Self-efficacy, depressive symptoms, and the pursuit of physical health rewards

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Introduction

Although people value physical health, most people are not as active or healthy as they would like to be. Previous research suggests that both motivation for health rewards and perceived self-efficacy differ between individuals with symptoms of subclinical depression compared to healthier populations. In an ongoing study that uses neuromarketing to optimize mobile digital health messages aimed at increasing physical activity, we examined whether individual differences in depressive symptoms moderated the associations between self-efficacy and physical activity.

Do individual differences in depressive symptoms (BDI score) moderate the associations between self-efficacy and physical activity?

Methods

Study Design

Neuroimaging  Daily Messages and Surveys  Physical Activity

Daily Surveys and Activity Trackers

Fourteen participants (n = 4 with subclinical depression according to Beck Depression Inventory, BDI) answered daily surveys on their mood and self-efficacy, or confidence in increasing their physical activity (“How confident are you in your ability to increase your daily physical activity?”), every morning for 7-14 days. Fitbit trackers were used to collect data on daily steps.

Analysis

Data obtained from daily surveys and activity trackers was analyzed using a linear mixed model in jamovi with GAMLj package. We used random intercepts for participants and analyzed the interaction between self-efficacy and BDI score.

Current Results

Higher self-efficacy was associated with more physical activity and this association was moderated by depressive symptoms.

Above: Average daily steps (9717, SD = 3030) by BDI score.

Above: Self-efficacy was positively correlated with step count, t = 5.97, p < .001. Thus, participants who were confident in their ability to increase their daily physical activity had a higher step count than those who were not as confident.

Left: The relationship between daily self-efficacy and steps was dependent on BDI score, t = −2.213, p = 0.027. Individuals with low BDI scores showed the strongest benefits of self-efficacy on physical activity.

Conclusion

Although BDI scores were not associated with activity (steps), higher levels of perceived self-efficacy were associated with higher levels of physical activity. This association differs in participants with subclinical depression. Data collection is ongoing. Future analyses will examine individual differences in functional brain activation while participants are viewing the health messages delivered during the intervention.

The benefits of self-efficacy on daily physical activity were weaker in those with higher levels of depressive symptoms.

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