Genetic Heterogeneities in Response to Trauma: The Case of 9.11
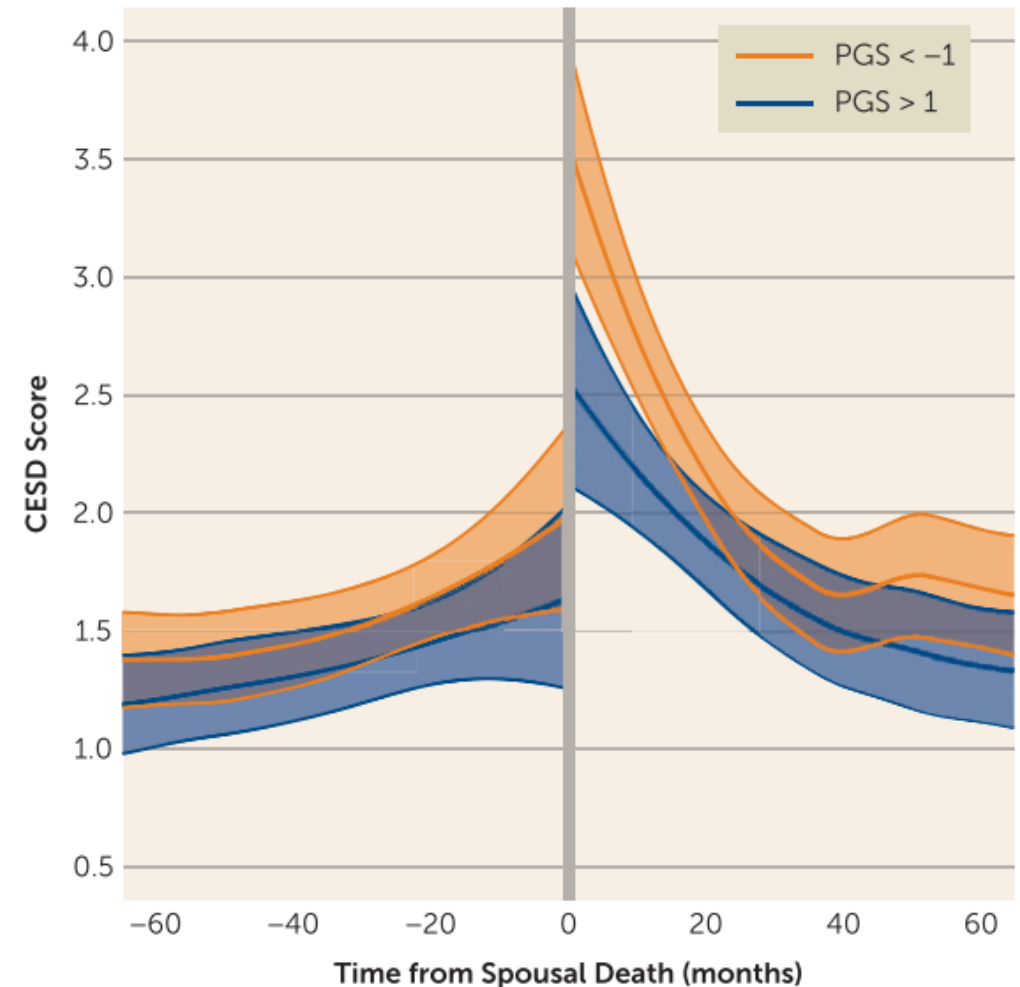
Shiro Furuya

Jason M. Fletcher
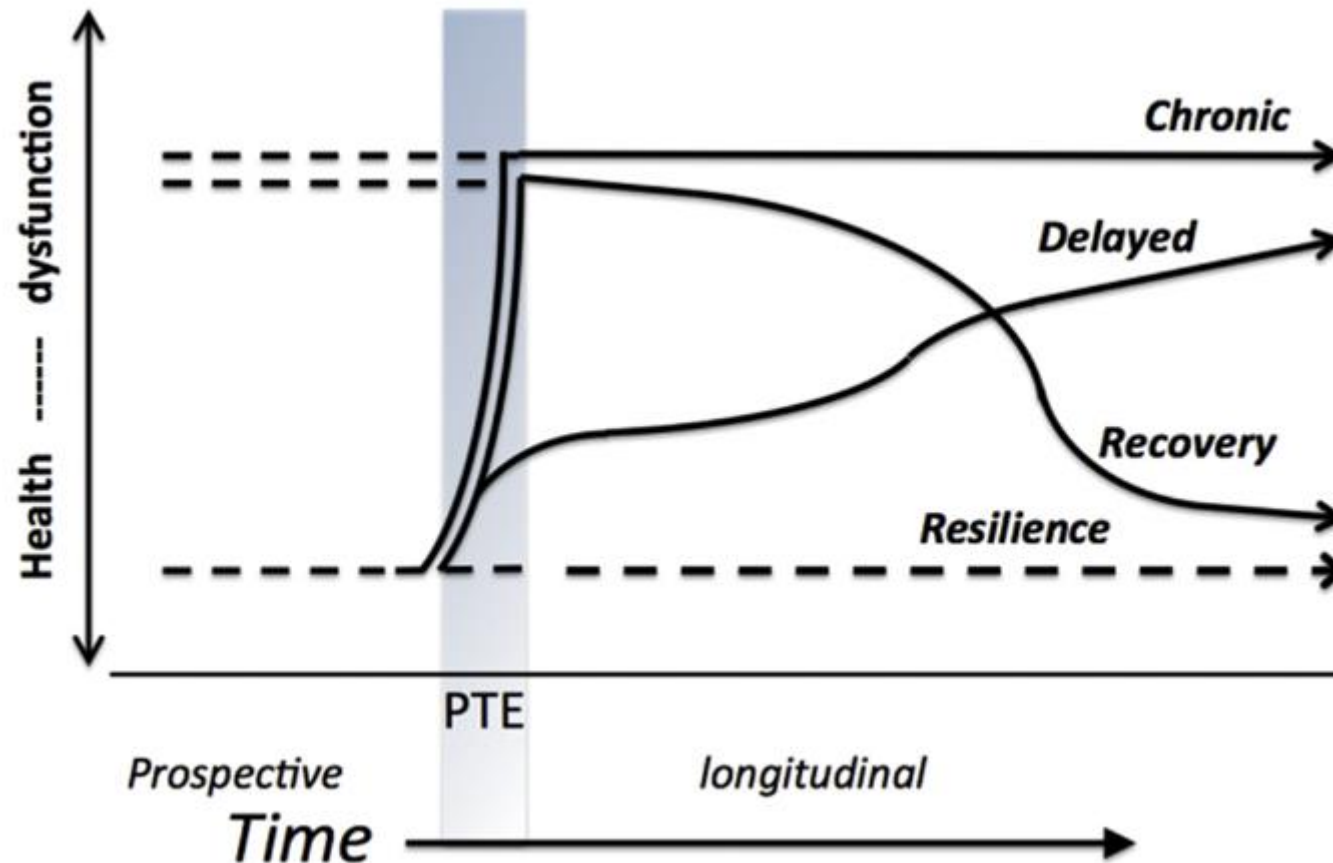
Qiongshi Lu

1. What do we know?

- Genotypes and depressive symptoms
  - Diathesis-stress model
  - Gene-susceptibility model

- Empirical evidence for different response by PGS

- Scholarly consensus has not been made

Source: Domingue et al. (2017)

# 1. What do we know?

- Different response to trauma

Source: Galatzer-Levy, Huang & Bonanno 2018.

2. What do we not know?

- Are results replicable?

- Do heterogeneities by genotypes and baseline depressive symptoms differ?

3. Why is this important?

- Extend the discussion to other age groups

- Shed light on the importance of environmental factors (or genotypes)

Genotype   Baseline CES-D   9/11
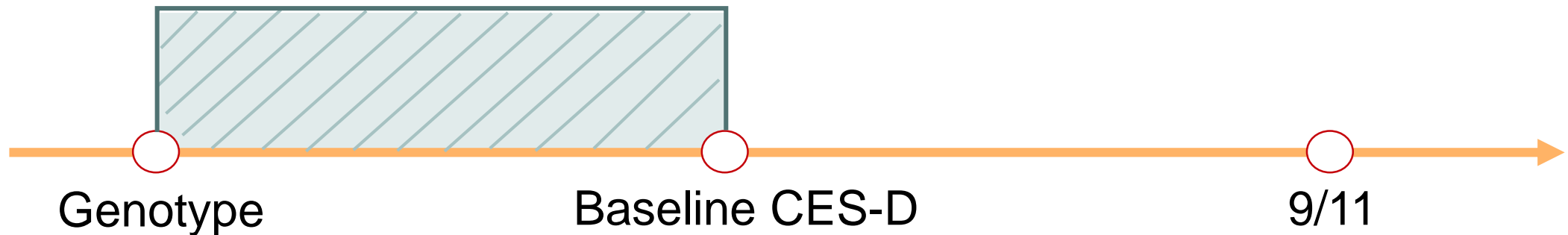
4. What did we find?

- *Data*
  - Add Health Wave I & III

- Identification strategy
  - Regression discontinuity design (RDD)
    - Treatment: September 11 attacks
    - Outcome: Depressive symptoms (CES-D score)
  - Genotypic / Baseline depressive symptom groups
    - High PGS (>= 75 percentile)
    - Middle PGS (< 75 percentile and > 25 percentile)
    - Low PGS (<= 25 percentile)

$$CESD_i = \alpha + \beta_1 T_i + \beta_2 r_i + \beta_3 G_i + \beta_4 (T_i * r_i) + \boldsymbol{\beta_5}(T_i * G_i)$$
$$+ \beta_6 (r_i * G_i) + \beta_7 (T_i * r_i * G_i) + \chi + \varepsilon$$
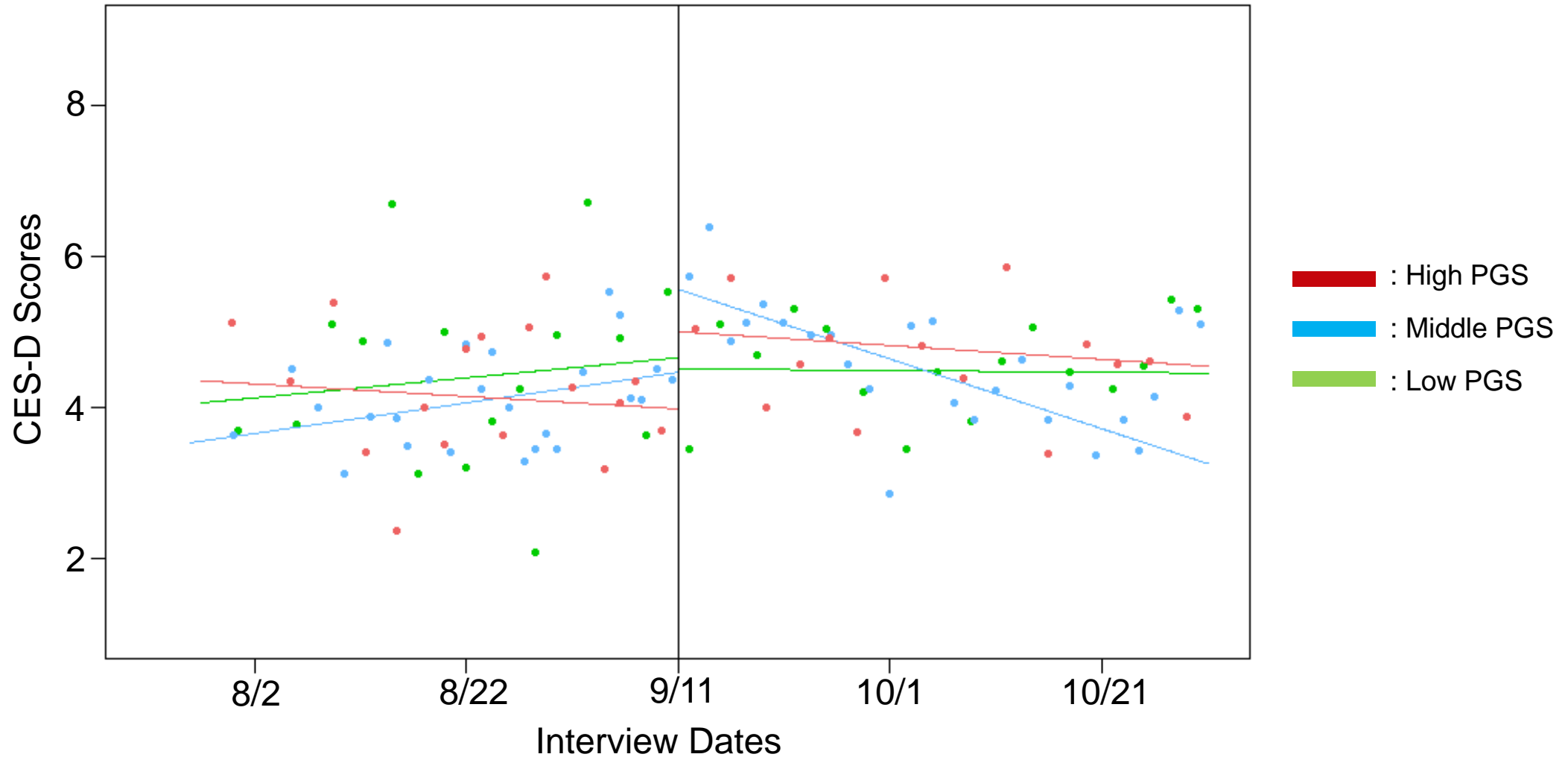
4. What did we find?

Estimated discontinuities by PGS score groups for subjective well-being
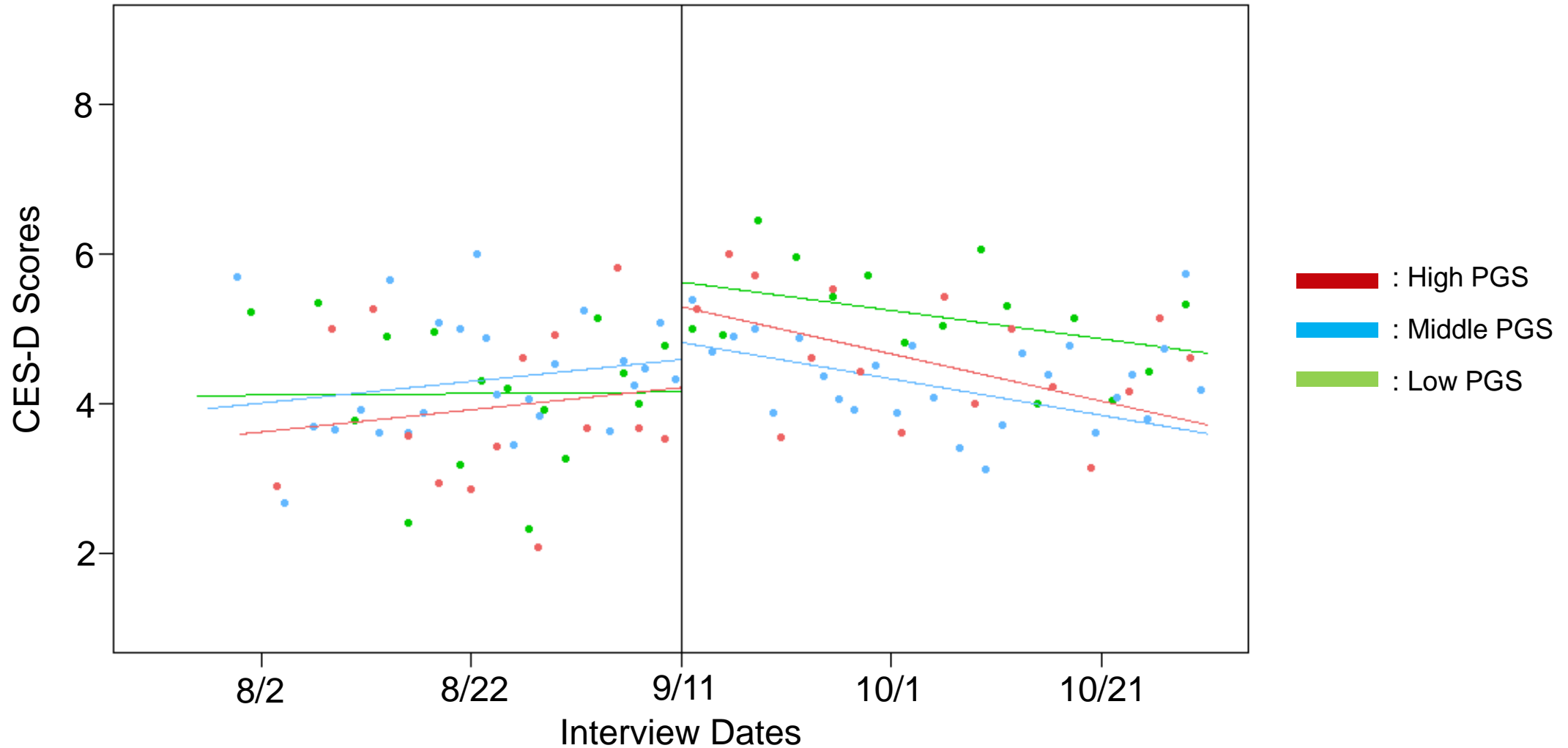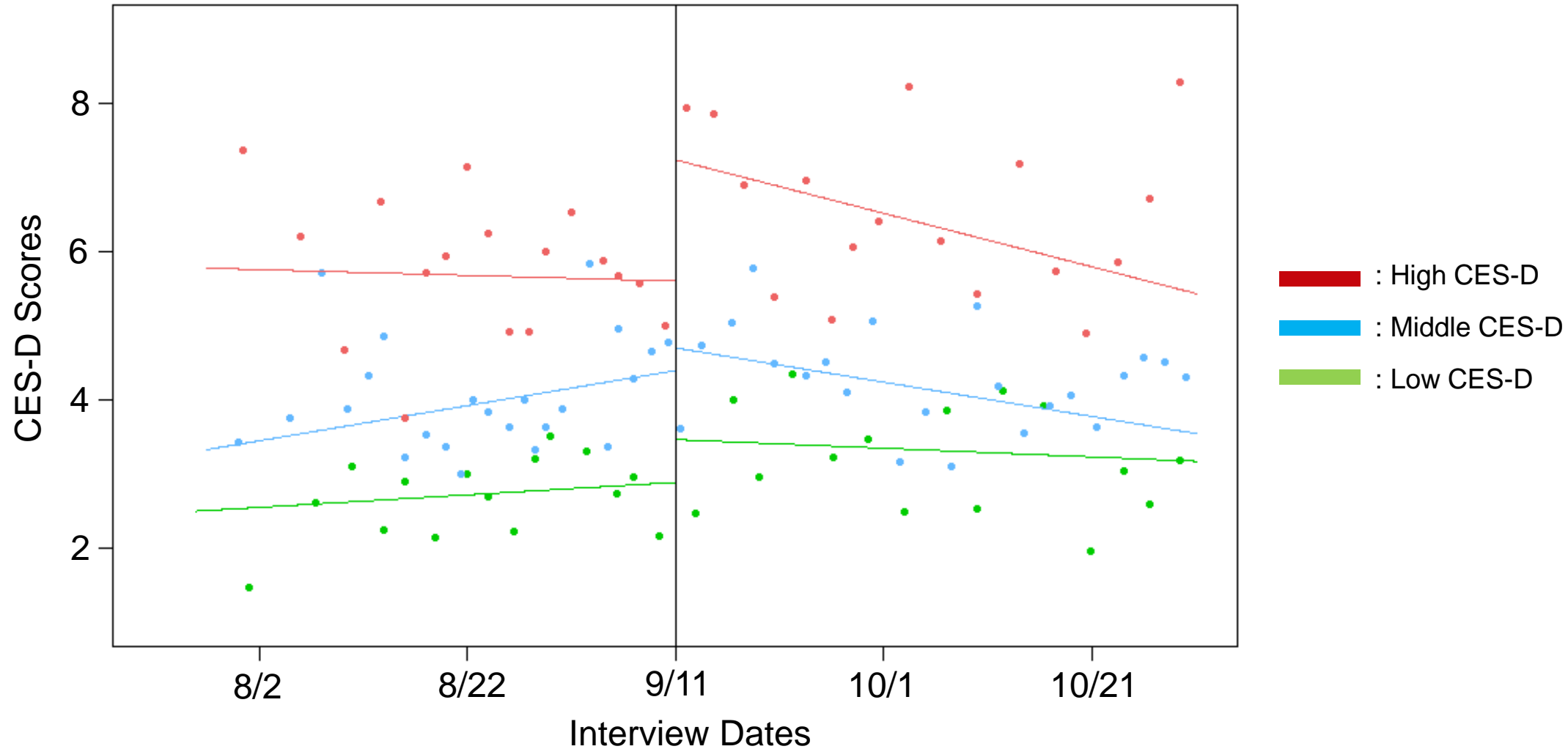
4. What did we find?

Estimated discontinuities by PGS score groups for depressive personality

Legend:
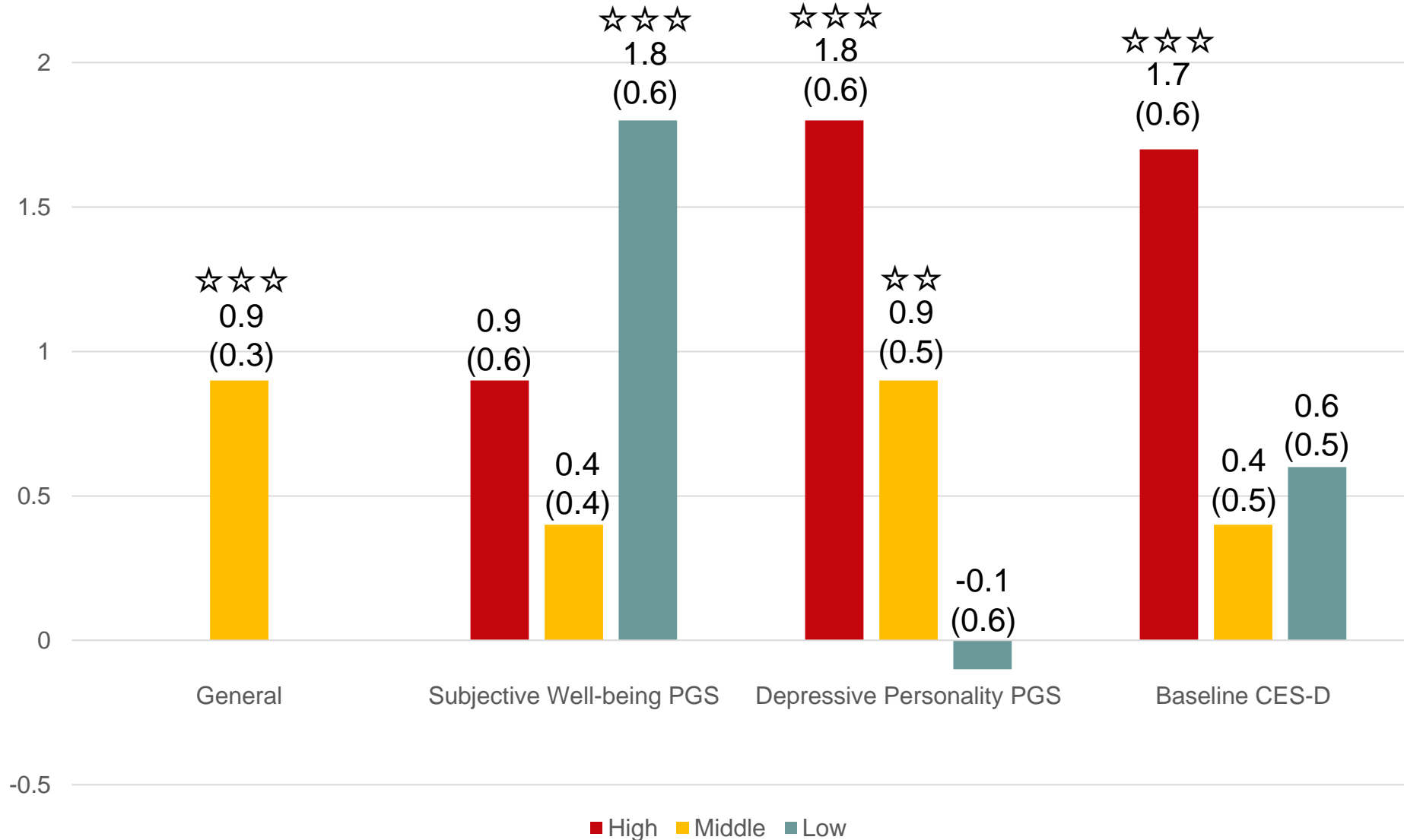- : High PGS
- : Middle PGS
- : Low PGS

4. What did we find?

Estimated discontinuities by baseline depressive symptoms

4. What did we find?

Estimated discontinuities by using the regression discontinuity design

4. What did we find?

- Genetic heterogeneities in discontinuities

- Neither depressive personality nor subjective well-being PGS do not predict the general trend of depressive symptoms