JOINT SUSCEPTIBILITY TO SMOKING AND VAPING AMONG ADOLESCENTS

SHARED ENVIRONMENTS
The use of other tobacco products and other substances moderately determine one’s cigarette smoking and vaping status across all predicted directions ($R^2_{DSCB}=0.213$, $R^2_{TSCB}=0.272$), while household use of tobacco products, and eating and sports behaviour yield lower determination coefficients.

SMOKING AND VAPING DIFFERENCES
Cigarette smoking status is overall best predicted by one’s use of other tobacco-based products ($R^2_{sno}=0.337$), while the vaping status is best predicted by one’s use of other substances ($R^2_{Vap}=0.308$).

CROSS-PREDICTION
Whereas one’s vaping status is best predicted from the vaping models ($R^2_{DSCB}=0.308$), one’s smoking status is surprisingly more accurately determined using vaping models ($R^2_{TSCB}=0.356$ to $R^2_{TSCB}=0.337$).

SUBGROUP VARIATIONS
The use of other tobacco products better determines smoking and vaping status among women ($R^2_{TSCB:Women}=0.332$), other substances use determines the male status better ($R^2_{DSCB:Men}=0.279$). Both status are better determined for teenagers above 14 than 14 or below ($R^2_{TSCB:14}=0.274$; $R^2_{DSCB:14}=0.236$), and for self-reported white teenagers than others ($R^2_{TSCB:White}=0.318$; $R^2_{DSCB:White}=0.270$).

CONCLUSION
The findings show that smoking and vaping is better determined by one’s related behaviours, such as use of other tobacco products and other substances, rather than the household tobacco use and broader lifestyle attitudes such as risk preference, eating or sports. Both status are best determined using the same models - and partly even across outcomes -, supporting joint susceptibility assumptions.

Methods and Data: Data from the US National Youth Tobacco Survey (11 waves; 2011-21; n=102,512) and the US Youth Behavioural Risk Survey (3 waves; 2015,2017,2019; n=18,504) was used to create five social environments: Household tobacco consumption (HHTCB), individual consumption of other tobacco products (ICTB), drinking/substance use (DSCB), risky lifestyle (RLB), and eating and sports (ESB). Using logistic regression models, smoking and vaping status as binary outcomes were trained on 90% of the data sets for each of the environments. The coefficients were retained and used on the other 10% of the data. The results show how well predicted and observed outcomes correlate.

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