Exercise Identity Development in Adolescents with Obesity
Exploring the Link Between Length of Physical Activity Intervention and Identity Outcomes
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Background
Adolescent Obesity in the United States
Adolescent overweight and obesity rates in the United States have significantly increased over the past decades, presenting a substantial public health concern. Despite a recent plateau in this trend, the prevalence of obesity amongst youth remains high at 20.5% for 12-19 year olds. Based on evidence which supports a connection between childhood obesity and numerous physical, psychological, and emotional health risks, it is imperative to engage obese youth in lifestyle and behavioral strategies which combat or mitigate these comorbidities. One such strategy is increasing time spent in physical activity; however, the length of physical activity intervention may impact outcomes and therefore warrants examination.

Exercise Identity: Why Is It, and Why Does It Matter?
The theoretical foundations of Exercise Identity lie in Identity Theory, which posits that individuals hold salient knowledge and beliefs about their unique social roles, resulting in predictable behaviors. Identities are most actively formed in adolescence, and are relatively stable throughout the lifetime. They are linked with role meanings (i.e., what an individual believes it means to be an “exerciser”), and individuals strive to habitually engage in behaviors which they believe are consistent with their identity. Theoretically, increasing an obese adolescent’s Exercise Identity may enhance habitual exercise behaviors. The questions remains: what length (measured in weeks) of physical activity intervention is the most effective in enhancing exercise behavior and strengthening Exercise Identity?

Research Questions:
1. Will length of a short-term (3–7 week) physical activity intervention have a significant impact on Exercise Identity score? Furthermore, will longer physical activity intervention length result in greater change in Exercise Identity?
2. Will the physical activity intervention produce significant positive changes in reported activity levels, especially vigorous physical activity and exercise activity choice?

Methods
Participants and Recruitment
Fifty overweight and obese adolescents (female=72%, mean age±SD 16.2±1.88 years, mean BMI±SD 35.7±7.87 kg/m2, mean BMI percentile±SD 97.5±3.7%) were recruited from a behavior change summer camp, which included an intensive physical activity intervention. Inclusion criteria included: signed youth assent and parent consent forms, attendance at camp for a duration of 3–7 weeks, age 11–17 years, BMI percentile above 85th percentile, and complete baseline and post-intervention data.

Physical Activity Intervention Length
The physical activity intervention length was defined according to the participant’s length of attendance at camp:
• Group 1: 3 weeks
• Group 2: 4–5 weeks
• Group 3: 6–7 weeks

Measures and Data Collection Procedures
Participants completed the Anderson Exercise Identity Scale and 3-Day Physical Activity Recall (3DPAR) at baseline (first day of camp) and post-intervention (last day of camp). The Exercise Identity Scale indicates importance placed upon exercise as an integral part of an individual’s overall self-identity, and has been validated by previous studies. The 3DPAR questionnaire is a self-report measure, which records time-use in segmented blocks of 30 minutes. When tested in adolescent populations, the 3DPAR accurately measures activity levels, especially time spent in vigorous physical activity, and has been validated against objective physical activity measures such as accelerometers.

Results
Reported Changes in Exercise Identity
ANOVA analysis determined that at least one group mean post-intervention Exercise Identity score differed from all group mean Exercise Identity scores adjusting for baseline Exercise Identity score; p<0.000. Ad-hoc testing using the t-test resulted in Group3 (6-7 week) significantly differing from Group2 (4-5 week) and Group1 (3 week) (p=0.003), 6.81 (p=0.114), and 3.00 (p=0.175), respectively.

Physical Activity and Exercise Behavior Outcomes
Kaplan Meier comparisons demonstrated a significant increase in vigorous physical activity from baseline to post-intervention within all groups (Log-Rank and Wilcoxon p<0.05; p=0.000), and compliance with National Physical Activity Guidelines. National Physical Activity Guideline criteria met in all group intervention length groups consisted of: 60+ minutes of moderate to vigorous physical activity daily; vigorous and muscle- and bone strengthening activities performed on at least three days per week.

Limitations
The sample size of this pilot study was small (n=50), was focused on one specific study site, and consisted of primarily female participants; resulting in limited generalizability. Future studies should include multiple sites, and strive to represent a more diverse sample population. Furthermore, objective physical activity data should be collected to reduce the potential for self-report bias.

Conclusion
Strengths
Despite the aforementioned limitations, the novel examination of the interaction between physical activity intervention dosage and Exercise Identity outcomes in an adolescent obese population is a major strength of this study. Given the disparities in physical activity engagement and severe health risks obese youth possess compared to their normal weight peers, new research specializing in adolescent obesity may provide researchers with future intervention strategies.

Conclusion and Future Directions
Preliminary findings suggest that, when engaged in immersive treatment programs which deliver a PA intervention for a duration of at least 6-7 weeks, obese adolescents may significantly enhance Exercise Identity and exhibit increases in exercise activity choice and EPA. These findings represent original evidence supporting positive outcomes in Exercise Identity, specifically measured in obese populations. Additional studies are needed to confirm and expand upon these findings. Further longitudinal investigations into the role psychological constructs, such as Exercise Identity, may play as mediators of both physical activity and weight outcomes are recommended.

References

Acknowledgements:
The author acknowledges, with deep appreciation, the assistance received from the immersive behavior change summer camp management and staff in assisting to distribute and collect study materials throughout the data collection phase of this study. The author also wishes to thank the participants of the study, and their families, for their generous devotion of time.