

Smoking cessation with a time-varying mediation effect model

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INTRODUCTION

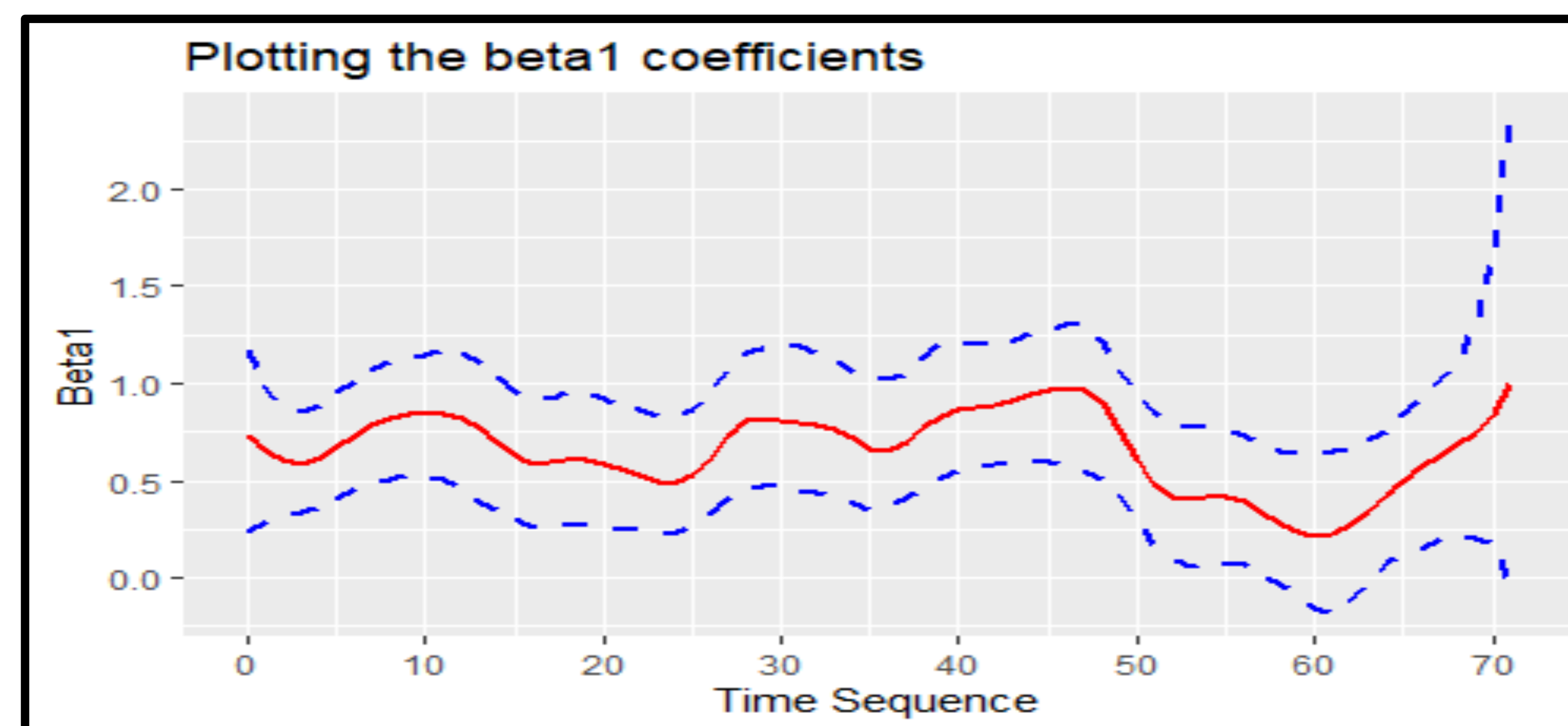
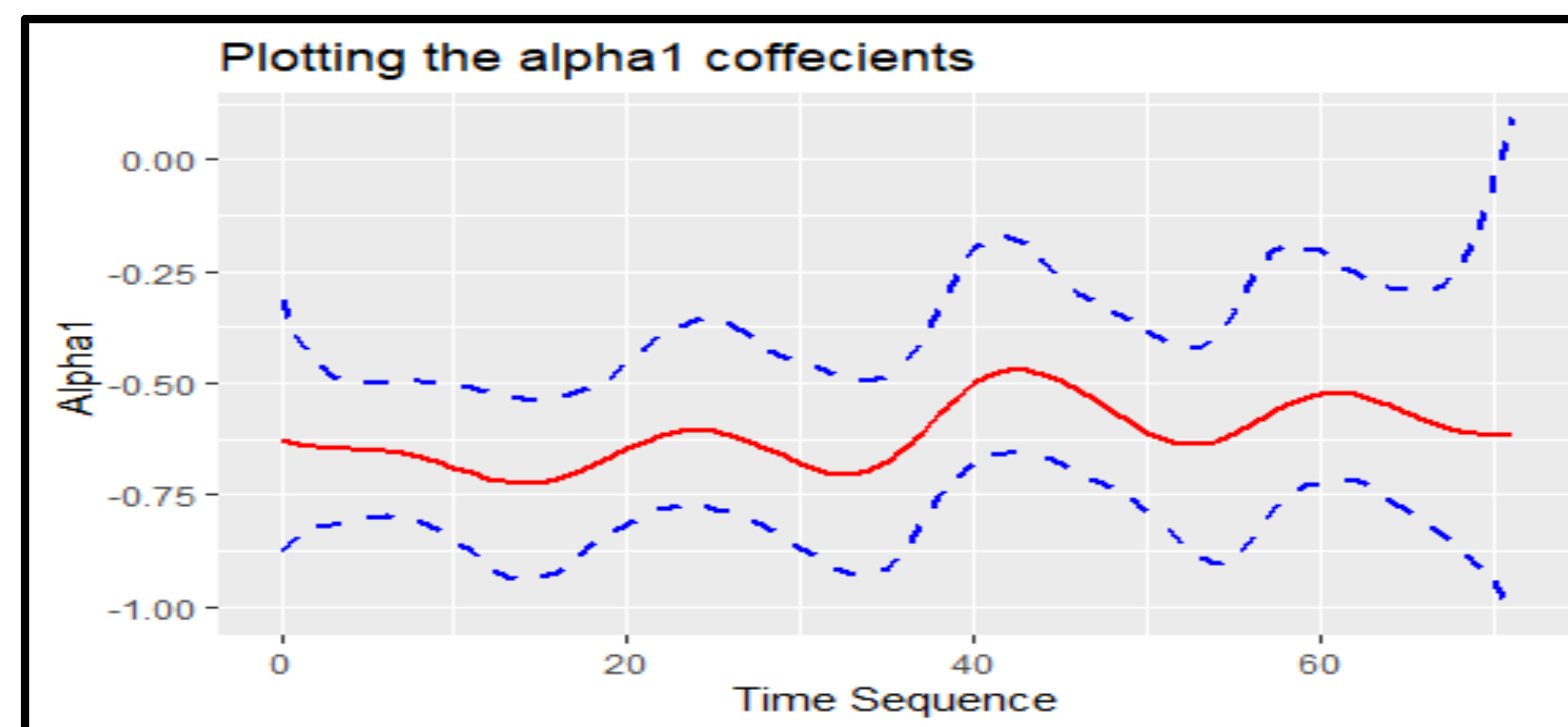
- Craving to smoke is critical in continued smoking behavior.
- We will examine if the effect of a text-based smoking intervention reduces craving and if this effect is mediated by the substance use of the participant's peers.
- The intervention was intended to affect a participant's peer and place influences on smoking behavior
- Mediation analysis allows examination of the mechanisms where a treatment influences an outcome.
- Current methods cannot examine how a mediation effect may change non-parametrically over time.
- This study applies a newly developed time varying mediation effect model in which the mediation effect varies as a continuous function of time.

METHODS

- The data were collected from 186 nicotine dependent adolescents over 6-months using an ecological momentary assessment (EMA) format.
- The mediation variable, friend_use, is an egocentric measure of peer substance use that is coded 1 if a participant was with someone who was using cigarettes, drugs, and/or alcohol and 0 otherwise.
- The outcome variable, craving, was measured on a scale from 1 to 5 with 1 being no craving and 5 being intense cravings.
- Adolescents were randomly assigned to a treatment or control group for the text-message intervention.
- Upon completion of the intervention, each adolescent received 3 EMA prompts per day for 4 days each month for a total of 72 possible assessments.
- The data were analyzed using the time-varying mediation effect model.
- This model helps to better understand continued smoking behavior by identifying when the substance use of a participant's peers is having the strongest impact on craving to smoke over the 6-month time period.

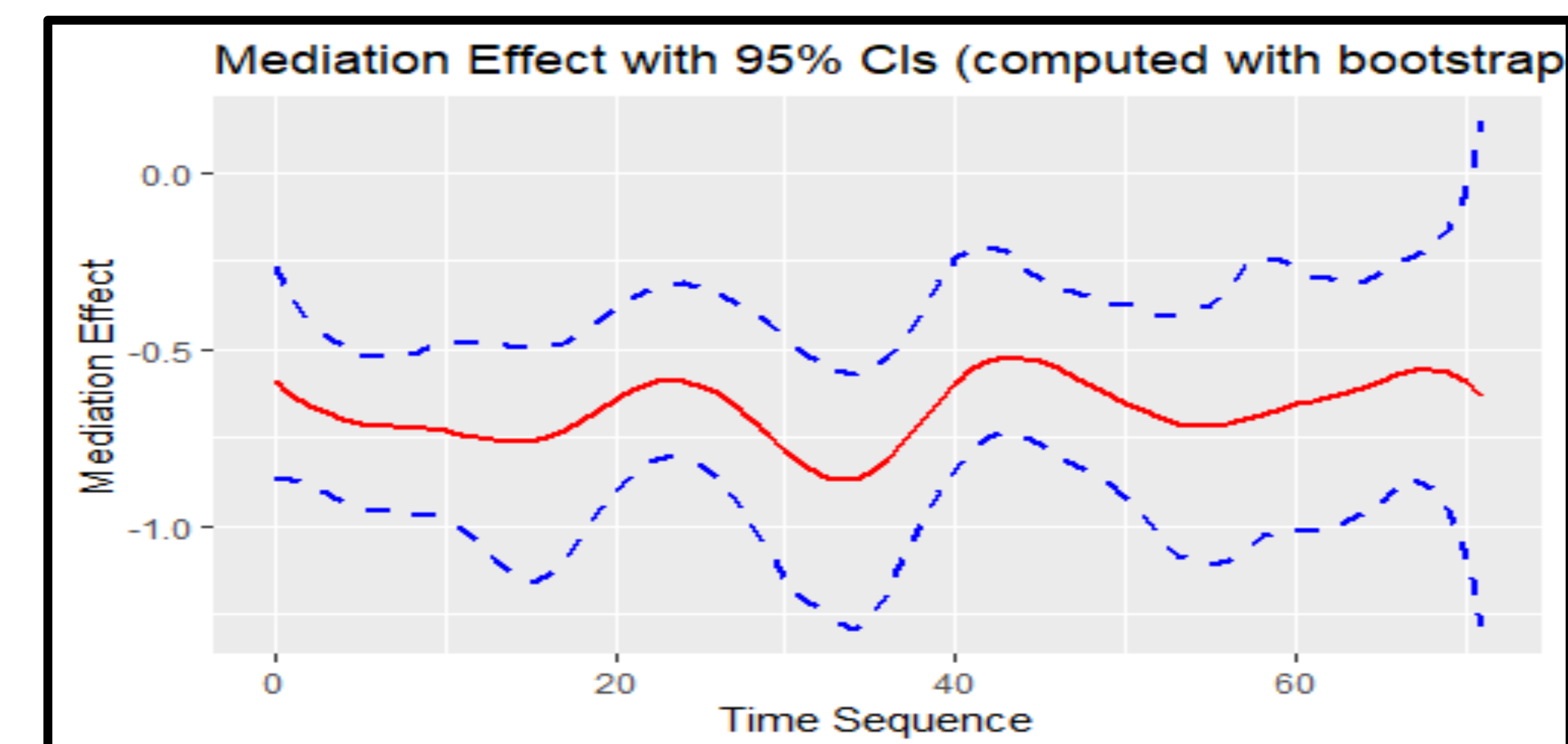
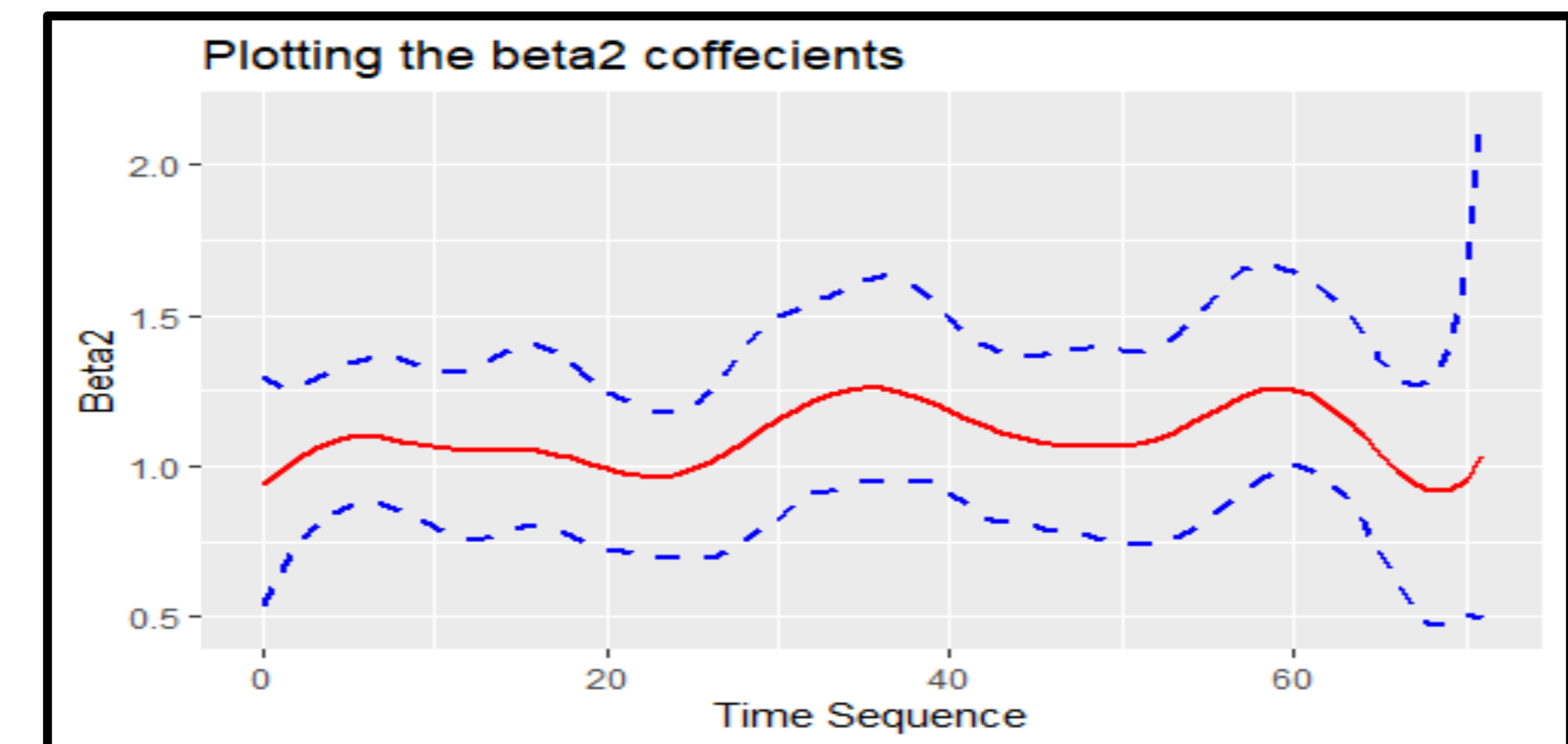
RESULTS

- The alpha 1 coefficients graph is the effect of the intervention on the mediator. This shows that participants who were in the intervention were around peers who use substances less.
- The beta 1 coefficients graph is the direct effect of the intervention on craving. The effect is statistically significant throughout much of the period and is positive, which indicates that being in the intervention decreases craving.
- The beta 2 coefficients graph is the effect of the mediator on the outcome. This shows that if a participant's peers are using substances, they are more likely to be craving.
- The mediation effect graph is the mediation effect which is significant throughout the entire time period.



CONCLUSION AND DISCUSSION

- The fact that the mediation effect is significant throughout the entire time period shows that the treatment effect is consistent and sustaining.
- Time varying mediation analysis shows that the mediation effect does not vary over time which is just as important as knowing that it does vary over time.



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