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Alzheimer's risk: Middle-age-lifestyle changes improve motivation and memory

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I. Introduction

Alzheimer's disease (AD) affects nearly 5.4 million individuals in the U.S. every year. With an increasing number of AD patients and no known cure, understanding genetic and environmental risk factors is key to prevention.

Although genetics is a key risk factor for AD, 50-60% of risk factors are environmental. This means that lifestyle/behavioral changes are the best approach to preventing early on-set Alzheimer's disease (due to non-genetic risks).

An online database and smartphone app were created that provide users with an easy source of information about AD prevention behaviors. Two benchmark results of this study were the effect on intrinsic motivation and metacognition in study participants who had access to the database and app.

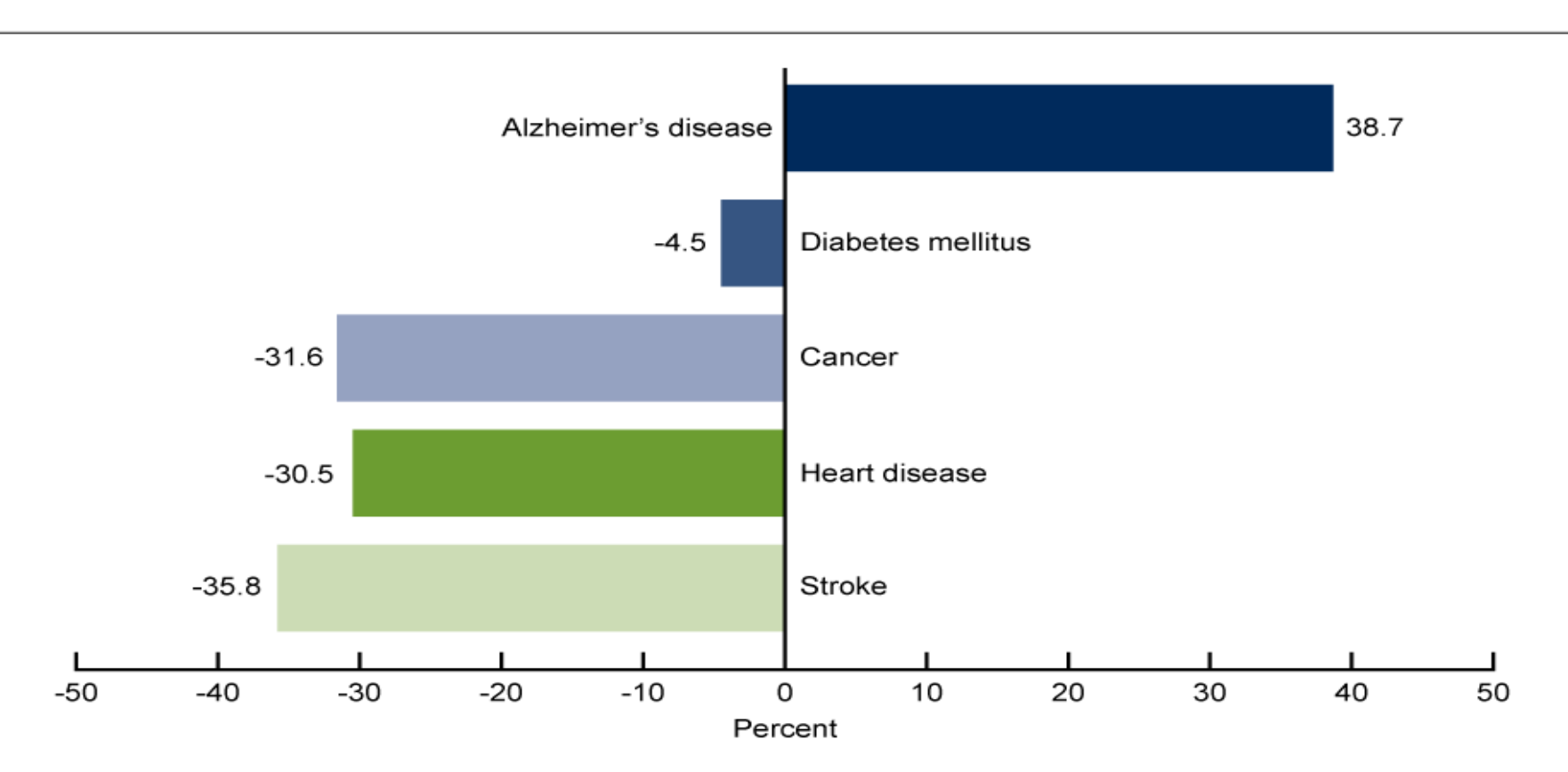


Figure 1 – Alzheimer's disease mortality increased compared with selected major causes of death: U.S. 2000 and 2010.

II. Methods

A randomized controlled trial of 146 participants between the age of 40-64 was conducted.

The treatment group was provided an evidence-based educational program, a wearable activity monitor, and a smartphone app that provided suggestions for behavioral changes and tracked which changes participants incorporated.

The app targeted six behavioral domains, including stress management and cognitive stimulation.

Before, during, and after the 6 month experiment, treatment and control group members completed surveys that measured metacognitive concern, perceived stress, and intrinsic motivation.

Metacognitive concern was measured with a survey of how participants felt their memory was now compared to 3 years ago in to seven areas: remembering recent events and names/faces of friends/relatives, train of thought, navigation to familiar places, operation of appliances, how to perform household chores/hobbies, and an overall rating.

Intrinsic motivation was measured with a survey inquiring why the individual was engaged as a study participant. Optional responses included: because the activity is interesting, because the activity is pleasant, and because the activity is fun.

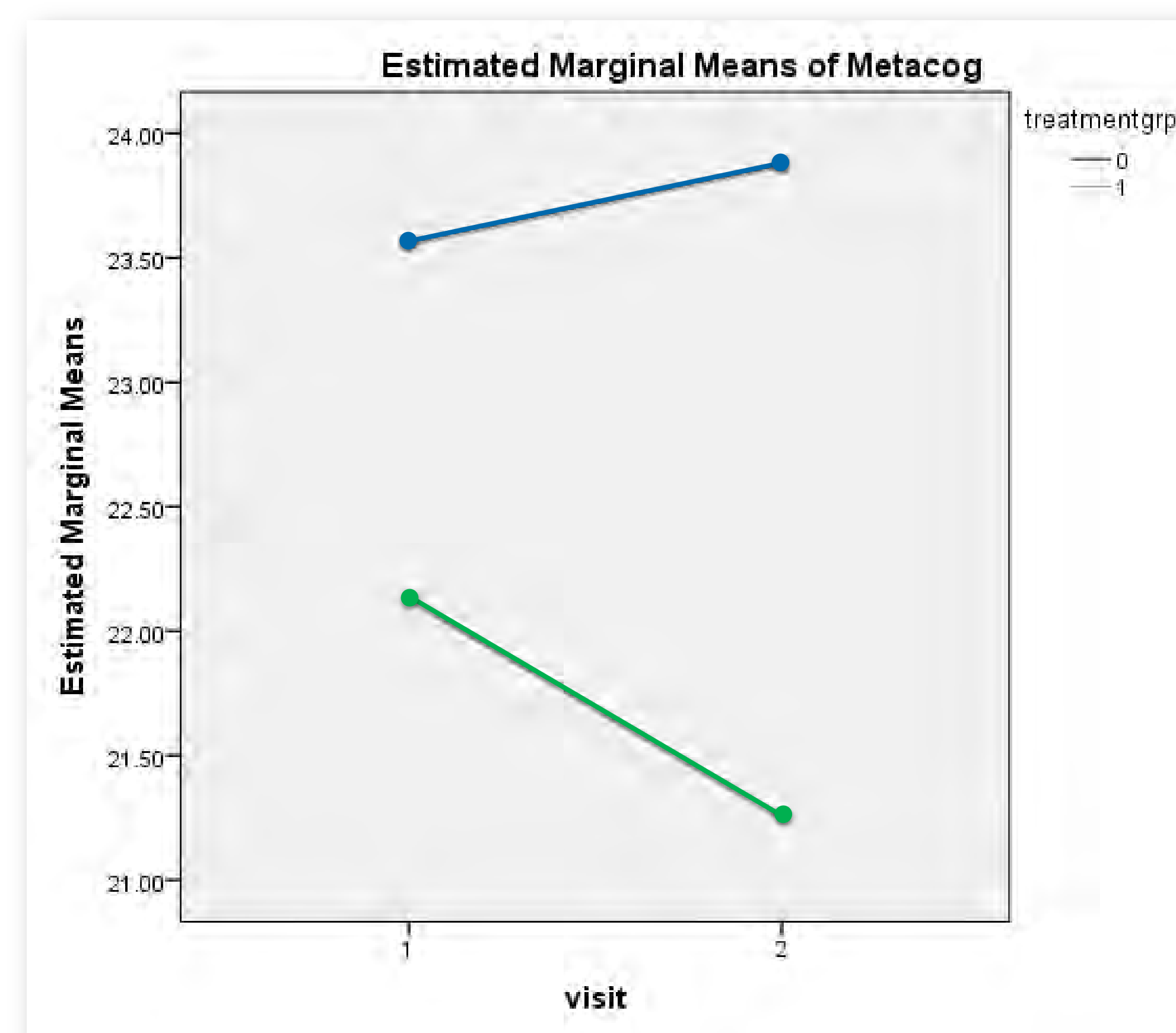


Figure 2 – Change in metacognitive concern: treatment vs. control.

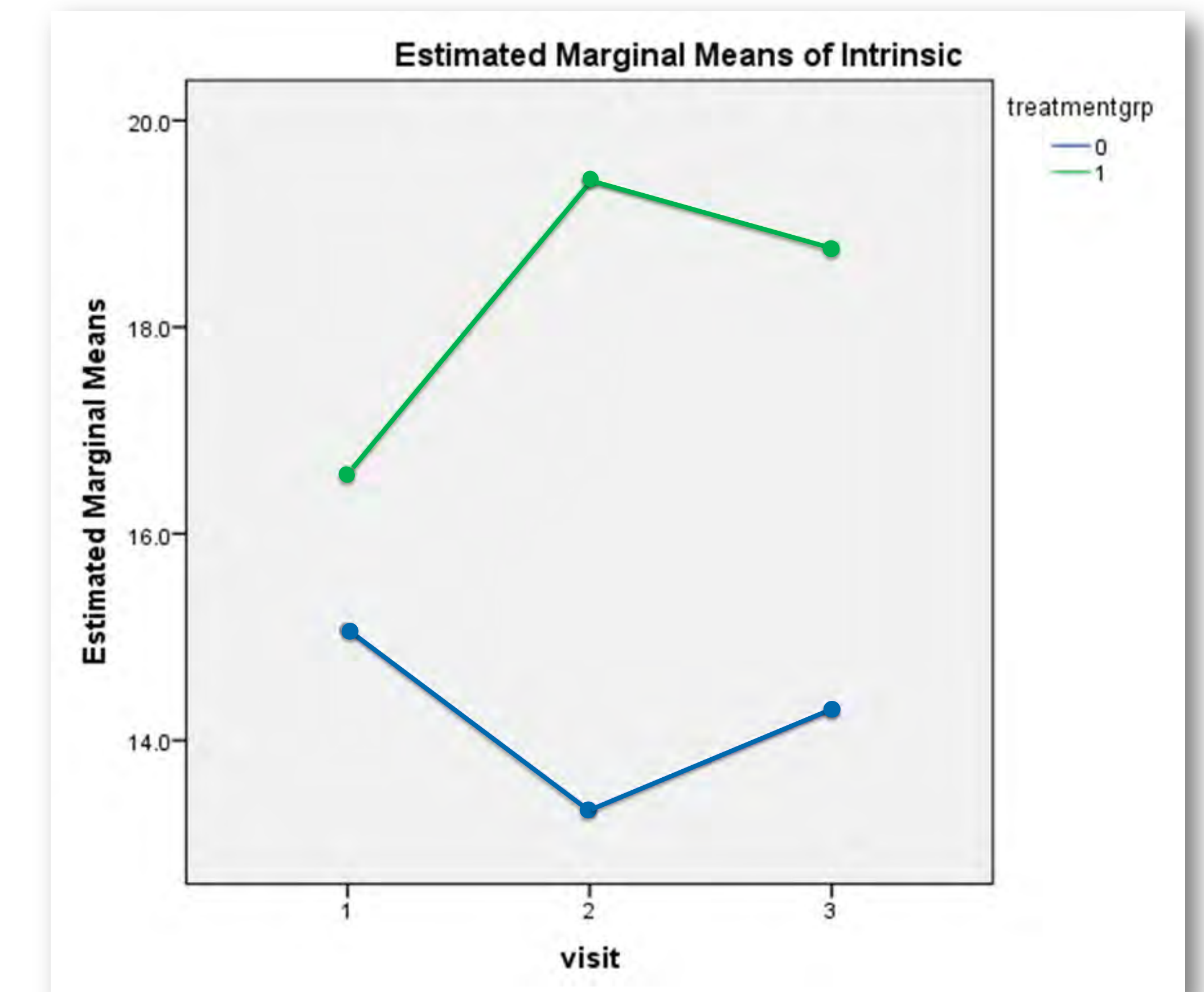


Figure 3 – Change in intrinsic motivation: treatment vs. control.

III. Results

- The control group showed more metacognitive concern as time proceeded, while the treatment group showed significantly less ($p=.047$)
- The treatment group showed significantly more intrinsic motivation over time, while the control group showed less ($p<.001$)
- A trend was observed that the perceived stress scores were lower in the treatment group with the control group increasing over time, although the difference was not statistically significant ($p=.162$)

IV. Conclusions

Preliminary results suggest that making lifestyle changes in key areas leads to improved perceived mental health (metacognitive concern) and intrinsic motivation.

This pilot study was conducted on a racially and culturally homogeneous group. Future studies with international collaborators, intended to address AD on a global scale, will reveal if results from this study will be mirrored in a more diverse population.



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