SUPPLEMENTARY MATERIAL

Methods

Multistate models

Separately for girls and boys, we fitted the model without covariates (null model) and the model with age as a covariate (Table S1). Next, we tested the effects of psychosocial covariates with models by adding each of the covariates to the models already including age. We selected candidate predictors based on the Akaike information criterion (AIC) and using the likelihood ratio test to compare nested models. The smaller is AIC, the better model fits to the data.

When constructing the multivariable models, we considered those psychosocial covariates, which, when added to the model with age, improved the fit considerably, p-value of the likelihood ratio test less than 0.1 being our criterion (Table S2). Age was included in the models regardless of p-value to account for possible time-inhomogeneity of the intensity process. To construct the final models, the covariates identified in the previous step were added one by one, starting from the models with age only and proceeding in the order suggested by p-values in Table S2. We retained those covariates, addition of which resulted in a considerably improved fit (p-value of the likelihood ratio test less than 0.1). Adding the covariates not included in the final models (pubertal development and school-related factors for girls, pubertal development and parents' native language for boys) did not improve models' fit (data not shown).

Lastly, we evaluated the overall goodness-of-fit of the final models by performing Pearson-type test comparing the expected and observed transitions as calculated in three follow-up time intervals. Furthermore, we inspected goodness-of-fit visually by plotting the expected and observed prevalence of each state along follow-up time.

The final models for girls (AIC=1631.156) and boys (AIC=2025.986) fitted the data well according to the Pearson-type test (girls p=0.96, boys p=0.79) and based on visual inspection of expected and observed prevalence of each state plotted along follow-up time (Figure S1 and S2).