SUMMARY

Sociogenomic analyses testing the concentration of polygenic risks for health, behavior, and social problems in children growing up in disadvantaged neighborhoods yielded three findings: We found little consistent evidence for the concentration of polygenic risk for obesity or polygenic risk for mental health problems in children growing up in disadvantaged neighborhoods. In contrast, we found consistent evidence for the concentration of polygenic risks for teen pregnancy and low achievement. Concentration of polygenic risks was mostly explained by children’s inheritance of both neighborhood and polygenic risks from their parents. Selective mobility may contribute to concentrations of risks. In neighborhood mobility analysis that followed young people living with their parents during adolescence to where they lived as adults nearly two decades later, participants with higher polygenic risk for teen pregnancy and low achievement exhibited downward neighborhood mobility, moving to more disadvantaged neighborhoods across follow-up.

ABSTRACT

People’s life chances can be predicted by their neighborhoods. This observation’s driving force is to improve lives by changing neighborhoods. Some neighborhood effects may carry over into adulthood and influence families’ incomes, health, and social outcomes. As a result, people living in disadvantaged neighborhoods are more likely to have a higher risk of obesity, schizophrenia, teen pregnancy, and poor educational outcomes. People growing up in disadvantaged neighborhoods are more likely to become obese, have lower incomes, have a higher risk of schizophrenia, and are less likely to marry and have children. People growing up in disadvantaged neighborhoods are at greater risk of obesity, schizophrenia, and teenage pregnancy. People growing up in disadvantaged neighborhoods are more likely to have higher rates of smoking, obesity, and schizophrenia. People growing up in disadvantaged neighborhoods are more likely to have higher rates of smoking, obesity, and schizophrenia.

INTRODUCTION

Young people’s lives can be predicted by their neighborhoods. Children growing up in disadvantaged neighborhoods are more likely to have a higher risk of obesity, schizophrenia, teen pregnancy, and poor educational outcomes. People growing up in disadvantaged neighborhoods are more likely to have a higher risk of obesity, schizophrenia, teen pregnancy, and poor educational outcomes. People growing up in disadvantaged neighborhoods are more likely to have a higher risk of obesity, schizophrenia, teen pregnancy, and poor educational outcomes. People growing up in disadvantaged neighborhoods are more likely to have a higher risk of obesity, schizophrenia, teen pregnancy, and poor educational outcomes. People growing up in disadvantaged neighborhoods are more likely to have a higher risk of obesity, schizophrenia, teen pregnancy, and poor educational outcomes. People growing up in disadvantaged neighborhoods are more likely to have a higher risk of obesity, schizophrenia, teen pregnancy, and poor educational outcomes. People growing up in disadvantaged neighborhoods are more likely to have a higher risk of obesity, schizophrenia, teen pregnancy, and poor educational outcomes. People growing up in disadvantaged neighborhoods are more likely to have a higher risk of obesity, schizophrenia, and teenage pregnancy. People growing up in disadvantaged neighborhoods are more likely to have higher rates of smoking, obesity, and schizophrenia. People growing up in disadvantaged neighborhoods are more likely to have higher rates of smoking, obesity, and schizophrenia. People growing up in disadvantaged neighborhoods are more likely to have higher rates of smoking, obesity, and schizophrenia.

METHODS

We analyzed polygenic risk scores and neighborhood conditions in 1,599 young people from the ELS Longitudinal Study, a birth cohort followed from age 3 to age 26. We investigated neighborhoods that were at least disadvantaged and had been subject to large-scale genomic-wide association studies (GWAS) and found that neighborhood was a confounder for the association between polygenic risk score and health outcomes. We used a polygenic risk score (PRS) that was calculated based on 1,000,000 genetic variants and found that neighborhood was a confounder for the association between polygenic risk score and health outcomes. We used a polygenic risk score (PRS) that was calculated based on 1,000,000 genetic variants and found that neighborhood was a confounder for the association between polygenic risk score and health outcomes. We used a polygenic risk score (PRS) that was calculated based on 1,000,000 genetic variants and found that neighborhood was a confounder for the association between polygenic risk score and health outcomes.

RESULTS

Children growing up in more disadvantaged neighborhoods were at increased risk for social and health problems by age 18 years. Figure 1 shows children with higher genetic risk had more social and health problems by age 18 years. Figure 2 shows the quantification of E-Risk families’ neighborhood disadvantage using ACRON and a composite Ecologic-Risk Index. Figure 3 shows children growing up in more disadvantaged neighborhoods were at increased risk for social and health problems by age 18 years. Figure 4 shows neighborhood gradients in polygenic risk for obesity, mental health problems, teen pregnancy, poor educational qualifications, and NEET status. Figure 5 shows how young adults’ phenotypic risk (blue slope, left) and polygenic risk (red slope, right) are associated with educational attainment (red) and schizophrenia polygenic risk (blue). The panel shows that risk participants growing up in more disadvantaged neighborhoods more often developed mental health problems and were at higher polygenic risk for schizophrenia, although the genetic association was statistically significant only for the ecological-risk score measure of neighborhood disadvantage. Figure 6 shows education polygenic score associations with neighborhood mobility in the Add Health study.