## Social provocation

A social provocation task was carried out with the study children during the home visit in order to assess variation in physiological stress response to induced psycho-social stress, as indicated by HPA axis (cortisol concentration) and autonomic nervous system activity along with individual’s subjective response. The hypothesis was that early risk background would influence participants’ stress response to a social provocation. The task and procedure was closely based on that used by Fairchild et al (2008) and Van Goozen et al. (1998).

The social provocation (SP) task was designed to elicit feelings of frustration, embarrassment, anger, and loss of control in children. The SP task was introduced approximately 55 minutes into the visit with the child and lasted for approximately 30 minutes. Children were told they were going to play a video game against an on-line opponent who would be visible via a webcam. The opponent was actually a confederate who had been previously video-recorded participating in the SP task. The opponent was the same age as the participant and matched for sex.

At the start of the task, the webcam was turned on and the opponent was seen being fitted with a blood pressure cuff similar to the one being fitted on the participant. The participant was then instructed that she or he would have a practice round (lasting 2 minutes), followed by two competitive rounds (each lasting 3 minutes). These rounds would be observed by the opponent. The game would conclude with a round played by the opponent. The winner would receive £10. To earn points in each round, the participant was required to quickly and accurately move the cursor to a target on the screen. The game was rigged so that participants performed poorly in the practice round and were unable to meet goals set by the research workers for points scored in the competitive rounds. Finally, although participants were given opportunities to hinder the opponent’s performance in the final round, the opponent always scored more points than the participant had in his or her previous rounds.

Each round (including the practice round) was followed by a video message from the opponent and the participant was given an opportunity to send a message in return. The opponent’s (pre-recorded) video message to the participant after each round included derogatory and taunting comments about the participant’s performance in the game.

Upon conclusion of the SP task, participants spent approximately 5 minutes completing an easy task designed for their success. At the conclusion of the study, children and parents were debriefed. Children were unaware that the game was rigged.

*Cortisol*was assayed from saliva samples that were obtained via passive drool. Salimetrics cryovials (polypropylene, 2mL capacity) were used to collect at least 1 mL of passive drool from participants. Children were instructed to refrain from vigorous exercise or from eating snacks or dairy products after mid-day on the day of testing. Saliva was collected at 20 and 10 minutes prior to the start of the SP task, at the end of the SP task, and at approximately 20, 45, and 65 minutes following the conclusion of the SP task. Nineteen percent of children refused to participate in round 2 of the SP task (often because they were very distressed). For these children, the timing of the saliva collection was identical to that described above, except they lacked the sample collected at the end of the SP task. Samples were refrigerated and then frozen at -20⁰C. There is a 7th saliva sample that children were told to collect before bedtime and post back to us, but the variability in this sample is so great (in terms of when children produced the sample and in terms of its values), that we do not typically use it.

Samples were assayed using the Salimetrics™ Cortisol hormone kit which is a competitive immunoassay specifically designed and validated for the quantitative measurement of salivary cortisol. Samples were thawed for 15 minutes and then centrifuged at 3000 rcf. Optical density was read on a microplate spectrophotometer at 450 nm with a correction of 620 nm. The samples were measured in duplicate, with none of the optical density coefficients of variation exceeding 10%. The assay had an analytical sensitivity of .003 μg/dl. Cortisol values were inspected for outliers (falling 3 or more standard deviations away from the mean); outliers were winsorized to the highest non-outlier value. Natural log transformations were conducted to normalize the winsorized cortisol concentration distributions.

*Heart rate and blood pressure* were measured using the OMRON 907 automatic blood pressure monitor. A blood pressure cuff was fitted around the child’s arm to record diastolic and systolic blood pressure and pulse rate. Blood pressure and pulse rate were measured at 5 time points just before the Social Provocation task was introduced (~40 min), immediately after Round 1 of the game + the opponent’s video message (~65 min), immediately after Round 2 of the game + the opponent’s message (~74 min), around 15 minutes after the Social Provocation Task ended (~103 min), and approximately 30 minutes after Social Provocation Task ended (~117 minutes into the visit). If children refused Round 2 of the Social Provocation task, blood pressures 4 and 5 were collected around 88 and 102 minutes into the visit, still corresponding to approximately 15 and 30 minutes post-Social Provocation task.

***Subjective Response***

To obtain additional information on children’s subjective response throughout the social provocation task, children were administered with a self rating scale called the ‘mood questionnaire’ four times during the stressor task. The children were asked 10 questions about their current psychological state (e.g., Do you feel nervous/care about winning/happy/frustrated) and asked to rate each item on a 5-point scale from ‘not at all’ to ‘extremely’. The questionnaire was based on the clinical self rating scale (Van Zerssen, 1986) and control/confidence ratings used in Fairchild et al. (2008).