



Introduction

- Individuals with tobacco use disorder (TUD), like other substance use disorders (SUD's), often report lower responsivity to natural positive emotional stimuli.¹
- Natural rewards deficiencies can be measured in terms of positive emotional regulation (ER) or the change in response to a positive stimulus following reappraisal^{1,2}
- Savoring is the process of appreciating natural rewards and it is known to increase hedonic response to natural rewards^{1,3,4}
- Savoring may have potential for treating positive emotional deficits among individuals with a SUD
- This project involved 1: A cross-sectional study to examine the effects of TUD on positive ER. 2: A pilot study to assess the feasibility and benefit of disseminating brief savoring training to individuals with TUD

Methods

Study 1 (Cross-Sectional):

- Positive ER task data was collected from smokers (n=190) and non-smokers (n=62).

Table 1	Smokers	Non-Smokers
Age in Years	38.86 ± 12.31	37.71 ± 12.46
% Female	45%	71%
Years Smoking	18.96 ± 10.61	0 ± 0
Cigs Per Day	16.86 ± 9.52	0 ± 0

Study 2 (Savor Pilot):

- Data was collected from smokers (N=44) randomly assigned to either Savor training (n=22) and asked to practice for 15-min/day; or a control (n=22) condition.

Table 2	Savor	Control
Age in Years	43.50 ± 12.66	39.27 ± 10.89
% Female	41%	41%
Years Smoking	25.23 ± 14.05	21.73 ± 14.05
Cigs Per Day	18.65 ± 11.02	14.73 ± 6.48

- Participants were given nicotine replacement patches and Ecological Momentary Assessments (EMAs: Smoking, Craving, Urges, Mood, Practice time) were collected over a 4-week period.
- \$100 dollars were given to participants for attending all training days, and an additional \$60 were given if participants completed 26-28 surveys over the study, with the payout scaling for lower numbers of responses

Table 3	Enrolled	Week 1	Week 2	Week 3	Week 4
Participants left in Savor Group	22	86.4% (19)	86.4% (19)	86.4% (19)	86.4% (19)
Participants left in Control Group	22	90.9% (20)	86.4% (19)	86.4% (19)	81.8% (18)

Week 4: p=0.688

Emotional Dysregulation in Tobacco Use Disorder: A Potential Treatment

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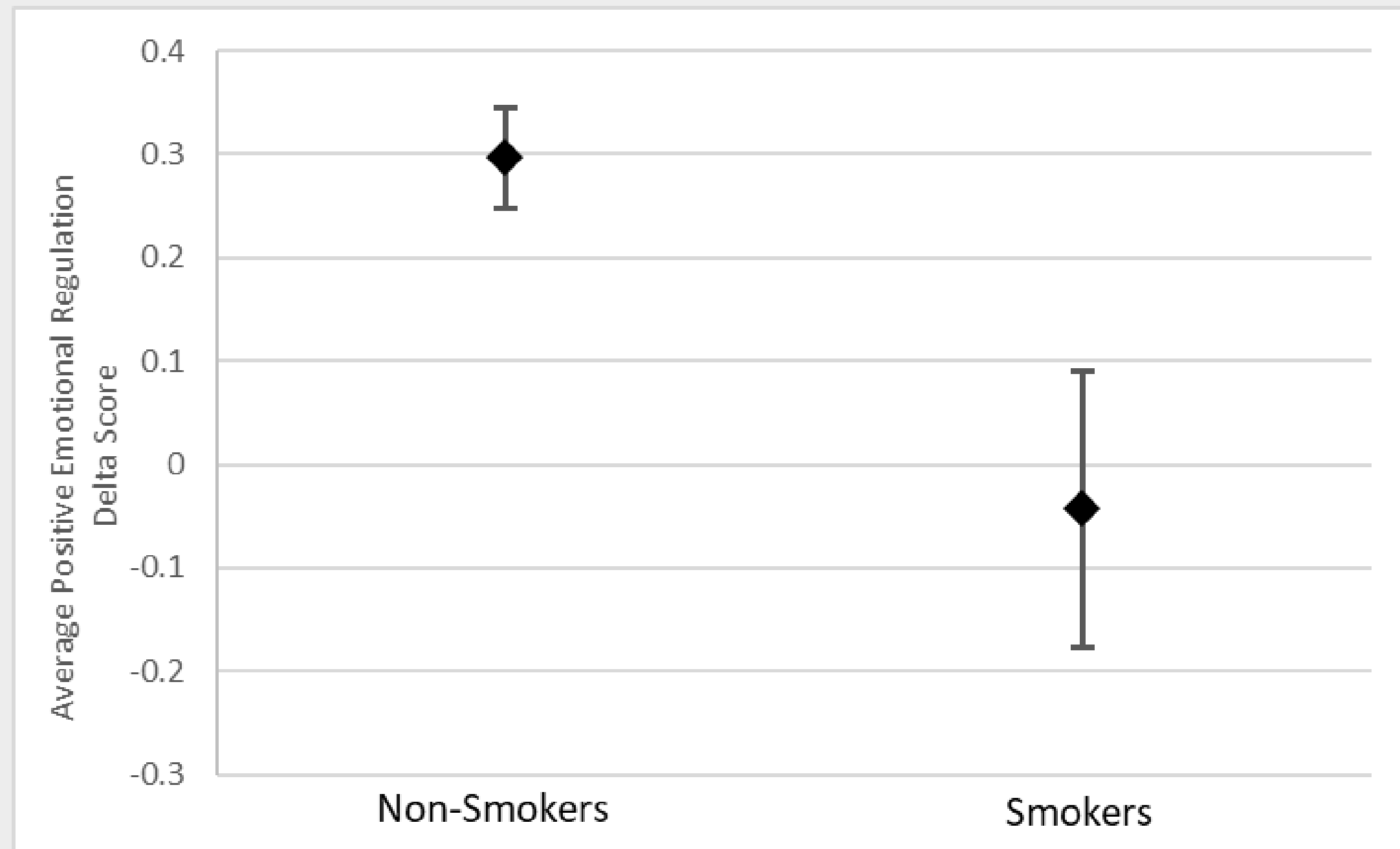
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Results

Study 1: Cross-Sectional

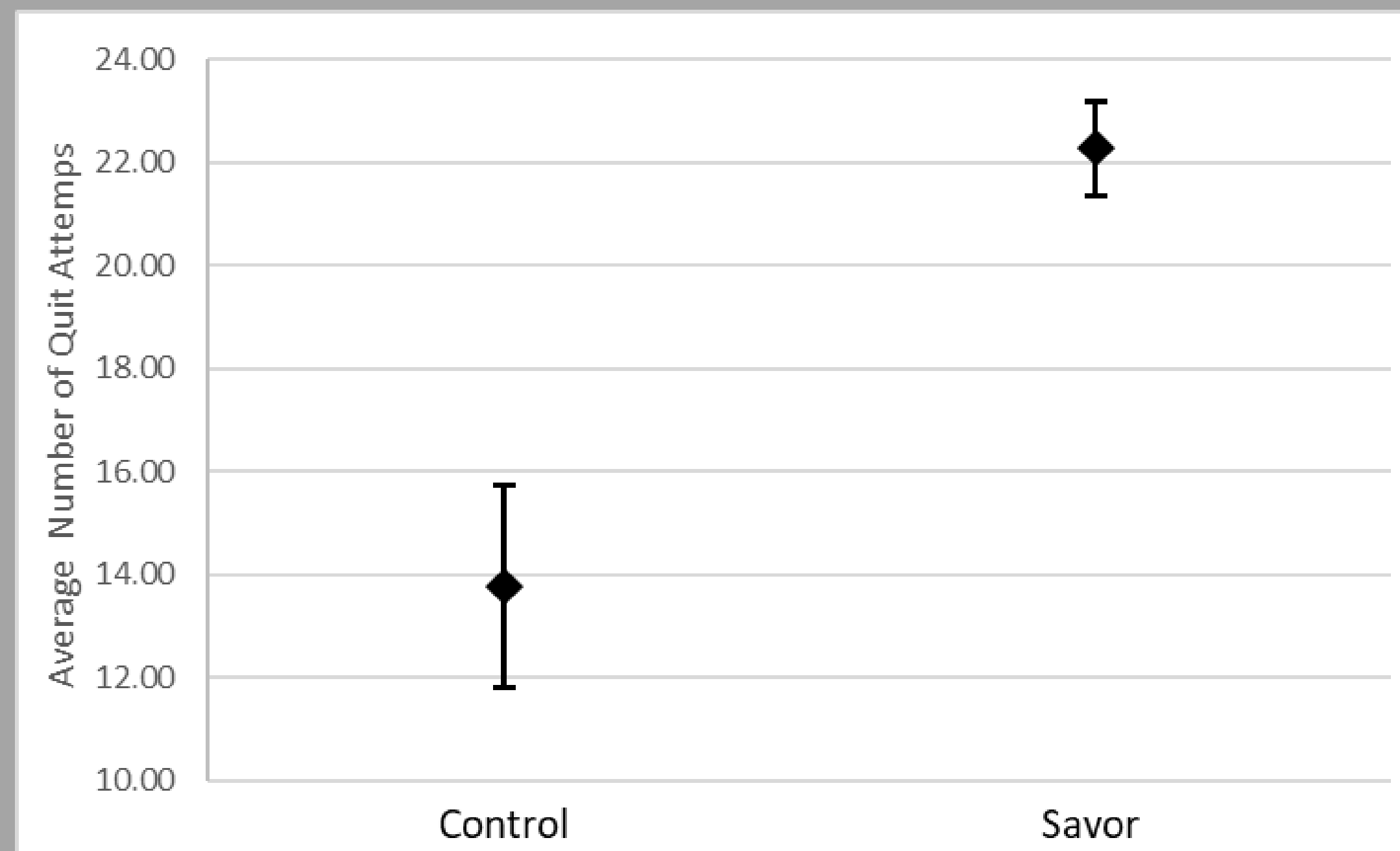
1. Non-Smokers Vs Smokers: Positive Emotional Regulation Delta Score*



Non-Smoker: (M=0.297 SE=0.049), Smoker: (M=-0.043 SE=0.134)
t(250)= 2.962, p=0.003

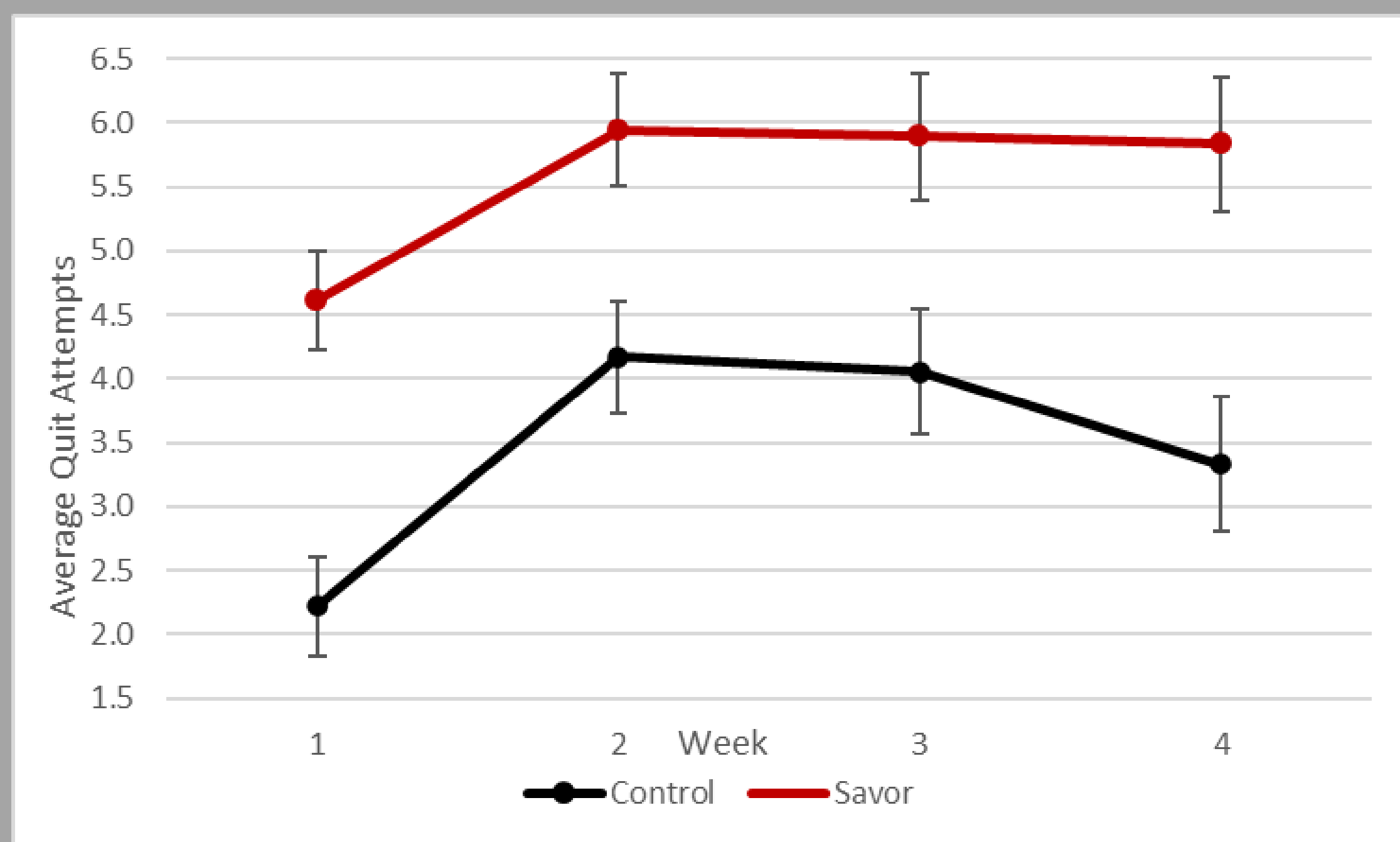
Study 2: Savor Pilot

2. Control vs. Savoring: Total Quit Attempts**



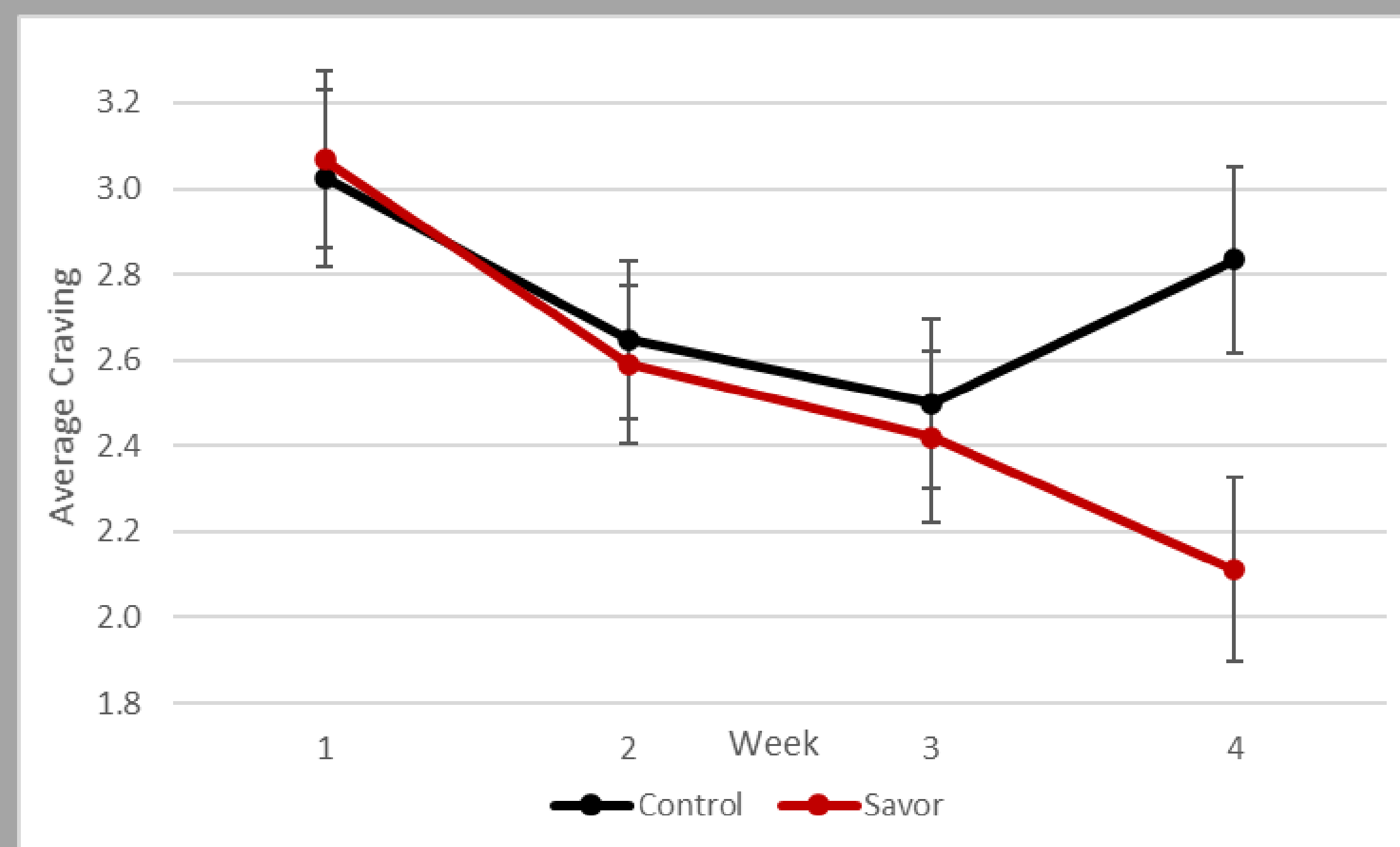
Control: (M=13.78 SE= 1.965), Savor: (M=22.28 SE=0.928)
t(34)= -3.912, p< 0.001

3a. Quit Attempts: Weeks 1-4**



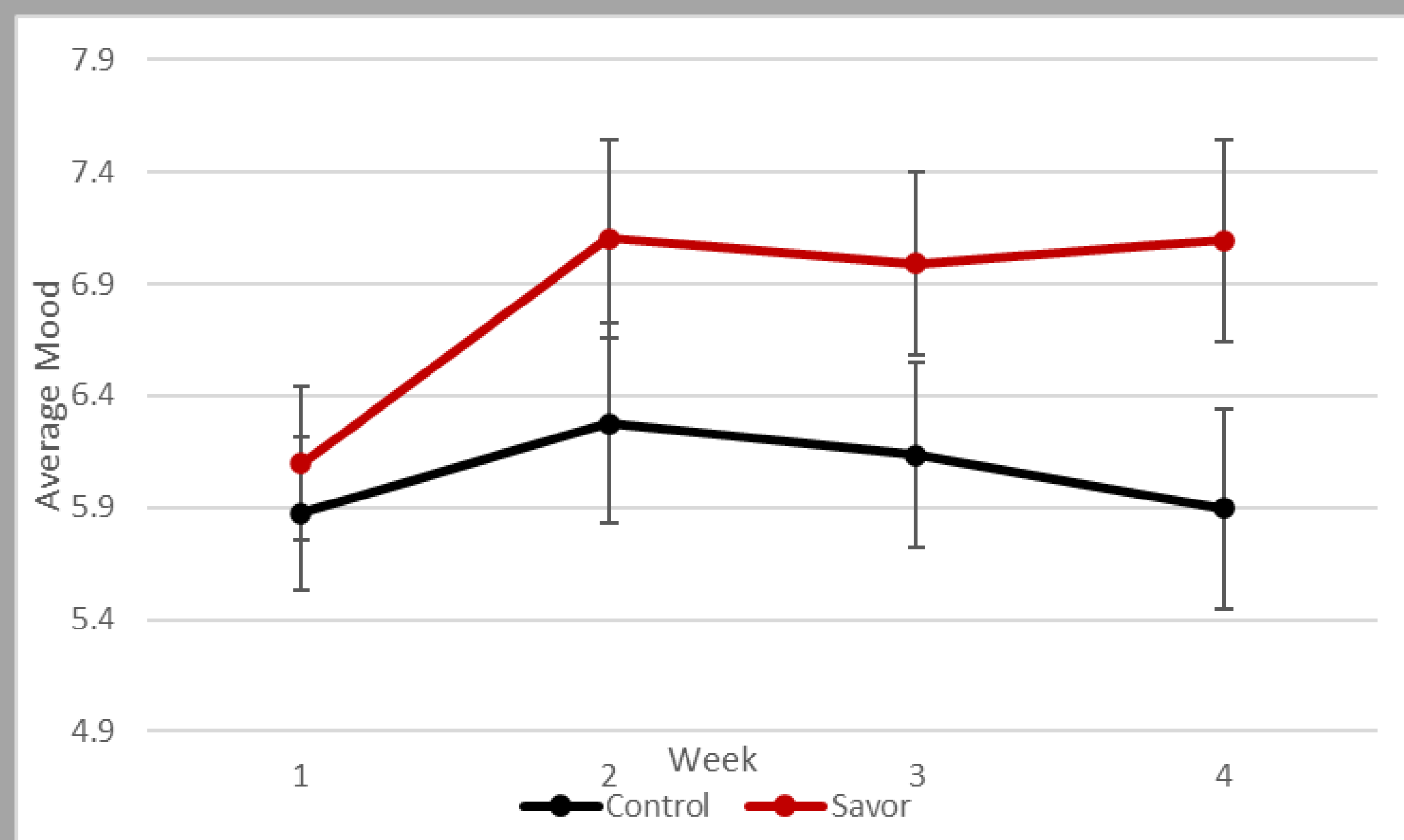
Control: (M= 2.222, 4.167, 4.056, 3.333, SE=0.386, 0.442, 0.493, 0.525), Savor: (M= 4.611, 5.944, 5.889, 5.833, SE= 0.386, 0.442, 0.493, 0.525) ANOVA: F(3, 32)=10.821, p<0.001

3b. Craving: Weeks 1-4**



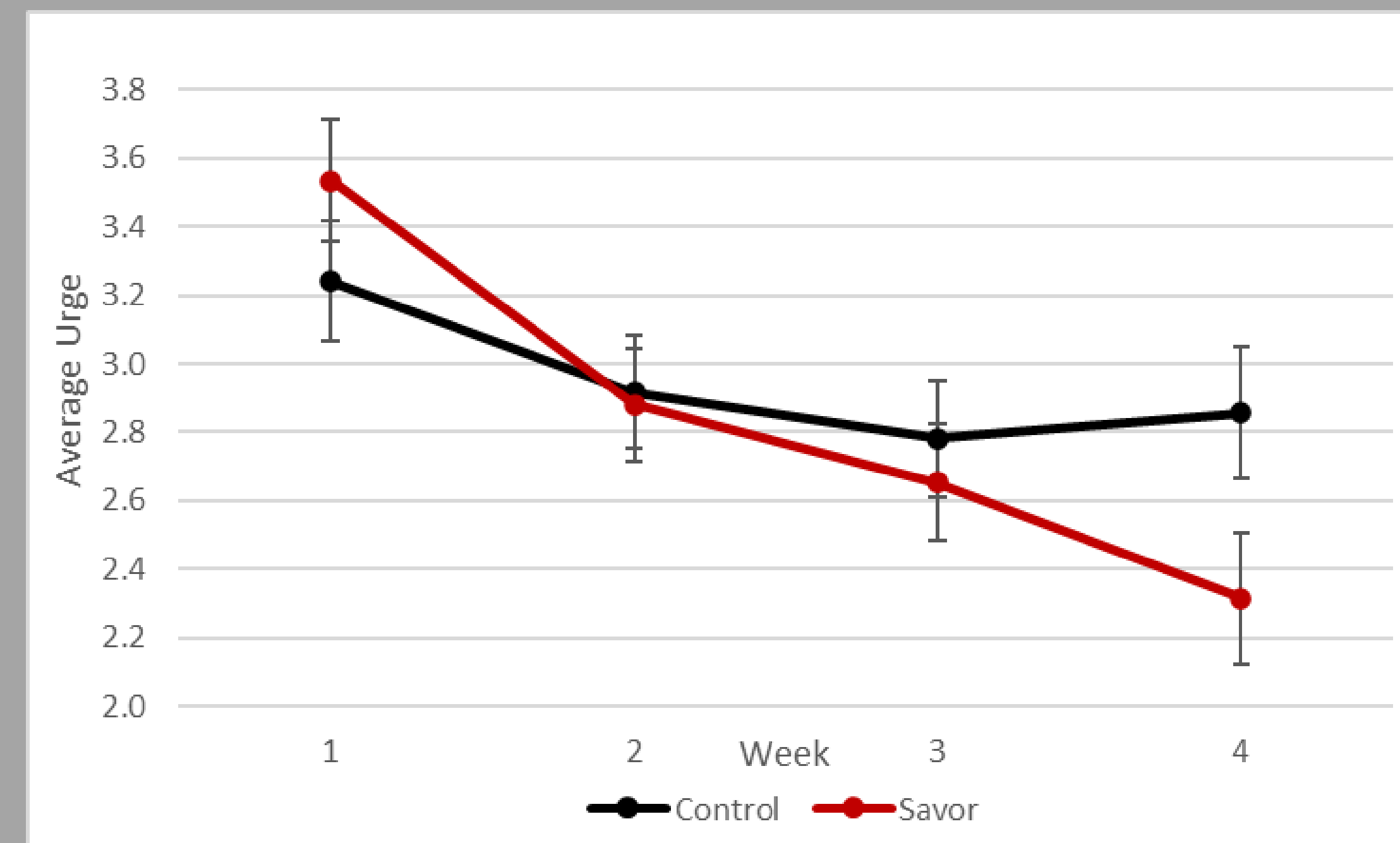
Control: (M= 3.026, 2.648, 2.499, 2.833, SE= 0.206, 0.185, 0.198, 0.217) Savor: (M= 3.068, 2.591, 2.421, 2.112, SE=0.206, 0.185, 0.198, 0.217) ANOVA: F(3, 32)=7.283, p<0.001

3c. Mood: Weeks 1-4*



Control: (M= 5.876, 6.278, 6.136, 5.894, SE= 0.342, 0.447, 0.413, 0.450), Savor: (M= 6.096, 7.102, 6.992, 7.094, SE= 0.342, 0.447, 0.413, 0.450) ANOVA: F(3, 32)=3.283, p=0.033

3d. Urge: Weeks 1-4**



Control: (M= 3.241, 2.916, 2.782, 2.857, SE= 0.178, 0.164, 0.170, 0.190) Savor: (M= 3.533, 2.881, 2.653, 2.314, SE= 0.178, 0.164, 0.170, 0.190) ANOVA: F(3, 31)=17.01, p<0.001

*P-Value < 0.05

**P-Value < 0.001



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Conclusions

Study 1 (Cross-Sectional):

- The cross-sectional study showed that compared to non-smokers, smokers exhibit worse task-related positive ER efficacy (See Figure 1).

Study 2 (Savor Pilot):

- On average participants who practiced savoring 26 minutes a day on 82% of the days made more quit attempts than non-smokers despite there being no prompt or incentive to quit (See Figure 2)
- The Savor pilot study demonstrated initial feasibility of brief savor training as a potential treatment option for TUD as seen by the compliance not differing significantly between groups and significant positive outcomes (See Table 3)
- Out of the 4 observed measures (quit attempts, craving, mood, urge to smoke) all showed significantly better outcomes among the savor group (See Figures 3a-d)

Future Directions:

- Savor-related reductions in the urge to smoke and craving emerge in the final week of the study, suggesting potential benefit for extending savor training and follow-up beyond 4-weeks
- These results highlight promising outcomes which may be explored in future smoking cessation studies and in the treatment of other SUDs.

Acknowledgements

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