**Supplementary Materials**

This online supplemental material contains standardized path coefficients for the significant or trending mediational paths for the models reported in Figures S.1 and S.2 (Figures 2 and 3 in the print version). These standardized coefficients are not available in M*plus* for the models that we were estimating[[1]](#footnote-1), but instead were calculated ourselves using different standardization strategies for continuous versus count outcomes in the models. For the continuous outcomes, the standardized path coefficients are standardized using the variances of the predictor and the outcome. Such standardized path coefficients cannot be calculated for the count outcomes, because for a Poisson distribution, the expected variance changes as a function of the expected mean and thus there does NOT exist a constant variance value. Instead, for the count outcomes, we manually calculated the standardized path coefficients that are standardized based on only the variance of the predictor. Since the standardized path coefficients reported below for continuous outcomes and for count outcomes are on different metrics, to avoid confusion, we reported only the unstandardized path coefficients in the text and in Figures S.1 and S.2.

**Standardized Path Coefficients for the Continuous Outcomes**

For the continuous outcomes, the standardized path coefficients, which are standardized using the variances of the predictor and the outcome, can be obtained from M*plus* 7.4 by estimating only the front part (W1-W3) of the models. The standardized path coefficients for the **significant or trending** mediational paths for the continuous outcomes are reported below for the model based on youth-reported internalizing and externalizing and the model based on parent-reported internalizing and externalizing, respectively.

**Model based on youth-reported internalizing and externalizing.**

* W1 social rejection 🡪 W2 externalizing symptoms: .
* W1 family risk by W1 social rejection interaction 🡪 W2 externalizing symptoms: .
* W1 social rejection 🡪 W2 internalizing symptoms: .
* W1 family risk 🡪 W3 deviant peers: .
* W1 family risk by W1 social rejection interaction 🡪 W3 deviant peers: .

**Model based on parent-reported internalizing and externalizing.**

* W1 family risk 🡪 W2 externalizing symptoms: .
* W1 family risk by W1 social rejection interaction 🡪 W2 externalizing symptoms: .
* W1 family risk 🡪 W3 deviant peers: .
* W1 family risk by W1 social rejection interaction 🡪 W3 deviant peers: .

**Standardized Path Coefficients for the Count Outcomes**

For the two count outcomes, regular standardized path coefficients which are standardized using the variances of the predictor and the outcome cannot be calculated. This is because for a Poisson distribution, the expected variance changes as a function of the expected mean, and thus there does NOT exist a constant variance value for the count outcomes. Accordingly, an *R*2 is not available for the count outcomes. Instead, using the FIML estimates of the variances of their predictors, we manually calculated the standardized path coefficients that are standardized based only on the variance of the predictor (reported below). These standardized path coefficients represent the amount of change in the count outcome for each one standard deviation increase in the predictor. Note that the prediction of W4 non-problem user is the logistic regression part of a zero-inflated Poisson model; the corresponding outcome is not observed in our data. Thus an *R*2 cannot be manually calculated for the logistic regression part of the zero-inflated Poisson model.

**Model based on youth-reported internalizing and externalizing.**

* W2 externalizing symptoms 🡪 W4 non-problem user: , on the logit metric. The corresponding odds ratio is , indicating that for each one standard deviation increase in W2 externalizing symptoms, the odds of being a non-problem user of alcohol and substances is multiplied by .74, controlling for other predictors.
* W3 deviant peers 🡪 W4 non-problem user: , on the logit metric. The corresponding odds ratio is , indicating that for each one standard deviation increase in W3 deviant peers, the odds of being a non-problem user of alcohol and substances is multiplied by .57, controlling for other predictors.
* W2 internalizing symptoms 🡪 W4 alcohol-substance use symptoms: , meaning that for each one standard deviation increase in W2 internalizing symptoms, the expected value of W4 alcohol-substance use symptoms is multiplied by , controlling for other predictors.
* W2 externalizing symptoms 🡪 W4 number of sex partners: , meaning that for each one standard deviation increase in W2 externalizing symptoms, the expected value of W4 number of sex partners is multiplied by , controlling for other predictors.
* W3 deviant peers 🡪 W4 number of sex partners: , meaning that for each one standard deviation increase in W3 deviant peers, the expected value on W4 number of sex partners is multiplied by , controlling for other predictors.
* W4 alcohol-substance use symptoms (treated as a continuous predictor) 🡪 W4 number of sex partners: , meaning that for each one standard deviation increase in W4 alcohol-substance use symptoms, the expected value on W4 number of sex partners is multiplied by , controlling for other predictors.

**Model based on parent-reported internalizing and externalizing.**

* W2 externalizing symptoms 🡪 W4 non-problem user: , on the logit metric. The corresponding odds ratio is , indicating that for each one standard deviation increase in W2 externalizing symptoms, the odds of being a non-problem user of alcohol and substances is multiplied by .77, controlling for other predictors.
* W3 deviant peers 🡪 W4 non-problem user: , on the logit metric. The corresponding odds ratio is , indicating that for each one standard deviation increase in W3 deviant peers, the odds of being a non-problem user of alcohol and substances is multiplied by .58, controlling for other predictors.
* W2 externalizing symptoms 🡪 W4 number of sex partners: , meaning that for each one standard deviation increase in W2 externalizing symptoms, the expected value of W4 number of sex partners is multiplied by , controlling for other predictors.
* W3 deviant peers 🡪 W4 number of sex partners: , meaning that for each one standard deviation increase in W3 deviant peers, the expected value on W4 number of sex partners is multiplied by , controlling for other predictors.
* W4 alcohol-substance use symptoms (treated as a continuous predictor) 🡪 W4 number of sex partners: , meaning that for each one standard deviation increase in W4 alcohol-substance use symptoms, the expected value on W4 number of sex partners is multiplied by , controlling for other predictors.

These standardized path coefficients for the continuous outcomes (standardized based on the variances of the predictors and the outcomes) and for the count outcomes (standardized based on only the variances of the predictors) are summarized in Figures S.1 and S.2.

**Elementary School**

**(Age 10)**

**Middle School**

**(Age 12)**

**High School**

**(Age 15)**

**Late High School**

**(Age 17)**

-.07

W2 Youth-Reported Externalizing

W2 Youth-Reported Internalizing

W1 Youth-Reported Externalizing

W3 Deviant Peers

W2 Deviant Peers

W4 Alcohol-Substance Use Symptom Count

W3 Alcohol-Substance Use Symptom Count

W4 Number of Sex Partners

Non-problem User

.22

.37

-.56

.29

.14

W Economic Hardship

.27

W1 Youth-Reported Internalizing

-.06

**Figure S.1.** Model based on youth-reported internalizing and externalizing symptoms. *Note*: Mediational path coefficients standardized by the variances of the predictor and the outcome are reported for continuous outcomes (internalizing, externalizing, and deviant peers), whereas mediational path coefficients standardized by only the variance of the predictor are reported for the non-continuous outcomes on the logit metric (for non-problem user) or on the log metric (for alcohol-substance use symptoms and number of sex partners). Significant or trending paths are solid lines; non-significant paths are dashed.

.14

-.31

.14

**Elementary School**

**(Age 10)**

**Middle School**

**(Age 12)**

**High School**

**(Age 15)**

**Late High School**

**(Age 17)**

W2 Parent-Reported Externalizing

W2 Parent-Reported Internalizing

W1 Parent-Reported Externalizing

W1 Parent-Reported Internalizing

W3 Deviant Peers

W2 Deviant Peers

W4 Alcohol-Substance Use Symptom Count

W3 Alcohol-Substance Use Symptom Count

W4 Number of Sex Partners

Non-problem User

.21

-.54

.16

-.07

.17

W Economic Hardship

-.27

.13

.11

-.06

**Figure S.2.** Model based on parent-reported internalizing and externalizing symptoms. Mediational path coefficients standardized by the variances of the predictor and the outcome are reported for continuous outcomes (internalizing, externalizing, and deviant peers), whereas mediational path coefficients standardized by only the variance of the predictor are reported for the non-continuous outcomes on the logit metric (for non-problem user) or on the log metric (for alcohol-substance use symptoms and number of sex partners). Significant or trending paths are solid lines; non-significant paths are dashed.

1. We were estimating the interaction effect of two latent variables (family risk and peer social rejection) using TYPE=RANDOM in M*plus*, and with this command standardized coefficients and the *R*2 values are not available from the program when the models included count outcomes (i.e., W4 alcohol-substance use symptom count and W4 number of sex partners). [↑](#footnote-ref-1)