Supplemental Material S1. Specifications, comparisons, and diagnostics for the regression models used.

R-code snippet for model fitting and comparison

Model fitting

```
model1 <- glm(Score ~ Age, data = data)
model2 <- glm(Score ~ poly(Age, 2, raw = T), data = data)
model3 <- glm(Score ~ poly(Age, 2, raw = T) * Gender, data = data)
model4 <- glm(Score ~ poly(Age, 3, raw = T) * Gender, data = data)
model5 <- glm(Score ~ log(Age) * Gender, data = data)
```

Model comparison

```
AIC(model1, model2, model3, model4, model5)

##        df      AIC
## model1  3 263.0674
## model2  4 253.3255
## model3  7 245.0314
## model4  9 247.8899
## model5  5 252.9714
```

Model diagnostics, Figure 2

```
plot(model1$fitted.values, model1$residuals) # Panel A

plot(model3$fitted.values, model3$residuals) # Panel B

qqnorm(model3$residuals) # Panel C

plot(hatvalues(m3), scale(m3$residuals, center = T, scale = T)) # Panel D
```

Generalized Variance inflation factors

```
car::vif(model3)

##                                     GVIF Df GVIF^(1/(2*Df))
## poly(Age, 2, raw = T)           3.884424  2        1.403885
## Gender                         68.590239  1        8.281922
## poly(Age, 2, raw = T):Gender 139.169554  2        3.434678
```

To get model predictions, we used

```
newdata <- data.frame(expand.grid(Age = seq(7, 30, 1), Gender = c("Male", "
Female")))
newdata$Gender <- factor(newdata$Gender)
preds <- predict(model3, newdata, se.fit = T)
```

Controlling for stuttering severity

To control for differences in (overt) stuttering severity, we entered OASES Item 1 into another model:

$$Model\ 6\text{: } \widehat{Impact} = b_0 + b_1 age + b_2 age^2 + b_3 sex + b_4(age \times sex) + b_5(age^2 \times sex) + b_6 severity$$

where $b_0 - b_5$ are exactly as in $Model\ 3$. But b_6 adjusts the other coefficients based on the influence that stuttering severity had on the OASES impact score. The model is illustrated in Figure S1, panel A, had an AIC of 226, $r^2_{adj} = .23$, and generalized variance inflation factors (VIFs) of 1.4, 8.3, 3.4, and 1.0 for the predictors age, sex, age × sex, and stuttering severity. The model diagnostics held up like $Model\ 3$, see Figure S1, panel B-C. Of most importance, the curvilinear relationship describing that adolescent female report the most adverse impact of their stuttering *on average* was much the same as the unadjusted relationship of $Model\ 3$ reported in Figure 1 in the main text. In Figure S1, panel A, we illustrate the *average* trends and CIs for age and sex combination when OASES Item 1 responses are data at response category 3 (the median response for both females and males in this sample). In short, controlling for self-reported stuttering severity did not impact the result reported in the main text.

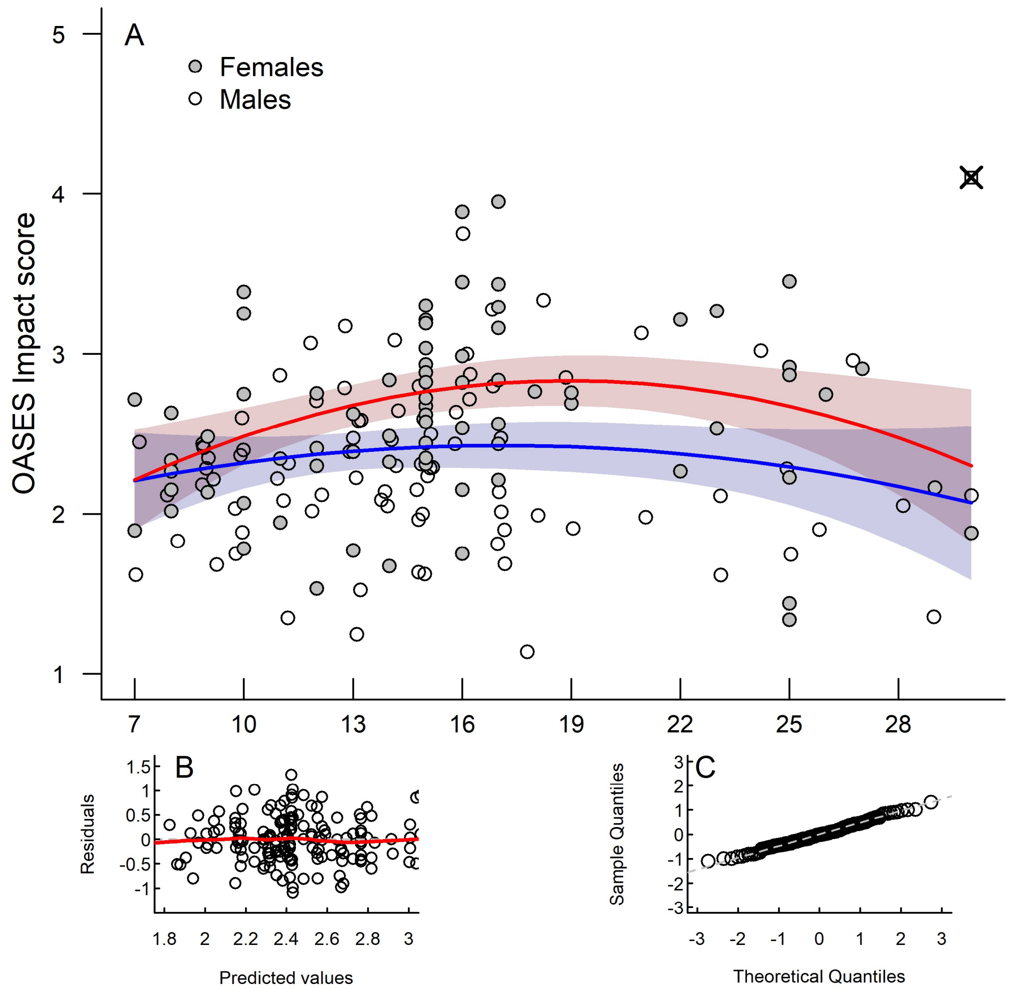

Figure S1. Panel **A** (top) illustrates the relationship between OASES Impact score (*y*-axis) and age (*x*-axis). Each individual is shown as a circle with a gray background for females and white background for males. One outlier (a 30-year-old man) is illustrated with a crossed over symbol; this participant has been excluded from all results presented herein (see Outlier detection for more information). The two solid curves are the average trends in $Model\ 6$ for females (red) and males (blue). The red and blue shaded areas are the 95% CIs around each curve. *These different lines are the average trends when OASES Impact score 1 is data at response category 3 (the median response for both females and males).* Panel **B** (bottom left) illustrates the predicted values versus residuals of $Model\ 6$, note that the red curve is close to zero along the span of the predicted values and that the dispersion of residuals is quite constant along the predicted values indicating that the assumption of homoscedasticity holds well. Panel **C** (bottom right) is a “quantile-quantile plot” illustrating the quantiles of the observed residuals (*y*-axis) plotted against the theoretical quantiles obtained if the residuals were normally distributed (*x*-axis). As the individual data points stays close the straight line, the observed residuals follow the normality assumption well.