

RESEARCH FINDINGS SUMMARY

Skin Deep Resilience in Identical Twins



QUICK SUMMARY

In this study, we examined the effects of conscientiousness – a personality trait related to being hard-working, responsible, and planful – on the physical and mental health of young adult twins. The study followed 141 pairs of monozygotic, or identical, twins for 13 years. Our study found that among twins who grow up in low socioeconomic status (SES) households, the one who had higher levels of conscientiousness also had higher levels of inflammation compared to their twin sibling who was lower in conscientiousness. In turn, inflammation has been linked to a number of chronic diseases later in life. Although conscientiousness is typically thought of as a positive trait, these inflammation findings suggest that individuals from disadvantaged backgrounds may pay a health cost when they strive to “beat the odds” by working conscientiously to achieve successes in life. This phenomenon has been called skin-deep resilience.

WHAT IS THE RESEARCH ABOUT?

Previous research has found that conscientiousness is a personality trait that predicts a number of positive outcomes in life, such as higher incomes and longer life spans. However, we hypothesized that not all people experience the benefits of conscientiousness. The phenomenon of skin-deep resilience suggests that for young people who grow up surrounded by adversity, striving to achieve success is effortful and can take a toll on one’s physical health. A factor that could play a role in skin-deep resilience is conscientiousness. This study investigates conscientiousness and inflammation in twins.



Figure 1. By studying identical twins, we have been able to conclude that differences in personality contribute to a number of adult life outcomes over and above the role of genetics.

WHAT DID WE DO?

We used a co-twin design in this study, in which we compared information about identical twins. By comparing twins, we are able to investigate whether youth health is related to behaviors (such as conscientiousness and striving), over and above the contribution of inherited traits such as genes. By using twins who share all their genetic material, we were able to control for potential variations in genetic and environmental factors that twins share. We followed a total of 141 pairs of twins, aged 11 to 20, for a period of 13 years. Each twin completed a survey about conscientiousness, and parents provided information about family socioeconomic status (SES; parent income and education). At the end of the 13 years, we collected information about mental health, and educational and professional status. To study physical health in young adults, we measured inflammation through levels of C-Reactive Protein (CRP) taken from a small blood sample. Previous research has found that this biomarker predicts obesity, diabetes, and other chronic illnesses later in life.

WHAT DID WE FIND?

A link was found between the levels of CRP and conscientiousness among twins. In lower-SES households, the twin with higher levels of conscientiousness had higher CRP. In contrast, the opposite was true in higher-SES households: here the twin with higher levels of conscientiousness had lower CRP. An important note is that high conscientiousness was related to better educational attainment, lower rates of depression, and lower alcohol use in twins across all SES groups. Thus conscientiousness had beneficial effects on mental health and educational outcomes across all twins; however its benefits for physical health-relevant markers was evident only among higher SES twins.

WHAT SHOULD YOU REMEMBER?

Youth who grow up in low-income households and are high in conscientiousness have higher levels of inflammation than their twin sibling who is lower in conscientiousness. As a result the high conscientious twin may face higher health risks in adulthood. This phenomenon is known as skin-deep resilience because conscientiousness is linked to a variety of positive life outcomes such as good mental health, higher incomes, and greater educational attainment, but at the same time, to poorer physical health outcomes in low SES young people. This is a powerful aspect of skin-deep resilience because it highlights a disparity that follows youth from low SES backgrounds even as they achieve successes into adulthood.

PUBLICATIONS

1. Chen, E., Yu, T., Siliezar, R., Drage, J. N., Dezil, J., Miller, G. E., & Brody, G. H. (2020). Evidence for skin-deep resilience using a co-twin control design: Effects on low-grade inflammation in a longitudinal study of youth. *Brain, Behavior, and Immunity*, 88, 661-667.

ABOUT THIS SUMMARY

This summary was prepared by Sonya Voloboi on behalf of the Foundations of Health Research Center at Northwestern University. You can access all of our research for free at our website, www.foundationsofhealth.org/publications.