Study 2

Subjects and methods

Study population

Study 2, a feasibility study of neuropsychological testing of adolescents and adults from the same sources as Study 1, was limited to 20 participants (age 11 – 24 years (mean 16.45 years)), who lived in the New York metropolitan area: seven with DEX exposure (long-term: one CAH woman (SW); short-term: two CAH men (both SW), two non-CAH women, and two non-CAH men) and 13 unexposed (four CAH women (two SW, one SV, one NC), six CAH men (four SW, one SV, one NC), two non-CAH women, one non-CAH man). In terms of ethnicity, 17 were White, two Hispanic, and one Asian. Of the seven DEX-exposed, the one CAH-affected female was DEX-exposed throughout pregnancy, the other six (two CAH-affected males and four non-CAH participants) only short-term exposed. Mean midparental education (15) was 5.50 (between at least one year of college or specialized training, and standard college or university graduation, but not a graduate degree).

Procedures

Neuropsychological testing was performed by one of the co-authors (MS) in his hospital setting in New York City, who did not know the CAH and DEX-treatment status of the participants. Written informed consent was obtained from all participating adult offspring and from the mothers of minors, and written assent from the adolescents under 18 years of age, after the appropriate institutional review boards had approved the study. Participants received reimbursement for travel expenses.

Assessments

Three neuropsychological tests were included.

(1) The Wechsler Abbreviated Scale of Intelligence (WASI, two-subtest format; 19) is a brief intelligence screen that provides an estimate of an overall intelligence quotient (IQ) based on verbal (receptive and expressive vocabulary) and performance (abstract nonverbal reasoning) intellectual ability. IQs are expressed as standardized scores with a mean of 100 and a standard deviation (S.D.) of 15, which represent the score of the individual taking the test relative to scores obtained by children of the same age and gender in the standardization sample.

(2) The Wide-Range Assessment of Memory and Learning, 2nd ed. (WRAML-2; 20) constitutes an assessment of memory function. The four indexes of this revised edition include Verbal Memory, Visual Memory, Attention-Concentration, and the Composite, General Memory. All measures are expressed as standardized scores with a mean of 100 and a standard deviation of 15.
(3) The Digit Span subtest from the Wechsler Intelligence Scales (21 – 22) is an assessment of sequential processing involving the repetition of number strings both forward (e.g. 1 – 2 – 3, 1 – 2 – 3) and backwards (e.g. 1 – 2 – 3, 3 – 2 – 1). It is a widely used measure of concentration, attention, and short-term memory, a component of ‘working memory’. Patients with impairments of short-term memory (reception, encoding, and/or processing) may demonstrate decreased digit span capacity (impaired forward repetition) or difficulty manipulating information (impaired reverse repetition).

Data analysis

Owing to the small sample sizes, no statistical comparisons are reported.

Results

Supplementary table 2 shows the descriptive data on age, midparental education, and test results for the three pairs (DEX-exposed versus DEX-unexposed) of subgroups, women with CAH, men with CAH, and non-CAH women and men combined. The subgroups are too small for meaningful statistical analysis. Inspection of the data shows trends similar to those in Study 1a, i.e. the one long-term exposed woman with CAH performed less well than the unexposed women with CAH, especially on the WRAM-L-2 scales, Attention and General, and on Wechsler Digit Span, while the short-term exposed participants performed mostly better than their respective controls. Yet, the differences for the latter in midparental education and IQ go in the same direction, may indicate selection bias, and are large enough to possibly contribute to the other cognitive differences.