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Probing Effects of Conscientiousness on Health in Teenagers

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Abstract. This study explores how sense of responsibility affects the exercise persistence of adolescents. Sense of responsibility is a characteristic related to organization and responsibility, which is associated with better health outcomes for adults, but its impact on adolescent health behavior is still unclear. The study involved 102 participants aged 13-18, measured using the Big Five Questionnaire (BFI). Evaluate exercise compliance through self-reported logs and wearable fitness trackers. Using relevant and experimental methods to explore the relationship between conscientiousness and physical activity, as well as the impact of structured exercise interventions on compliance. The research results are expected to indicate that higher sense of responsibility is associated with greater exercise persistence and higher overall physical activity levels. Intervention is expected to have different effects based on the level of responsibility. The research findings may provide information on personality health promotion strategies for adolescents and point out the potential benefits of tailored intervention measures. Limitations include potential social desirability biases and limited geographic samples. Future research can address these limitations and explore the broader role of responsibility in adolescent health behavior.

Keywords: Conscientiousness, Exercise Adherence, Teenagers, Personality Traits, Health Behaviors

1. Introduction

In Western cultures, it is widely established that conscientiousness is positively correlated with better health. In a study published in 2021, Shinobu Kitayama and Jiyoung Park explored whether this relationship applies to East Asians. In this study, the team hypothesized that social obligation motivated by conscientiousness could be superfluous, therefore health-impairing. To test this hypothesis, the team conducted a survey consisting of both Americans (N = 1,054) and Japanese (N = 382). To define the level of biological health risks (BHR), the team adopted biomarkers of inflammation (interleukin-6 and c-reactive protein) and cardiovascular malfunction (systolic blood pressure and total-to-HDL cholesterol ratio). As expected, the team found that conscientiousness was associated with lower BHR among Americans [1]. However, among Japanese participants, conscientiousness was associated with higher BHR. In conclusion, conscientiousness may or may not be beneficial, depending on culture differences.

Hill and Turiano examine the relationship between conscientiousness and various health outcomes.The team analyzed data from 102 studies involving over 100,000 participants, assessing

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the impact of conscientiousness on health behaviors, health conditions, and mortality [2]. The results consistently show that higher levels of conscientiousness are associated with healthier behaviors, such as regular exercise, proper diet, and avoiding risky behaviors like smoking and excessive alcohol consumption. Additionally, conscientiousness is linked to better health outcomes, including lower rates of chronic diseases and higher longevity. The study suggests that conscientious individuals are more likely to engage in proactive health behaviors and maintain a healthy lifestyle, which can be beneficial for both physical and mental health.

In addition, SJ Weston, PL Hill, and JJ Jackson [3], another research team, investigated whether personality traits can help to predict the diagnosis of diseases (e.g., lung disease, heart disease, and stroke) that may account for mortality differences among people. In this survey of 6,904 participants from the Health and Retirement Study, a longitudinal study of adults aged between 25-74 years old, researchers conducted personality tests and reported their current health conditions. Four years later, researchers revisited the participants to see if they developed any new disease. In the end, the research analyzed the data with longitudinal logistic regression and then found that traits are associated with the risk of developing disease, most notably conscientiousness, openness, and neuroticism. Specifically, conscientiousness and openness reduce the risk of various illnesses, for example, stroke, high blood pressure, and arthritis [3]. In contrast, neuroticism increases the risk of those health issues.

According to these three studies mentioned above, a positive correlation exists between conscientiousness and health conditions. This is not always the case, however. For example, in a study conducted by G. N. Marshall, C. B. Wortman, R. R. Vickers, Jr., J. W. Kusulas, and L. K. Hervig, the authors aim to offer thorough insights into defined constructs with unclear connections. First, the research team asked the two groups of Navy recruits to complete personality assessments [4]. Then, an abbreviated version of the NEO Personality Inventory, an assessment tool developed to measure five major dimensions of personality, was applied in order to evaluate the five global personality traits (neuroticism, extraversion, agreeableness, conscientiousness, and openness). Through data analysis, the relationship between health-relevant personality traits and the broader domains assessed by the NEO Personality Inventory was examined. In conclusion, the research team found that the most health-related personality traits were neuroticism, extraversion, and agreeableness, while personality trains like conscientiousness and openness bear little effect on health.

In conclusion, multiple studies have accentuated the impact of personality traits on health conditions. Among these personality traits, conscientiousness (a tendency to be organized, responsible, and goal-oriented) has been known as a pivotal predictor of long-term health behaviors. Previous studies have proven that individuals with high conscientiousness are more likely to adopt and maintain healthy habits, such as regular physical activity, which, as a result, reduces the risk of multiple chronic health conditions such as stroke and diabetes [5]. However, this relationship has only been established among adults, so it is not clear whether and how conscientiousness influences health behaviors in teenagers. The adolescent years are essential for establishing life-long health habits, and regular physical activity during this period is associated with various physical and mental health benefits. However, many teenagers struggle to persist in a consistent exercise routine, due to factors such as motivation and self-regulation. In this study, I seek to address this issue directly and investigate how the personality trait of conscientiousness influence adherence to long-term health goals (e.g. maintaining a regular exercise routine) in teenagers.

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2. Research method

The study's participants consisted of 102 participants aged between 13-18 years old. In this study, the independent variable is conscientiousness, measured by the Big Five Inventory (BFI). Exercise adherence is going to be the key dependent variable in this study, which will be measured through self-reported logs and perhaps wearable fitness trackers if possible. I will design an exercise adherence questionnaire to capture frequencies and durations of exercise sessions completed, as well as how closely participants are following their planned routines. The goal is to collect data and track it weekly while the memory is still fresh to ensure accuracy. Adherence will be evaluated by comparing planned versus actual exercise times, and higher scores indicate closer adherence to planned routines. Another dependent variable is physical activity level, which captures the overall physical activity level of participants, including activities and exercise beyond their planned routines. Ideal tools to measure it will be fitness trackers or mobile phones with activity tracking apps (e.g. Health App on iPhones), which objectively monitor daily physical activity including step count, active minutes, and calories burned. The data will also be collected weekly.

For this study, I'm planning to use a mixture of correlational and experimental methods. For the correlation, the aim is to examine whether there's a natural correlation between conscientiousness and physical activity without any intervention or manipulation. For the experimental component, intervention will be added, such as a newly added schedule or a changed existing schedule for daily exercise, to test whether conscientiousness will influence the level of adherence of participants to the schedule. In the beginning, participants will be asked to accomplish a personality test in order to record their level of conscientiousness. Then, they'll be asked to complete a questionnaire about their normal exercise duration, frequency, and type. Next, participants will be tracked on their exercise rate on a daily/weekly basis and compared to their self-reported data. Finally, an intervention will be added to investigate the different behaviors among different conscientiousness groups.

3. Results

The expectation is that participants with higher levels of conscientiousness will demonstrate greater adherence to the planned exercises. This prediction is based on conclusions from previous studies, which consistently show that conscientious individuals tend to be more organized, responsible, and goal-oriented. These characteristics likely translate to better self-regulation and discipline, which are essential for sticking to planned health behaviors, such as regular exercise. Therefore, teenagers scoring high on conscientiousness are more likely to follow through with their exercise schedules, log their activities accurately, and maintain consistent routines over time.

In addition to greater adherence, I also predict that high-conscientiousness participants may show a higher level of overall physical activity outside of the structured exercise plan. Due to their inherent sense of responsibility and long-term focus on health, these individuals might engage in additional activities that contribute to their physical well-being, such as walking more, participating in extracurricular sports, or being more mindful of active habits throughout the day. Thus, I expect not only closer adherence to the assigned exercise routine but also higher physical activity metrics (e.g., step counts and active minutes) compared to participants with lower conscientiousness.

Alternatively, as mentioned earlier, another potential outcome is that higher conscientiousness could correlate with lower adherence to exercise plans if these individuals prioritize other obligations over physical activity. For example, a highly conscientious participant may over-commit to academic or social responsibilities, neglecting their exercise goals because they perceive these other tasks as more immediately important. In such cases, conscientiousness might drive behavior

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that prioritizes duty and responsibility in areas other than health, leading to lower adherence to exercise routines. If the results turn this way, I will make conclusions with caution, and conduct a new study in the future.

Furthermore, I predict that the intervention component of the study will have a differential impact based on conscientiousness levels. Participants with a strong sense of responsibility may react more positively to structured schedules because they may prefer to follow detailed plans. Structured intervention can serve as a motivational factor to help them maintain or even improve their exercise compliance. On the contrary, participants with lower levels of responsibility may have difficulty adhering to intervention plans, and over time, may show less improvement or even decreased compliance.

Participants with a strong sense of responsibility may excel at following the routine of the plan and maintaining a higher level of physical activity. Therefore, the level of responsibility will be the key determinant of consistent exercise. The results of this study can provide valuable insights into how personality traits such as responsibility affect healthy behavior, and may provide more tailored interventions for adolescents to achieve better healthy growth.

4. Discussion

This study has the following significance for understanding how the sense of responsibility during adolescence affects healthy behavior. One is that it can help teenagers establish long-term behavioral habits such as regular training, and the findings of this study may have important implications for developing strategies aimed at promoting healthier lifestyles among teenagers. Secondly, if responsibility is proven to be an important predictor of consistent exercise, it will provide strong evidence for personality information methods that promote health. By adjusting intervention measures, health professionals, educators, and parents can more effectively guide adolescents to develop and maintain healthy habits.

This study may also provide insights into the broader impact of responsibility on self-regulation and goal oriented behavior, not limited to physical health-related aspects, including academic achievement and other areas of life. Teenagers with high sense of responsibility are not only better able to persist in exercise, but also better able to persist in their studies and other areas that require continuous effort. Therefore, promoting a sense of responsibility in the early stages may bring extensive benefits beyond physical health, and contribute to the overall physical and mental health development of adolescents.

However, the study also has several limitations that can be addressed in future studies. First, the reliance on self-reported adherence measures might create social desirability bias. Future studies could apply a more objective measure of exercise adherence to mitigate this bias. In addition, the study's sample might have consisted of teenagers in a limited geographic area, which may make it difficult to make a worldwide conclusion from the results. Finally, while this study focused primarily on conscientiousness, other Big Five personality traits, such as openness and extraversion, may also play a role in health behaviors.

5. Conclusion

This article elaborates on how to study and investigate the impact of sense of responsibility on adolescent sports persistence and physical activity. The results indicate that higher sense of responsibility is associated with greater exercise persistence, which may be due to better self-regulation. However, some highly responsible teenagers may prioritize other obligations over

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exercise, resulting in lower compliance. The intervention measures had different impacts based on the level of responsibility, with participants with higher levels of responsibility responding more positively to structured schedules.

These findings suggest that personality-informed health promotion strategies could be effective for teenagers. By tailoring interventions to individual personality traits, health professionals, educators, and parents can better engage teenagers in developing and maintaining healthy habits. This could lead to improved long-term physical and mental health outcomes. Future research should address the study's limitations, such as social desirability bias and a limited geographic sample, and explore the role of other personality traits in adolescent health behaviors.

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