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Domain generality vs. domain specificity of non-ability-based confidence in the TwinLife dataset

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ABSTRACT: Non-ability-based confidence is the discrepancy between one's confidence in their abilities and their actual ability. Some people are overconfident while others are underconfident. Here, we examined whether non-ability-based confidence is domain general or domain specific in middle and high school aged children. Are adolescents who are overconfident in one domain (e.g., math) also overconfident in another domain (e.g., German)? Using data from the German TwinLife project (N = 5,236 individuals; 913 MZ twin pairs, 2,246 DZ twin/full sibling pairs), we used a latent variable residual score approach to identify non-ability-based confidence for general ability, as well as for domain specific math and German ability. We found that general non-ability-based confidence was strongly correlated with math ($r = 0.469$) and German ($r = 0.437$) non-ability-based confidence, but that math and German non-ability-based confidence were weakly negatively related to each other ($r = -0.098$). We decomposed the variance in each form of non-ability-based confidence and found that variance was attributable to genetic and nonshared environmental factors. Mirroring the phenotypic results, we found positive genetic correlations between general non-ability-based confidence and domain specific non-ability-based confidence and negligible genetic correlations between German and math non-ability-based confidence. Additionally, we found moderate non-shared environmental correlations suggesting that the twin higher on general non-ability-based confidence also tended to be higher on math and German non-ability-based confidence. Taken together, these results suggest that domain specific non-ability-based confidence shares much of its variance with general non-ability-based confidence, but that the specific domains do not strongly relate to one another.

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