

BACKGROUND

E-cigarettes have gained popularity as an alternative to cigarettes, with the potential to aid smoking cessation. However, their effectiveness in reducing the reinforcement value of smoking is unclear. The Cigarette Purchase Task (CPT) asks participants to report how many cigarettes they would buy at various prices, providing metrics that can be indicative of reinforcement value. The present study aimed to utilize a brief version of the CPT to assess the impact of e-cigarettes on cigarette reinforcement value.

METHODS

This study is a secondary data analysis of a nationwide clinical trial of e-cigarettes¹. Participants who smoked daily were randomized in a 2:1 ratio to receive 4 weeks of e-cigarettes or not. The study included 427 participants in the e-cigarette group and 211 participants in the control group. The brief Cigarette Purchase Task (CPT) was completed at baseline, week 4, week 12, and week 24. We assessed differences in CPT parameters, including **Intensity**, **O_{max}**, and **Breakpoint**, between the e-cigarette and control groups. Intensity refers to the number of cigarettes a participant would consume if they were free. Breakpoint is the maximum price a participant is willing to pay to smoke a single cigarette for ten minutes. O_{max} represents the maximum expenditure a participant is willing to make for cigarettes in a single day. For each parameter, we removed outliers, and conducted a 4 x 2 ANOVA (timepoint x group).

RESULTS

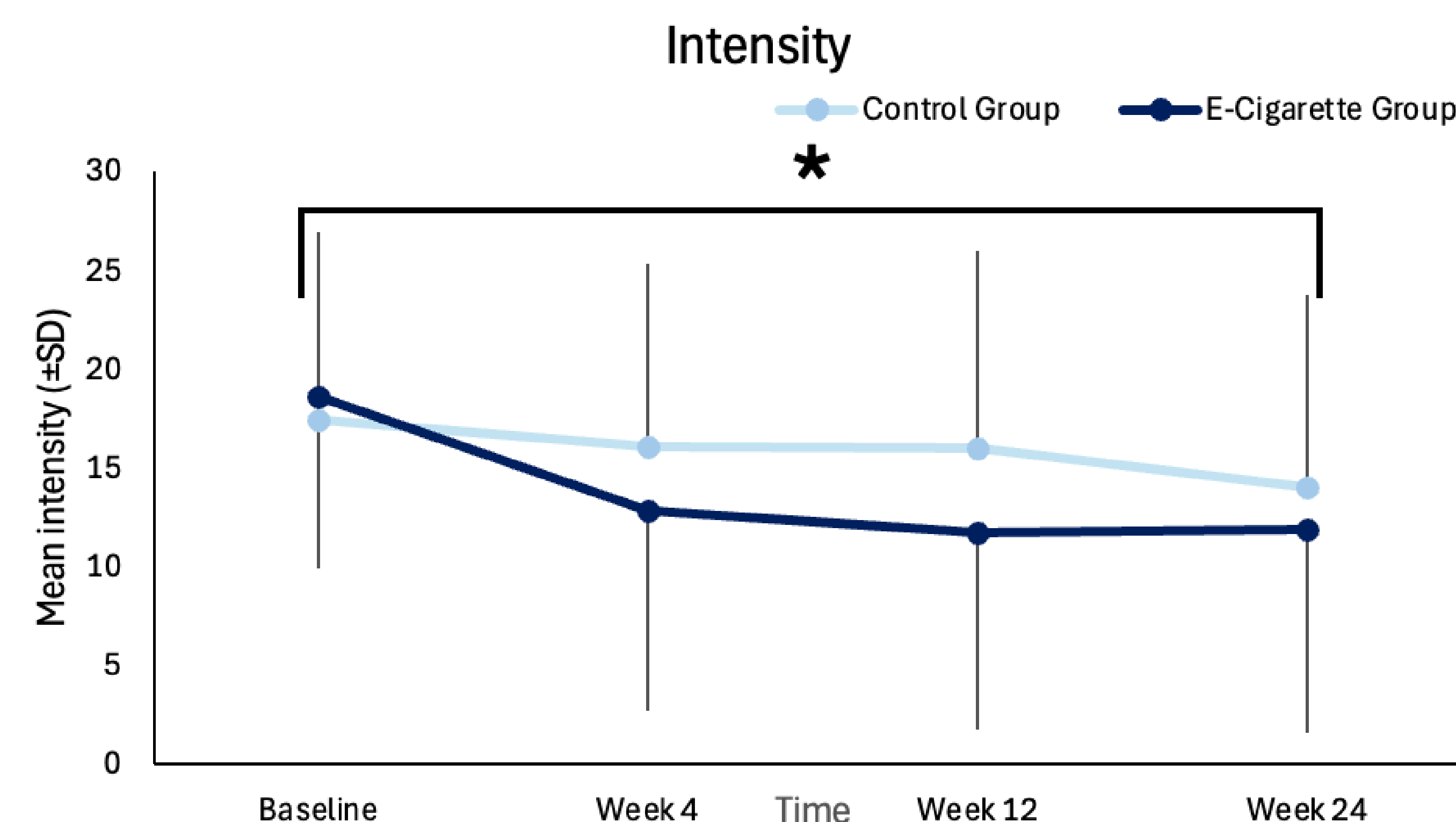


Figure 1. Intensity

Significant effects were observed for week ($F(3,1200)=69.02$, $p<0.05$) and group ($F(1,400)=6.43$, $p<0.05$), with a significant interaction between week and group ($F(3,1200)=14.03$, $p<0.05$). Significant interaction indicated by *.

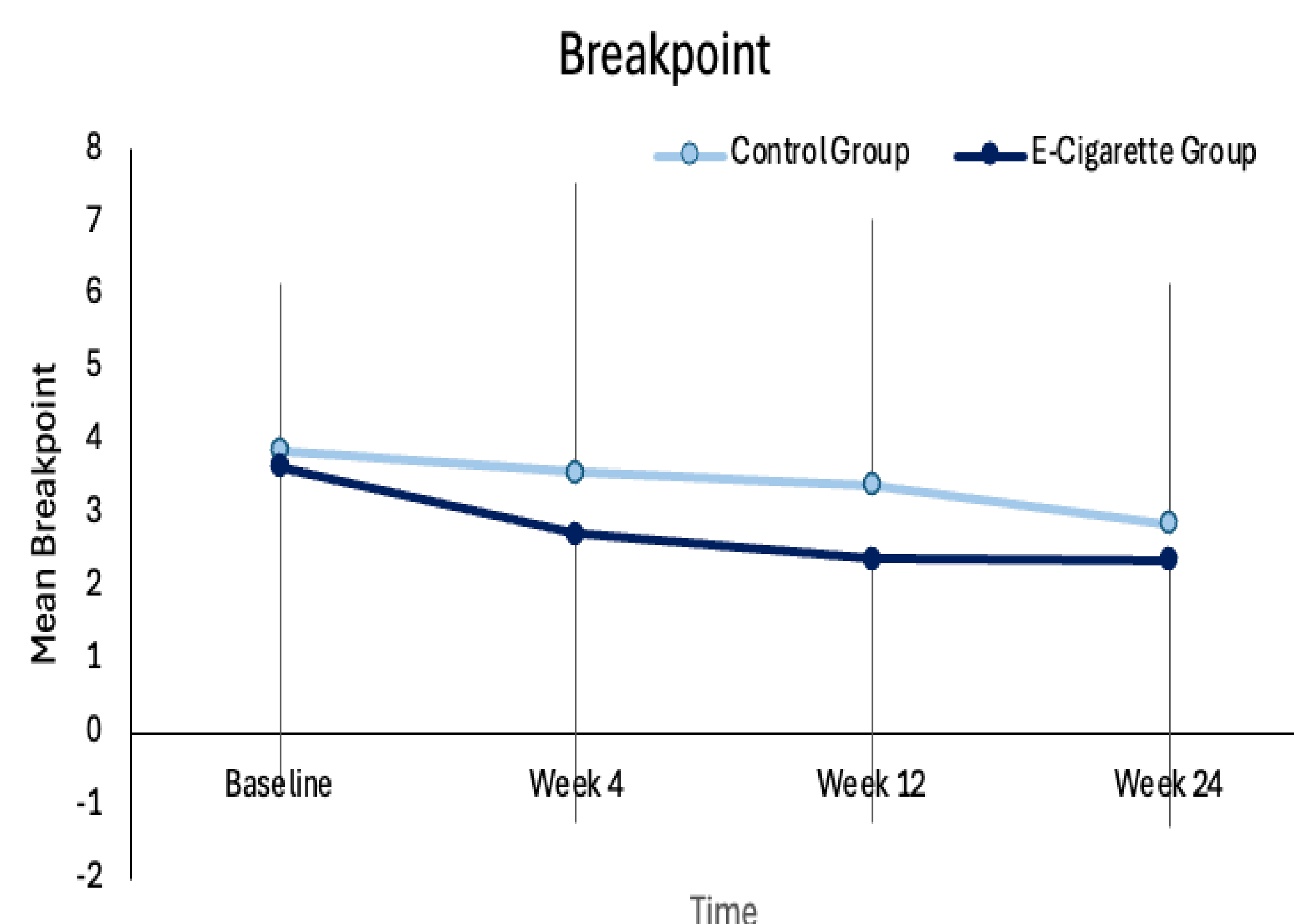


Figure 2. Breakpoint

There was a significant effect of week ($F(3,1173)=13.367$, $p<0.05$), but no significant effect of group ($F(1,391)=3.642$, $p>0.05$) or interaction between week and group ($F(3,1173)=1.772$, $p>0.05$).

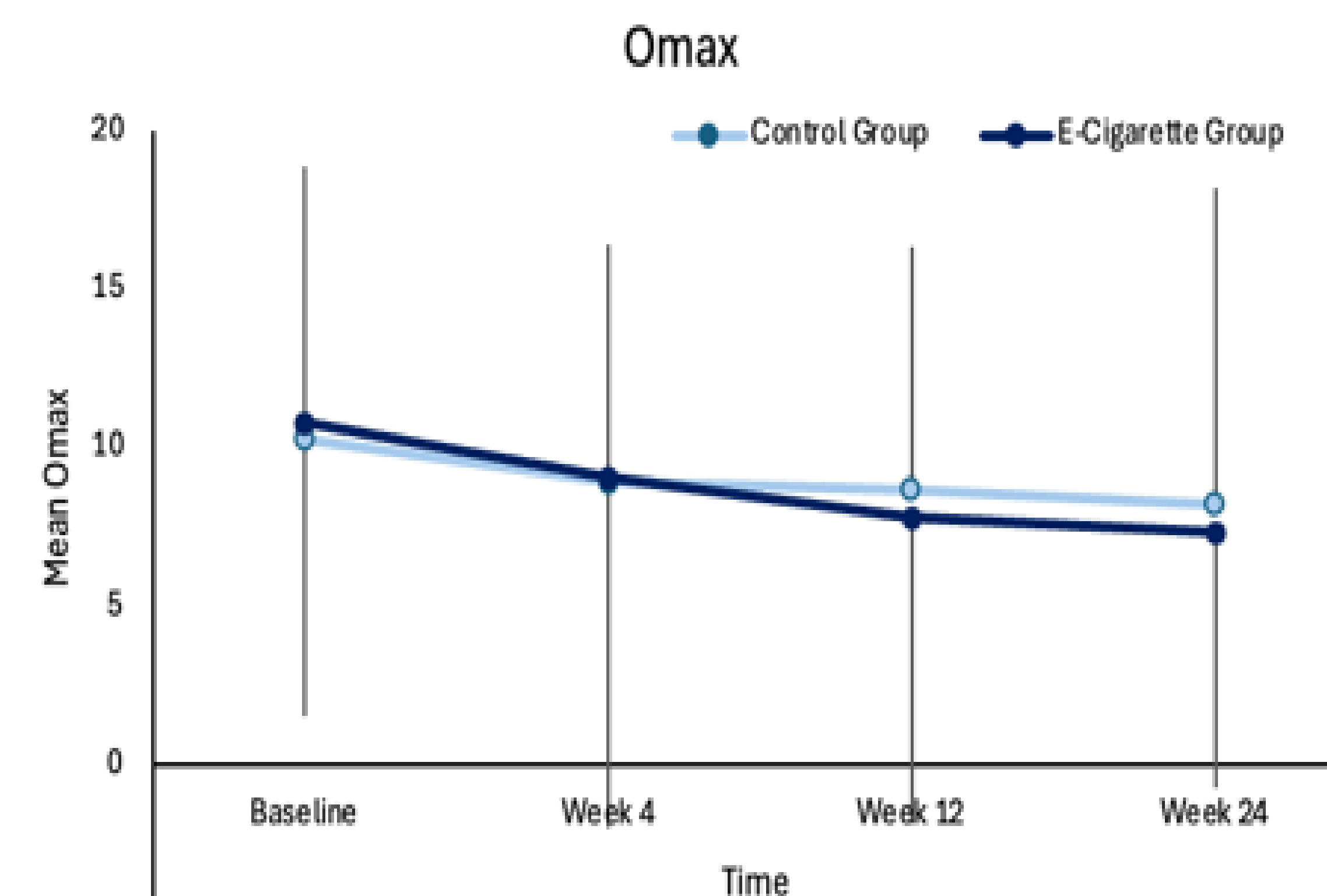


Figure 3. Omax

A significant effect of week was found ($F(3,1227)=15.751$, $p<0.05$), with no significant effect of group ($F(1,409)=0.121$, $p>0.05$) or interaction between week and group ($F(1,1227)=1.350$, $p>0.05$).

CONCLUSIONS

The introduction of e-cigarettes reduced the Intensity of cigarette reinforcement but did not significantly impact other aspects of reinforcement value, such as O_{max} or Breakpoint. This finding contrasts with a prior study² which reported that e-cigarettes reduced O_{max} for cigarettes. Differences between studies may stem from utilizing different versions of the CPT or may indicate that cigarettes still maintain high reinforcement value even after the introduction of another nicotine product. Further research is needed to understand these differences and the long-term impact of e-cigarettes on smoking behavior.

REFERENCES

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- 2) Smith, T. T., Wahlquist, A. E., Heckman, B. W., Cummings, K. M., & Carpenter, M. J. (2020). Impact of E-cigarette Sampling on Cigarette Dependence and Reinforcement Value. *Nicotine & Tobacco Research*, 22(2), 297-301.

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