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### Abstract

**Background:** Adolescence sees a unique and rapid expansion of life events across a wide range of contexts. However, it remains unclear how suicidal ideation develop in relation to cumulative patterns of exposure to everyday life events that occur across multiple dimensions in adolescence.

**Methods:** Using a prospective, multi-center cohort of 2,161 adolescents followed up from age 14 to age 23, we mapped trajectories of exposures to life events in seven dimensions (Family, Accidents, Distress, Autonomy, Deviance, Sexuality, and Relocation) from adolescence to young adulthood, and determine their ability to predict the development of suicidal ideation throughout adolescence.

**Results and Conclusions:** We found that adolescents enduring the highest, and fastest accelerating cumulative loads of everyday life events experienced significantly higher rates of suicidal ideation persisting throughout adolescence, and that life events nested within the family environment carried a unique, higher risk.

### Background

- To refine suicide prevention efforts for young people, it is crucial to understand the development of suicidal behaviors in relation to factors that increase its risk.
- Stressful life events have been linked to adolescent suicidal ideation. However, prior studies focused mainly on the role of traumatic experiences or negative life events only, while whether or how the progression, the sum, and the interrelation of the multi-dimensional everyday life events impact on the risk of adolescent suicidality remains unknown.

### Methods

**Participants:** n=2,161. From the community-based multicenter cohort IMAGEN, recruited from 8 European sites. The data was collected at age 14, 16, 19, and 23.

#### Measures:

##### 1. Multi-dimensional life events cumulative load:

The 39-item **Life Event Questionnaire (LEQ)** was at all time points. It encompasses life events across seven dimensions: Family, Accident, Distress, Autonomy, Deviance, Sexuality, and Relocation<sup>1</sup>. We sum up the numbers of life events in each dimension over all time periods, and derived data of cumulative exposure load for pre-baseline, baseline, 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> follow-up.

##### 2. Childhood trauma:

The 28-item **Childhood Trauma Questionnaire (CTQ)** was administered at age 19, which assessed the presence and severity of 5 types of maltreatment: physical abuse (PA), emotional abuse (EA), sexual abuse (SA), physical neglect (PN), and emotional neglect (EN). A dichotomized variable of the presence of any type of childhood maltreatment when any of the subscales had a sum score indicative of at least moderate maltreatment<sup>2</sup>.

**3. Suicidal ideation:** The presence of suicidal ideation was assessed as an item in the LEQ at age 14, 16, and 19. According to the responses, we acquired data of the presence of suicidal ideation over 4 different time periods: pre-baseline, baseline, 1<sup>st</sup> and 2<sup>nd</sup> follow-ups.

##### 4. Analysis:

- Latent Trajectory Analysis (LCA)<sup>3</sup> was used to map latent life event trajectories between 1 to 10, with each solution being the best fitting over 100 randomized initializations. The final number of latent trajectories was decided according to the model fit criteria and to the qualitative plausibility.
- Generalized linear mixed effects regression was conducted to evaluate the predictive models for suicidal ideation with LEQ trajectories.
- LCA was repeated to test the specific role of the Family dimension. First, we performed LCA while excluding the Family dimension, producing "No-Family" trajectories. Second, we produced "Family-only" trajectories using the same method. We then used these different groupings in equivalent models predicting risks of suicidal ideation and compared their performance.

### Conclusions

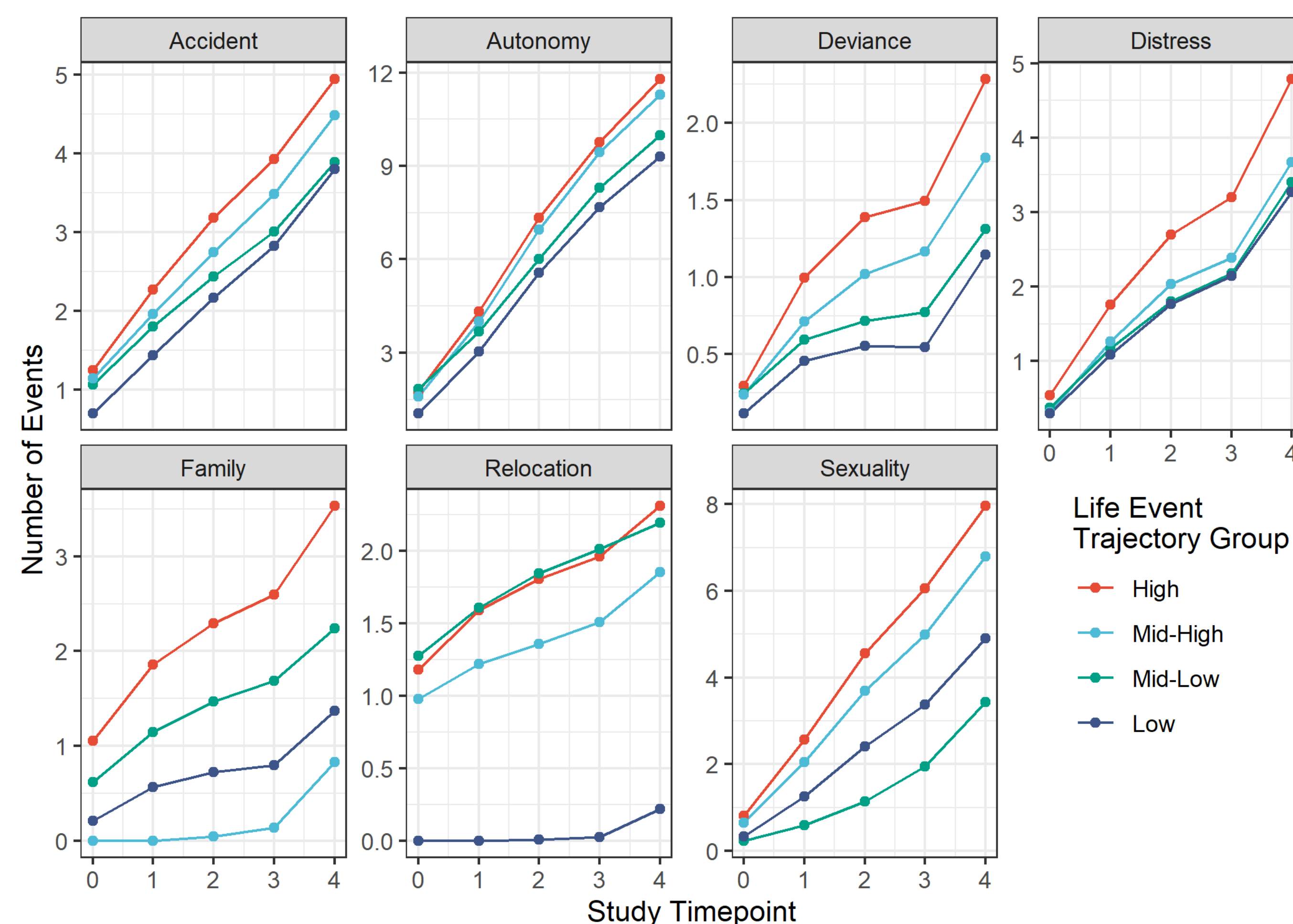
This study adds to existing literature showing that higher cumulative exposure to life events across multiple dimensions is associated with higher suicidal ideation in adolescence when childhood trauma is taken into account, and that life events nested within the family environment may carry unique high risk. This evidence highlights the importance of assessing the family context and implementing specific therapeutic approaches targeting these factors when evaluating suicidal risk in adolescents.

### Results

#### 1. Multi-dimensional life event cumulative load trajectories:

Four trajectories of cumulative life events were identified that best clustered participants' data, labelled as "High" (n=1,125, 52.1%), "Mid-High" (n=320, 14.8%), "Mid-Low" (n=380, 17.6%), and "Low" (n=335, 15.5%), respectively (Figure 1).

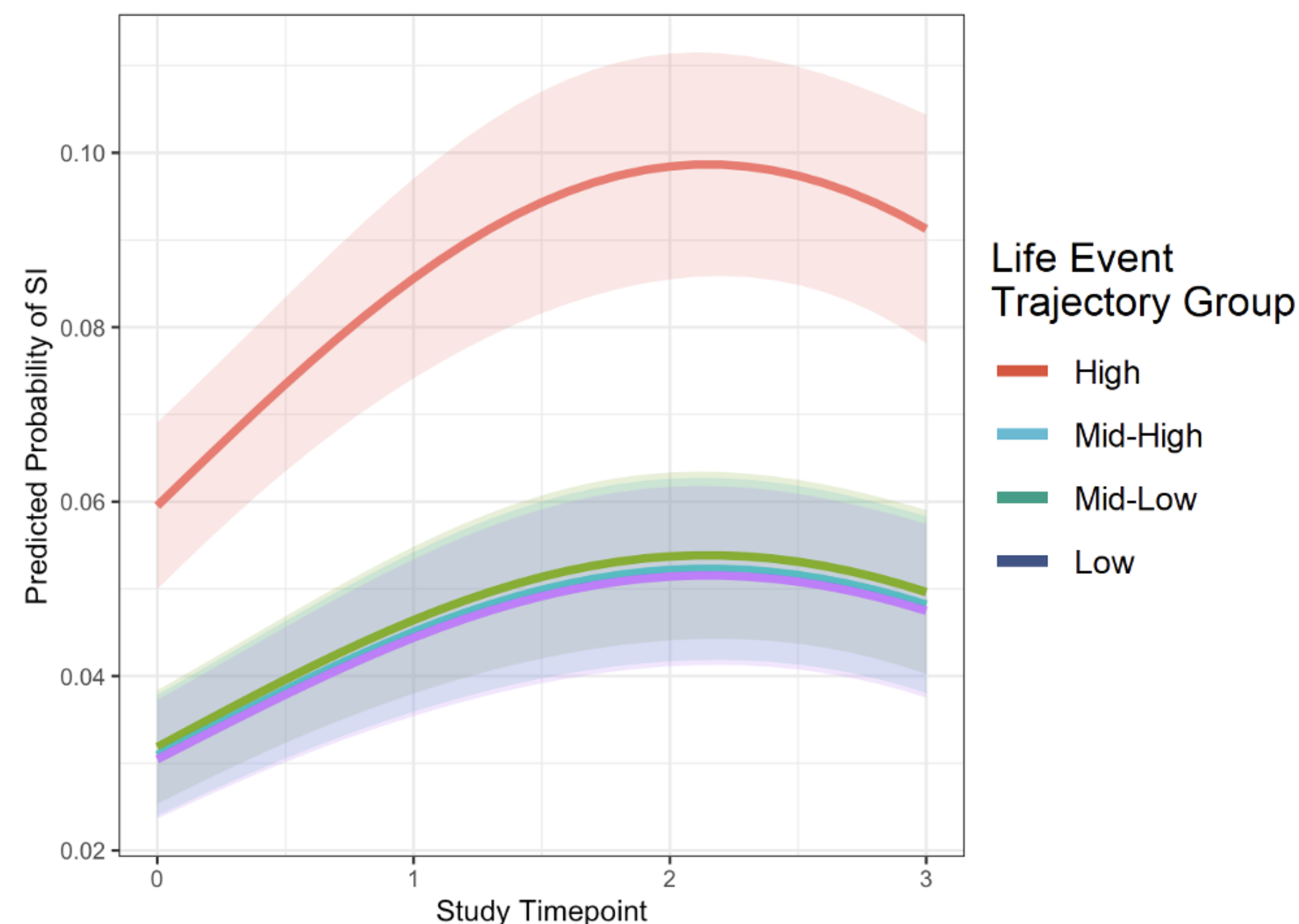
Figure 1. Life event trajectory groups across 7 dimensions and 5 timepoints.



#### 2. Life event trajectories predicting risks of suicidal ideation:

After childhood trauma was controlled for, the life event trajectories remained an independently significant risk factor for suicidal ideation. Participants of the "High" cluster, enduring the highest and the fastest accelerating cumulative loads of everyday life events, had significantly higher rates of suicidal ideation persisting throughout adolescence (Figure 2).

Figure 2. Predicted probability of suicidal ideation for 4 life event trajectory groups across 4 timepoints.



#### 3. Life events of the Family dimension carries a unique risk:

In the models predicting suicidal ideation from "No-Family" or "Family-only" trajectory groups, we found that the Family-only latent trajectory membership performed better in predicting risks (marginal R<sup>2</sup>g<sub>lmm</sub>=0.060) than the No-Family latent trajectory membership (marginal R<sup>2</sup>g<sub>lmm</sub>=0.047). In addition, using trajectories based on the family dimension alone gave 94% of the risk-prediction performance that was seen with the full seven-dimension life event trajectories.

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### Acknowledgements

This work received support from the following sources: the European Union-funded FP6 Integrated Project IMAGEN (Reinforcement-related behaviour in normal brain function and psychopathology) (LSHM-CT- 2007-037286)

