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Increasing the Efficacy of Student Learning Groups

Juliet Buddiga, Melvin Philip, David Sloan Wilson, PhD

Introduction

- Nobel laureate Elinor Ostrom previously identified 8 “core design principles” [“CDPs”] initially for the purpose of managing common pool resources
- It has been suggested that the CDPs can be generalized in order to increase the efficacy of all groups¹
- Recent studies have looked at the implementation of the CDPs in intentional communities and business groups

This study analyzes the effect of CDP intervention in a real classroom setting, utilizing a group poster project integrated into an introductory university course



Methods

- Students enrolled in “Evolution for Everyone” formed groups of 2-4
- Applied evolutionary theory to ask a novel research question to ultimately be compiled into an academic research poster
- 3 out of 6 discussion sections received a minor CDP intervention (worksheet explaining principles in the context of groups)
- All groups were asked to write a “group contract”
- A weekly survey was distributed electronically
 - Students were asked to rate their group function
 - Open text response allowing students to explain why or why not their group was performing at optimal function
- Data collected and analyzed: Group contract text, survey response text, and the number of references cited on students’ final posters

Excerpt from Student Handout:

CDP #3: Fair and Inclusive Decision Making: If you want good decisions and motivated people, group members need to be involved in making the decisions that affect them, particularly with agreements about how the group runs.

Key Planning Question: How will we make decisions in a way that involves those who need and want to be involved?²

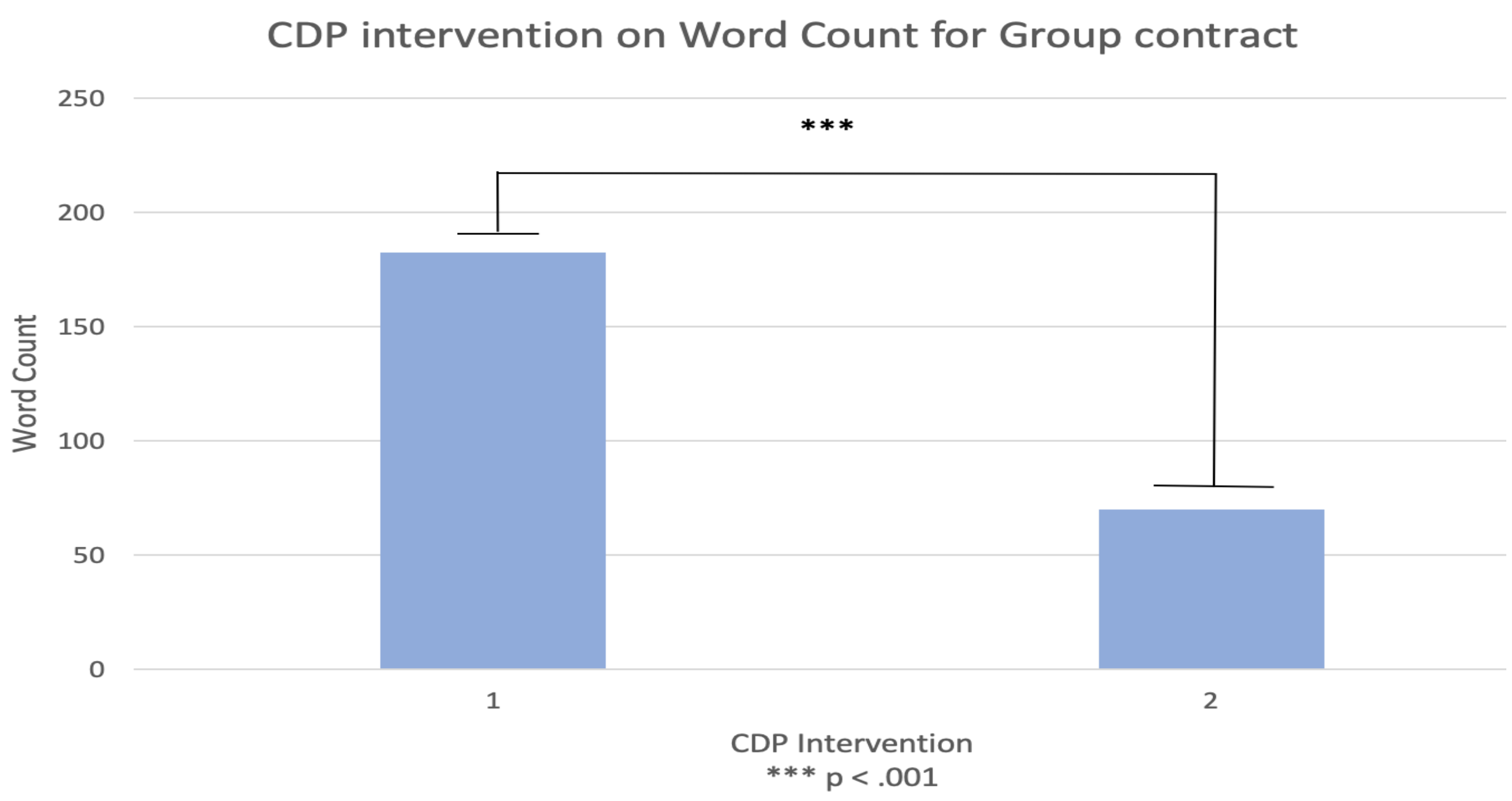


Figure 1. Effect of CDP Intervention on Word Count in Group Contracts

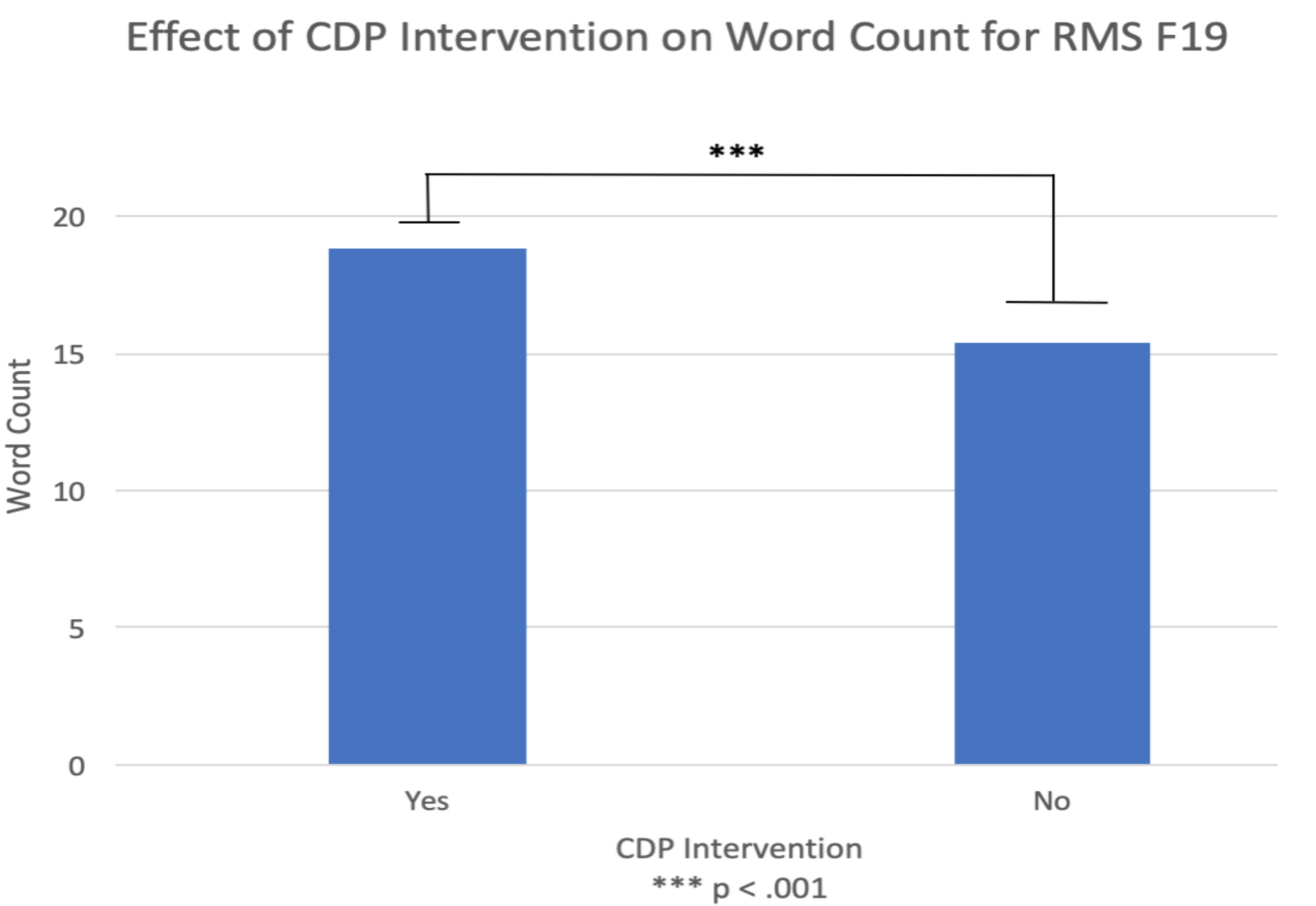


Figure 2. Effect of CDP Intervention on Word Count for Repeated-Measures Survey Fall 2019

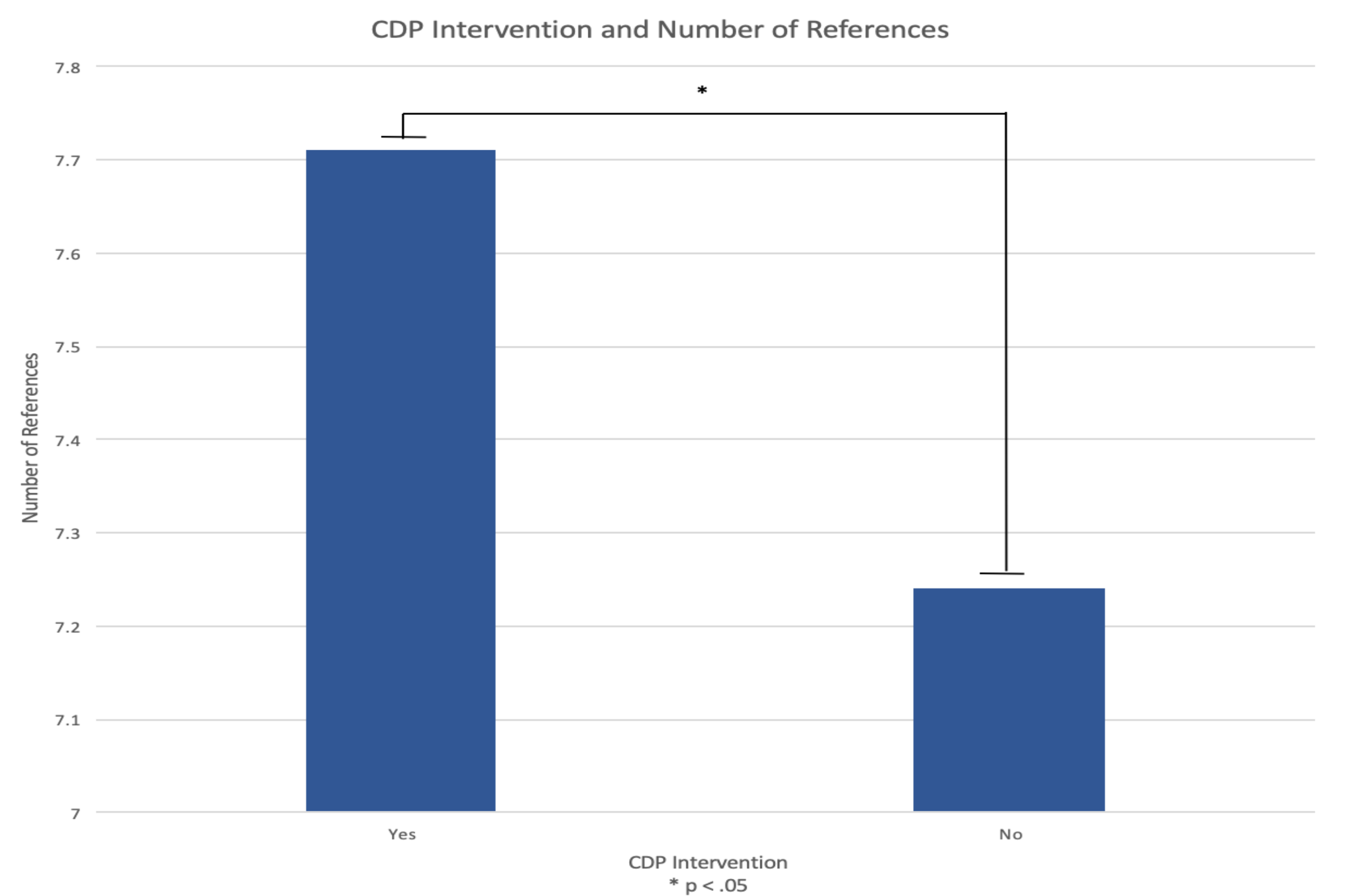


Figure 3. Effect of CDP Intervention on Number of References in Final Poster

Results

Our results show that the CDP intervention seemed to affect several key variables associated with group assignments.

- For the group contract: (Fig. 1)
 - The poisson regression to analyze the effect of CDP intervention on word count for the group contract was significant ($p = 1.43E-290$).
 - Groups that received intervention ($M = 182.04$, $SD = 76.55$) included more words than groups that didn't ($M = 69.73$, $SD = 27.66$).
- For the repeated measures survey: (Fig. 2)
 - The poisson regression to analyze the effect of CDP intervention on word count of the RMS F19 data was significant ($p = 2.1722e-29$).
 - Groups that received intervention ($M = 18.84$, $SD = 11.87$) included more words than groups that didn't ($M = 15.36$, $SD = 10.72$).
- For the poster project itself: (Fig. 3)
 - The poisson regression to analyze the effect of CDP intervention on Number of References on poster was significant ($p = 0.029611$).
 - Groups that received intervention ($M = 7.71$, $SD = 1.9$) included more references than groups that didn't ($M = 7.24$, $SD = 2.47$).

Discussion

- Our results show that the CDP intervention seemed to affect several key variables associated with group assignments, including word count, character count, and number of references included on the final poster project. This suggests that the small intervention does affect group function in a real-world classroom setting.
- Further analysis is currently being conducted to observe differences in final poster grades between intervention and control groups
 - Grades will be collected using an objective outside rater and standardized grading criteria
- A final, extended survey is currently being analyzed for further outcome variables amongst groups (trust, commitment, satisfaction, cooperation)
- This study further displays the feasibility of incorporating CDP intervention in real classroom settings
- As this was an extremely minor intervention, further research can look at the effects of increased intervention levels, as well as variations in group sizes and assignment types

References

1. Wilson, D. S., Ostrom, E., & Cox, M. E., (2013). Generalizing the core design principles for the efficacy of groups. Journal of Economic Behavior & Organization. 90S, S21-S32.
2. Atkins, P. W., Wilson, D. S., & Hayes, S. C. (2019). Prosocial: using evolutionary science to build productive, equitable, and collaborative groups. New Harbinger Publications.