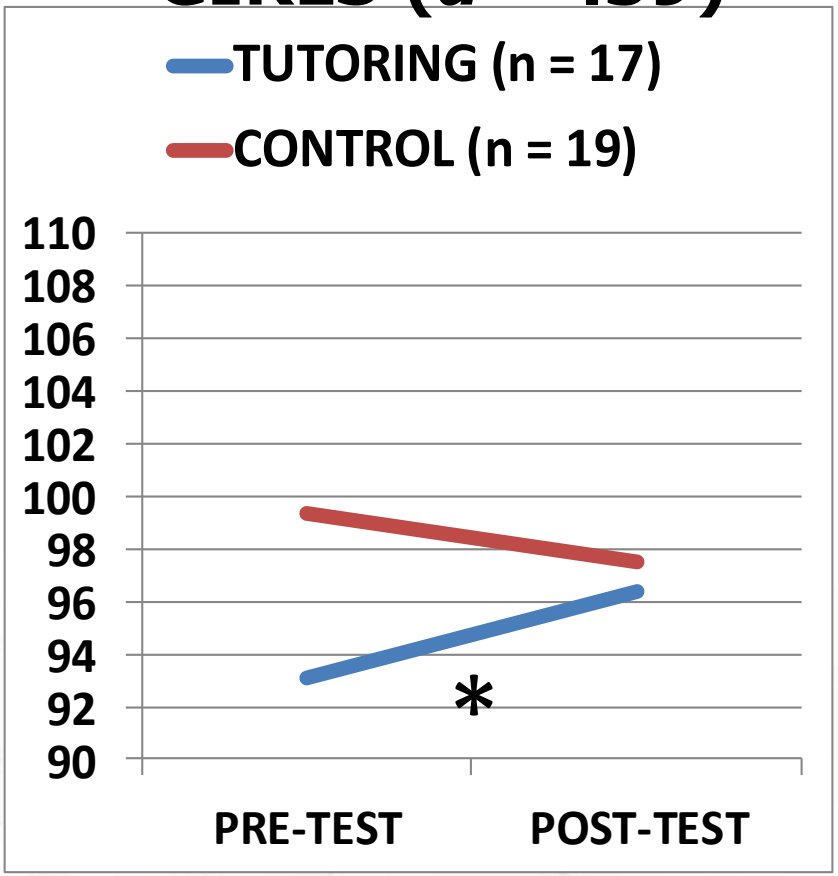
Practice & Research Question 2: *Does tutoring have similar effects for girls and boys?*

- Surprisingly, this question has not been addressed in previous tutoring studies
- We used repeated measures analysis of variance rather than analysis of covariance to answer question no. 2 (these methods give similar but not identical answers)

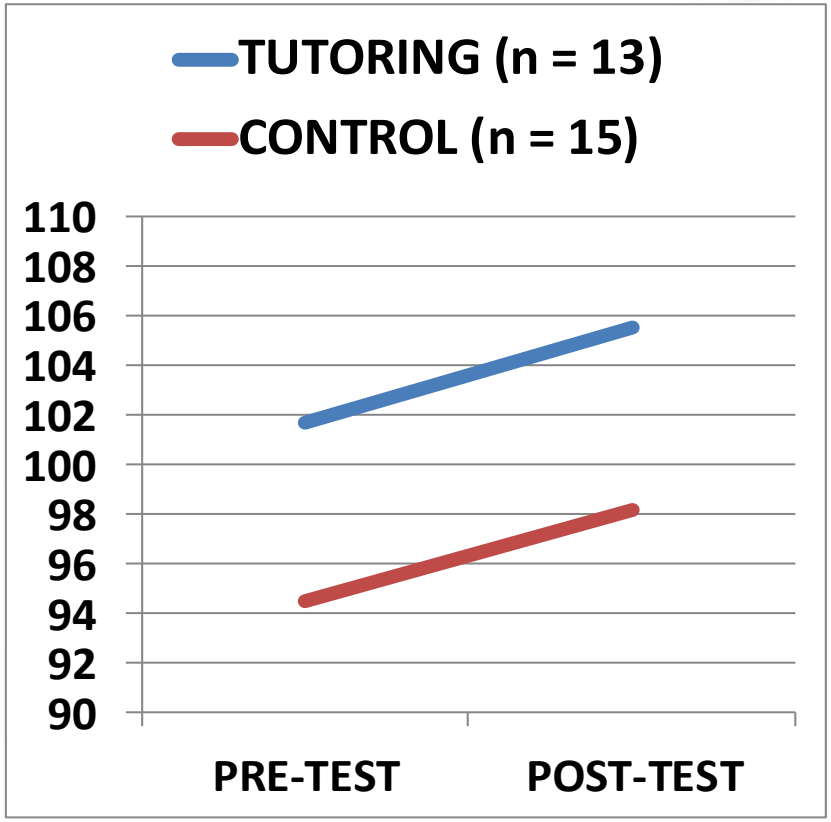
WRAT4 Word Reading:

Pre-test to post-test change, by gender & group

GIRLS (*d* = .39)



BOYS (*d* = .01)



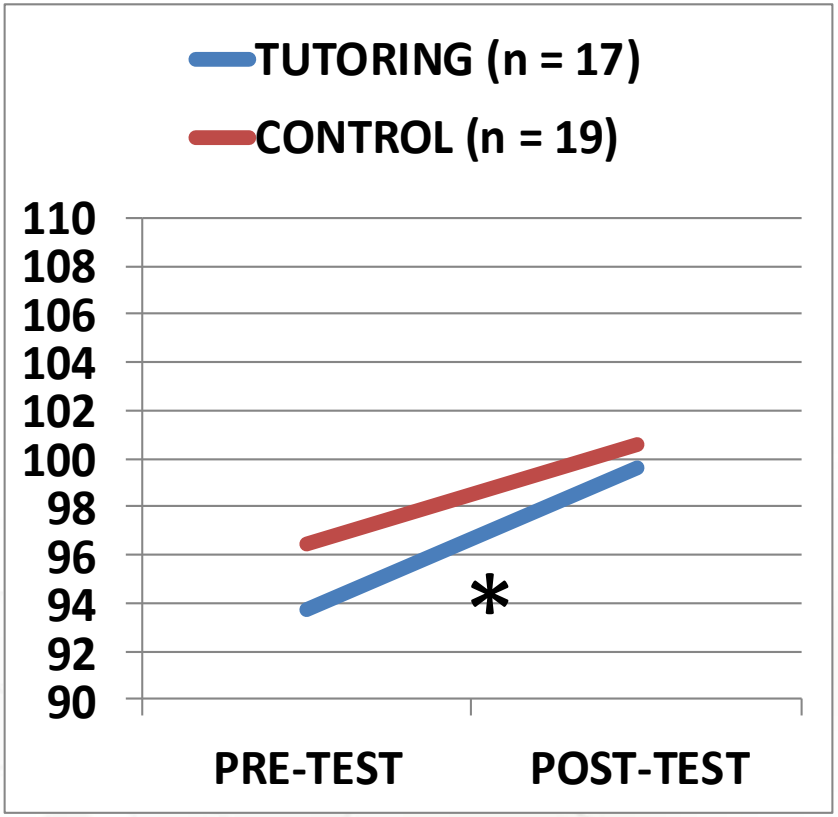
(* $p < .05$, 2-tailed)

uOttawa

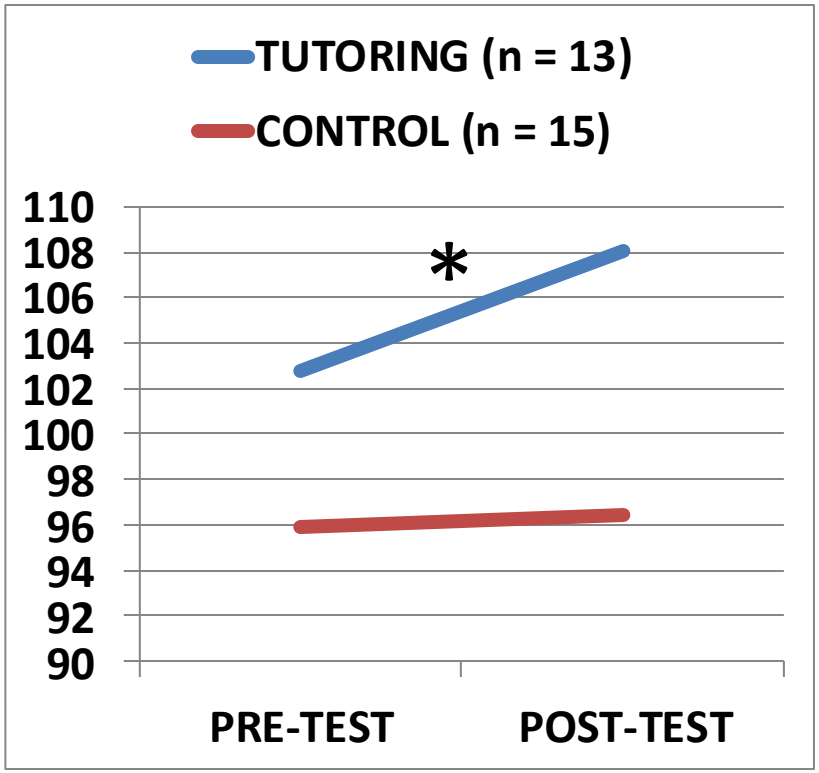
WRAT4 Sentence Comprehension:

Pre-test to post-test change, by gender & group

GIRLS (*d* =.12)



BOYS (*d* = .44)

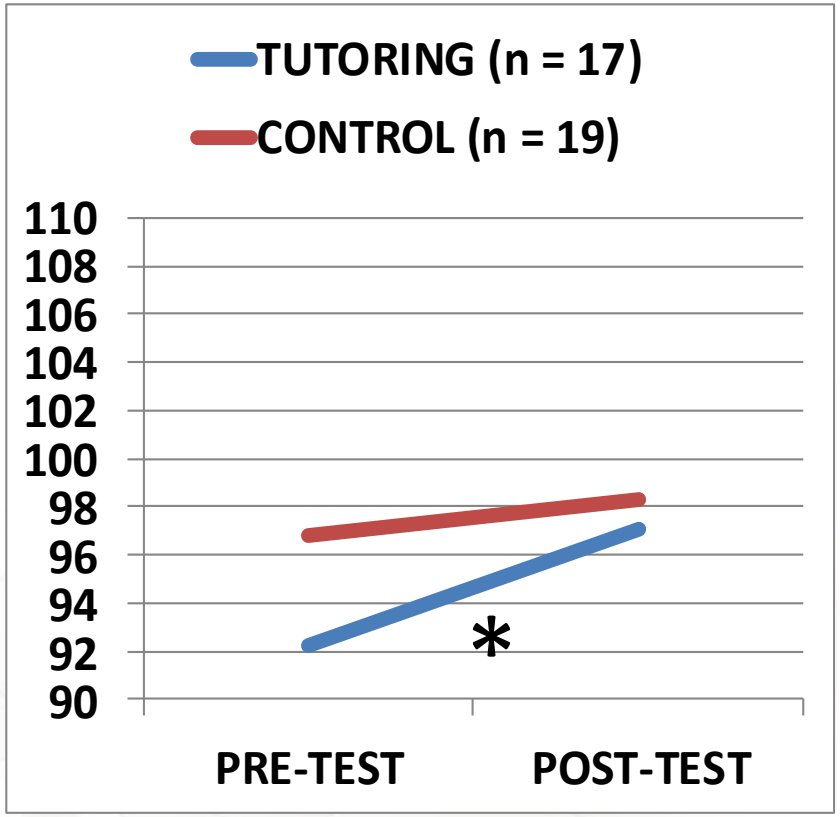


(*$p < .05$, 2-tailed)

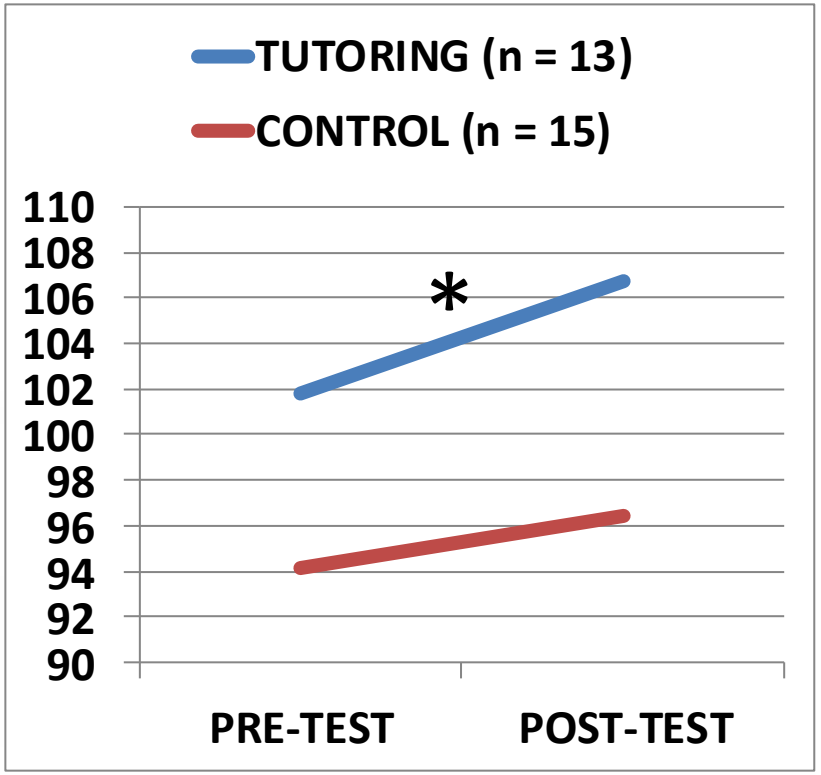
uOttawa

WRAT4 Reading Composite:
Pre-test to post-test change, by gender & group

GIRLS (*d* = .25)



BOYS (*d* = .19)



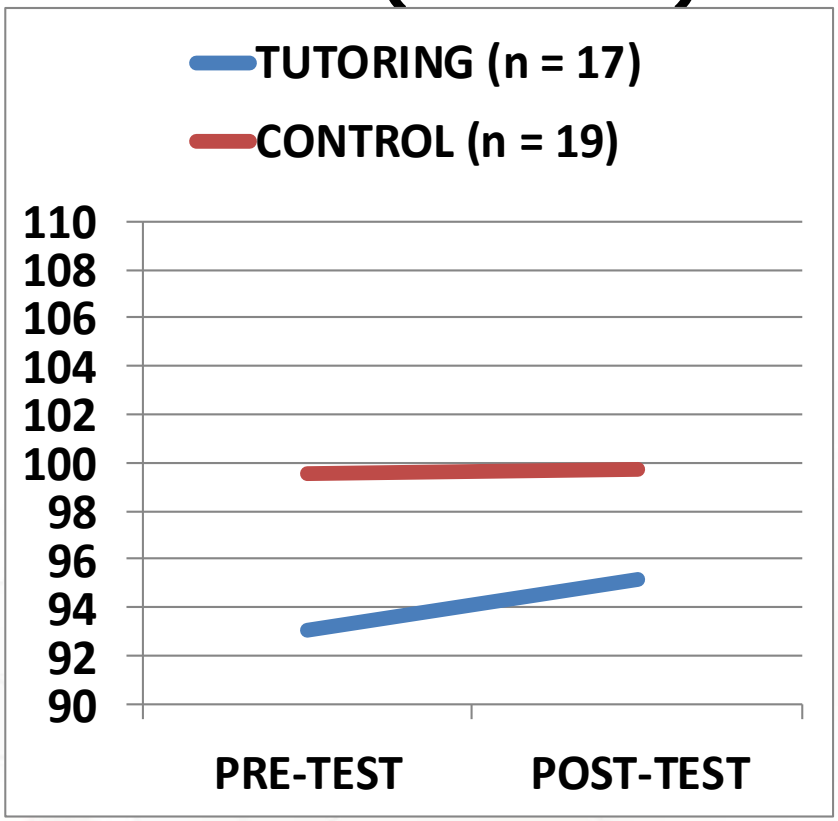
(*$p < .05$, 2-tailed)

uOttawa

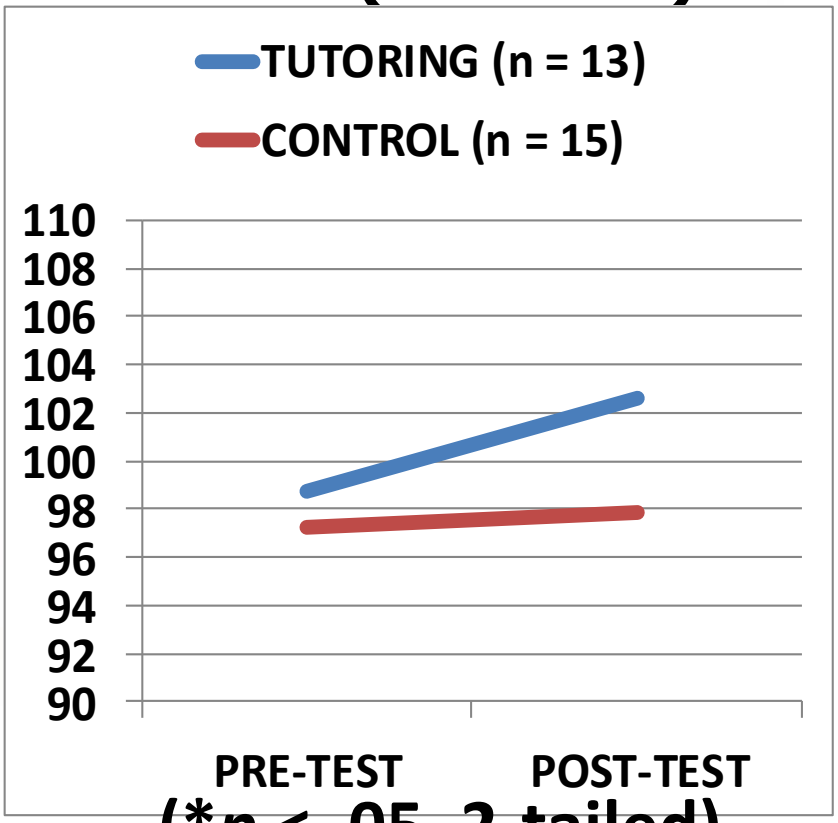
WRAT4 Spelling:

Pre-test to post-test change, by gender & group

GIRLS (*d* = .15)



BOYS (*d* = .19)



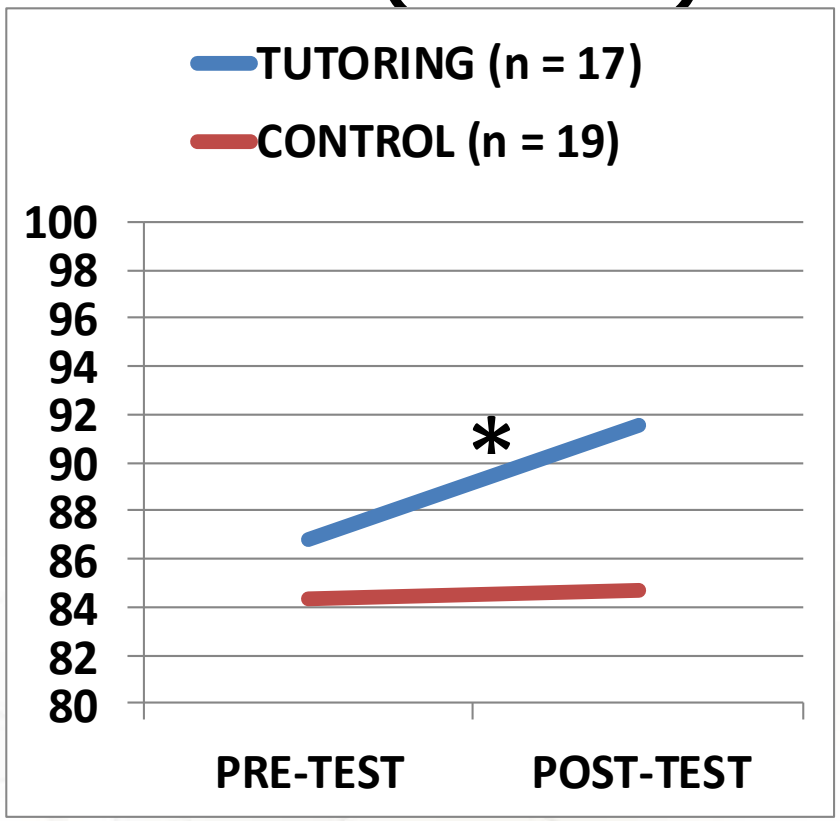
(*$p < .05$, 2-tailed)

uOttawa

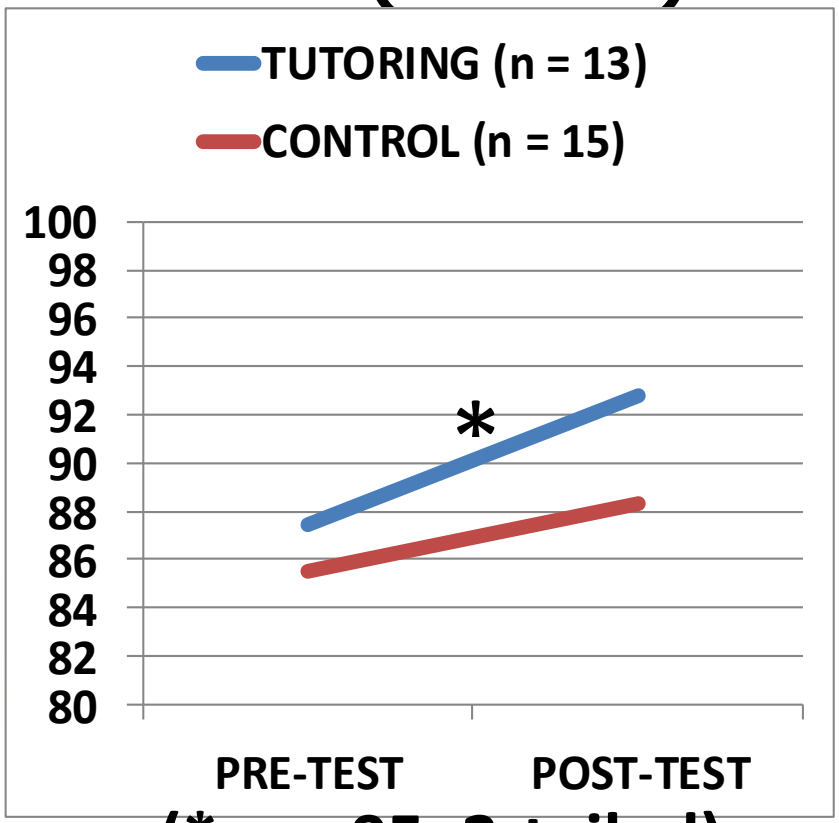
WRAT4 Math Computation:

Pre-test to post-test change, by gender & group

GIRLS (*d* = .41)



BOYS (*d* = .21)



(*$p < .05$, 2-tailed)

uOttawa

Conclusion to practice & research question 2:

Girls:

- Statistically significant gains on 4 out of 5 WRAT4 outcome measures
- Cohen's *d* > .25 on Word Reading, Reading Composite, Math Computation

Boys:

- Statistically significant gains on 3 out of 5 WRAT4 outcome measures
- Cohen's d > .25 on Sentence Comprehension

Overall conclusions

- **From our tutoring study (2008-2010):**
  - Tutoring does help children in care to catch up in reading and math
  - Girls and boys both benefit in reading and math, although to somewhat different degrees on different aspects
- **From a new tutoring study (2010-2012) (Harper & Schmidt):**
  - Found similar results with mainly (80%) Aboriginal foster children
  - Used small groups of children, with university students as tutors

Overall conclusions (continued)

- Our results and those of Harper & Schmidt are encouraging, both for tutoring and for educational interventions, more generally, with children in care
- Many more well controlled evaluations of promising educational interventions are needed in child welfare (Forsman & Vinnerljung, 2012)

Overall conclusions (continued)

- **Take-away message for practitioners:**
  - Identify, perhaps with help from a researcher, a tutoring method on which there are promising data on effectiveness in Spain, in the general population of children
  - Then, try out this method with a small number of children in care who have assented to use it on a trial basis
  - Make sure your tutoring method is relatively structured, of sufficient duration, & feasible
  - If it seems to work well, collaborate with a researcher in rigorously evaluating the method

Overall conclusions (continued)

- **Take-away message for researchers:**
  - Collaborate with practitioners in helping to identify a promising tutoring method or other educationally relevant intervention
  - Rigorously evaluate the tutoring or other educational intervention, to improve educational outcomes in children in care
  - Publish your findings, to help other children in care in Spain and in other countries to improve their success in school and in life

Thanks, articles, contact & questions

- **Thank you for your attention!**
- **My thanks also** to the foster children, foster parents, staff from 9 Children's Aid Societies in Ontario, my students and colleagues, & the Government of Canada, for their collaboration or funding
- **References:** For peer-reviewed articles (by Forsman & Vinnerljung (2012), Flynn et al. (2012), and Harper & Schmidt (2012), see the special issue of *Children and Youth Services Review, 34* (6), June, 2012, on improving educational outcomes of young people in care.
- **Contact:** Robert Flynn (rflynn@uottawa.ca). Feel free to write to me by e-mail
- **Questions?**

uOttawa