***Supplementary Material 3: Case summaries***

| ***Case 1*** | |
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| *Gender/ethnicity:* | Male/Danish |
| *Current diagnosis:* | ICD10 & DSM4 Schizophrenia (instrument OPCRIT) |
| *Age (at assessment):* | 49yrs (169cm /98kg) |
| *Birth status:* | Born by Caesarean Section due to Rhesus immunisation, birth weight 2500grams, length 47cm. No known severe head trauma or neuro-infections in childhood. Early motor dys-coordination, developed enuresis nocturna at age 6 yrs. |
| *Child/adolestent develpment* | Unknown |
| *Upbringing/schooling:* | Grew up at different foster homes, never acquired any formal education and received public allowance from age 22 yrs. |
| *Family history:* | Yes. Mother with unknown mental problems, father diagnosed with alcoholism and three brothers with schizophrenia, |
| *Onset of psych. illness:* | 10 yrs. Admitted to child and adolescent psychiatric ward due to severe conduct and behavioral disturbances, incl. violent behavior, incl. sadistic attacks on other children and adults. |
| *Examinations:* | Psychological testing revealed organic brain damage at age 12 years, while pneumoencephalography investigation showed a mild degree atrophia cerebri. Patient diagnosed with mild mental retardation. |
| *EEG:* | Unknown |
| *Disease course:* | Admitted to psychiatric wards 67 times since childhood. Currently living in psychiatric care-facility (nursing home). Convicted at age 46 for a violent attack on a care-giving staff-member and currently under forensic psychiatric constraints. |

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| *Other/previous diagnoses:* | Clinical ICD-10 diagnoses F 06.0; 06.32; 06.4; 07.0; 10.2; 12.2; 15.1; 19.1; 19.2; 20.0; 20.3 & 20.9. |
| *Functioning level (current):* | GAF Scale Score 25 (0-100). |
| *Symptoms:* | Bizarre behavior, positive formal thought disorder, restricted affect, suicidal ideation, persecutory delusions, concomitant delusions and hallucinations, concomitant persecutory delusions and hallucinations, third person auditory hallucinations, running commentary voices, abusive/accusatory/persecutory voices, non-affective hallucinations in any modality, life-time diagnoses of alcohol, cannabis and other dependence with psychopathology, lack of insight, continuous chronic illness with deterioration. |
| *Treatment & response:* | Treated with numeous antipsychotics (Aripiprazole, Chlorprothixen, Clozapine, Haloperidol, Levomepromazine, Perphenazine, Risperidone, Quetiapine, Thioridazine, Ziprasidone and Zuclopentixole) as well as with antidepressants (Amitriptyline) and tranquillisers (Carbamazepine, Clonazepam, Oxazepam and Trimipramine). Considered refractory to treatment. |
| *Somatic illness:* | Adiposity, Chronic Obstructive Lung Disease, Diabetes and Myocardial Infactation. |

| ***Case 2*** | |
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| *Gender/ethnicity:* | Male/German (father German, mother European Caucasian) |
| *Current diagnosis:* | ICD-10 & DSM-IV 295.9 Schizophrenia, Undifferentiated type (instrument: SCID 1): |
| *Age (at assessment):* | 23yrs |
| *Birth status:* | Normal pregnancy without complications, the umbilical cord was tied multiple times around the neck during birth but no asphyxia, APGAR score 10/10/10 |
| *Child/adolestent develpment* | Delayed motor skills development, free sitting by the end of the first year, free walking with 18 months, language development was very conspicuous and very delayed, first words not until the age of two and then only slow |

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| | progress. At the age of four diagnosis of a language development deficit as well as a central motor coordination disorder (in spite of intense physiotherapy since being an infant) by a paediatrician. Speech test at 5yrs: lingual motor function very poor, vocabulary didn't seem to be very limited, striking was the constantly occurring echolalia, manneristic way of speaking. Combined with further behavioural problems like avoidance of eye contact, partly ignoring persons, insisting on following rules and orders also by other people (anxiety triggered by changes of order) it finally lead with 6yrs. to the diagnosis of a "primary personality disorder of autistic imprinting with no known aetiology". Contact difficulties with other children, because social situations couldn’t be evaluated correctly by the patient. |
| *Upbringing/schooling:* | School enrolment at the age of seven in a remedial class, due to under-challenge change to a special school for 1 1/2 years, then change to a school for children with speech defects, then lower secondary school with graduation. Afterwards one year apprenticeship in a school for disabled people; break off due to excessive demand, then depressive and adynamic. The patient is not married, was never in a relationship and lives with his parents at the time of the examination. |
| *Family history:* | Brother: depressive mood, untreated; father: alcohol abuse, untreated |
| *Onset of psych. illness:* | At the age of 4 diagnosis of an early childhood autism. Onset of schizophrenia at the age of 18 |
| *Examinations:* | At the age of 17: WAIS performance IQ 68, verbal IQ 94. No impairment of simple attention performance but noticeable impairments in tasks requiring flexibility of responses as well as planning and persistence. *instrument-based Examinations* |
| *EEG:* | Abnormal EEG with decelerated basal activity and irregular slow activity in terms of a mild abnormal background activity, which could be caused by medication or organic brain syndrome. No evidence for a focus or increased brain excitability |
| *Disease course:* | As child twice in-patient care and out-patient treatment of the developmental language disorder and the childhood autism. Two in-patient psychiatric treatments for schizophrenia and out-patient treatment |
| *Other/previous diagnoses:* | Schizophrenia, paranoid type ( ICD-10: F20.9; DSM-IV: 295.3 ), learning disability with autistic features (ICD-10: F84.1) respectively early childhood autism ( ICD-10: F84.0 ) |
| *Functioning level* | GAF Scale Score 30 ( 0-100 ) |

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| *(current):* | |
| *Symptoms:* | Delusions of reference, persecution, grandiose, somatic, religious. Thought withdrawal and insertion. Auditory hallucinations: commenting, commanding voices. Disorganized thinking and behaviour. Negative symptoms (affective flattening, alogia, avolition) Depressive and manic symptoms within the psychosis. Tried in a confused and disorganized condition to kill himself with a knife, became aggressive against his mother who managed to take away the knife |
| *Treatment & response:* | Treated with numerous antipsychotics (Haloperidol, Levomepromazine, Fluspirilene, Perazine, Pimozide), a benzodiazepine (Lorazepam) and an antidepressant (Amitriptyline). Little initial clinical improvement by Haloperidol and Levomepromazine, the positive symptoms were slowly declining only after three or four weeks. Reduction after four weeks worsened delusion dynamics, psychotic anxiety and increased drive. Marked worsening with exacerbation of positive symptoms after switch to Fluspirilene. |
| *Somatic illness:* | Hypothyroidism, neurodermatitis, scoliosis, flatfoot, convergent strabismus |

| ***Case 3*** | |
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| *Gender/ethnicity:* | Female/British |
| *Current diagnosis:* | Schizoaffective disorder, (instrument SADS-L), also satisfies criteria for Cycloid psychosis |
| *Age (at assessment):* | 45yrs |
| *Birth status:* | Nothing abnormal recorded |
| *Child/adolestent develpment* | Unknown |
| *Upbringing/schooling:* | Left at age 16 with no qualifications and worked in a factory. |
| *Family history:* | Yes. Daughter diagnosed with autism, mental retardation and paranoid schizophrenia |

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| *Onset of psych. illness:* | 41 |
| *Examinations:* | Unknown |
| *EEG:* | Unknown |
| *Disease course:* | 41 yrs Took overdose.<br>42 yrs Admitted. Believing her daughter is in danger, running around in a state of panic, agitated, her thoughts are not hers, anxious. Crying, thought disordered, low in mood, wandering around aimlessly, whispering about magic, muttering numbers. Looking confused.<br>43 yrs Admitted to hospital, angry, depressed, anxious, restless all night, crying, depressed, at times refusing to talk. Smiles inappropriately, attitude of helplessness. Paranoid ideas that a doctor is going to harm her daughter. Seen later at home, slowed down, flat affect, answering monosyllabically. Feels worthless.<br>44 yrs Improved. Doing fine at home. |
| *Other/previous diagnoses:* | Schizoaffective disorder |
| *Functioning level (current):* | GAS: 28 |
| *Symptoms:* | Unknown |
| *Treatment & response:* | Antidepressants and antipsychotics |
| *Somatic illness:* | Nil reported |

***Case 4***

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|---|---|
| *Gender/ethnicity:* | Male/British |
| *Current diagnosis:* | ICD10 & DSMIIIR Chronic schizophrenia (instrument SADS-L) |

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| *Age (at assessment):* | 53yrs |
| *Birth status:* | Unknown |
| *Conspicuities as a child/adolescent:* | Unknown |
| *Upbringing/schooling:* | Completed 10 to 11 years of schooling, the patient has learning difficulties. Adolescent friendship patterns were “grossly inadequate”. |
| *Family disposition:* | Yes. Mother with schizophrenia and low IQ, brother has possible schizophrenia and low IQ. |
| *Onset of psych. illness:* | 16 yrs. Hospitalized on a psychiatric ward at the age of 17. |
| *Examinations:* | CT scan normal. |
| *EEG:* | EEG normal |
| *Disease course:* | Multiple episodes of schizophrenia that have resulted in hospitalizations that have totalled five or more years in length. |
| *Other/previous diagnoses:* | Clinical ICD-10 diagnoses |
| *Functioning level (current):* | Unknown |
| *Symptoms:* | Unknown |
| *Treatment & response:* | Treated with the antipsychotic Zuclopenthixol (60 mg oral, 200mg weekly IM) as well as with antidepressants, mood stabilisers (Carbamazepine 400mg BD) and tranquillisers. The patient’s psychotic symptoms do not respond very well to neuroleptics. |
| *Somatic illness:* | Chronic obstructive airways disease. |

| ***Case 5*** | |
|---|---|
| *Gender/ethnicity:* | Female/Icelandic |
| *Current diagnosis:* | ICD-10 & DSMIV Schizophrenia |
| *Age (at assessment):* | 43 yrs (162 cm /88 kg) |
| *Birth status:* | No abnormalities mentioned in patient´s records. |
| *Conspicuities as a child/adolescent:* | Delayed cognitive and social development. Mild mental retardation. |
| *Upbringing/schooling:* | Problems with upbringing in family home.<br>Left school at the end of compulsory education aged 14. |
| *Family disposition:* | Mother with bipolar disorder. |
| *Onset of psych. illness:* | First admitted to adult psychiatric ward aged 21. |
| *Examinations:* | Low IQ (IQ = 64 to 68 in repeated IQ tests). |
| *EEG:* | Within normal range. |
| *Disease course:* | First admitted to psychiatric ward at age 21. Repeated hospitalizations thereafter.<br>Has spent most of her life in homes for patients with low IQ and behavioral problems. |
| *Other/previous diagnoses:* | Mild mental retardation. |
| *Functioning level (current):* | GAF Scale Score 21-30. |
| *Symptoms:* | Delusions, hallucinations, paranoia, mild disorientation, mild thought disorder, unstable mood with rapid manic |

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| | and depressive mood swings. |
| *Treatment & response:* | Good antipsychotic response to neuroleptics and clozapine. |
| *Somatic illness:* | Facial hirsuitism, strabismus sin., hallux valgus bilaterally. |

| ***Case 6*** | |
|---|---|
| *Gender/ethnicity:* | Female/Icelandic |
| *Current diagnosis:* | RDC Bipolar disorder type 1 (instrument OPCRIT & L-SADS). Also meets ICD-10 and DSM-IV criteria for BPD |
| *Age (at assessment):* | 13 years at first assessment, 58 years at last assessment. |
| *Birth status:* | Unknown |
| *Conspicuities as a child/adolescent:* | Early physical development, menarche 10 years old, but late cognitive and social development and low IQ. Called "crazy" in Elementary school by other children. |
| *Upbringing/schooling:* | Poor premorbid work and social adjustment. Impulsive, very blunt and restless. |
| *Family disposition:* | Yes, brother with bipolar I disorder, and mother with recurrent depression. |
| *Onset of psych. illness:* | 13 yrs |
| *Examinations:* | Completed Elementary school aged 12 but completed only 1 more year of mainstream education. |
| *EEG:* | Unknown |
| *Disease course:* | Moderately acute onset definable within 1 month, followed by continuous chronic illness with more than two years of hospital admission. |

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| *Other/previous diagnoses:* | Unknown |
| *Functioning level (current):* | Patient lives in a nursing home for elderly patients with dementia or severe chronic psychiatric illness. |
| *Symptoms:* | Rapid cycling bipolar disorder at age 13 hearing voices and experiencing visual hallucinations, ideas of reference and proceeding into catatonia on one occasion. Subsequent course one of bipolar I disorder with psychotic features, such as paranoid delusions and auditory hallucinations and displaying very poor impulse control. |
| *Treatment & response:* | Manic and psychotic symptoms respond to lithium and neuroleptics. Depressive symptoms to lithium and antidepressants. |
| *Somatic illness:* | Hypothyroidism. Overweight from her early twenties. |

***Case 7***

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| *Gender/ethnicity:* | Female/Icelandic (both parents Icelandic) |
| *Current diagnosis:* | ICD-10: F84.0 Childhood autism (ADI-R; ADOS); F70 Mild mental retardation (WPPSI-R; VABS-II) F82 Specific developmental disorder of motor function |
| *Age (at assessment):* | 5yrs |
| *Birth status:* | Induced delivery at term. Neonatal course unremarkable. |
| *Development* | In the second half of the first year she was considered a very easy baby, making few demands and often taking little notice of what was going on around her. Upon hindsight, parents mentioned how she focused intensely on things, and how difficult it was to get through to her. She crawled on all fours at 12 months, walked without support at 16 months. At first, language development seemed normal with some words appearing in the beginning of the second year. At 16 months, she lost some of the words she had acquired (<5 words) followed by stagnation in language development up to 24 months when she started in kindergarten. No indications of regression or stagnation in other development. |

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| *Upbringing/schooling:* | Began kindergarten at 24 months where she was initially considered aloof, possibly hard of hearing, showing little interest in adults and children alike, never asking for anything and not showing any reaction when something was taken from her. She received general early intervention focusing on communication and social interaction. With increased language development she became more social and in her sixth year she could play with her peers with support from an adult. Also, she became interested in taking part in games involving singing and gesturing. In free play she did best when she was with younger children. |
| *Family history:* | Older sister had idiopathic seizures in the first year of life, and was later diagnosed with ADHD (K-SADS-PL). |
| *Onset of psych. illness:* | In the first year of life. |
| *Examinations:* | At five and a half she was tested with the WPPSI-R: performance IQ 62; verbal IQ 62; full scale IQ 56. |
| *EEG:* | Not done |
| *Disease course:* | Classic autistic course in the first two years. In the first year she focused more on things than people. She had a period of regression or stagnation in language development between 16 and 24 months. Upon follow-up at five and a half, she was clearly autistic. |
| *Other/previous diagnoses:* | F80.8 Other developmental disorders of speech and language; F94.8 Other childhood disorders of social functioning; F84.9 Pervasive developmental disorder, unspecified. |
| *Functioning level (current):* | Total score of the VABS-II was 64. |
| *Symptoms:* | ADOS: At five and a half year, she spoke in full sentences. Her use of language in describing simple actions was disorganized. She initiated conversations several times but had difficulties in following simple flow of ideas and concepts. Mild echolalia was present. She pointed to things in distance with synchronized eye contact, and used appropriate head movements for “yes” and “no”, but other gestures were limited. Eye contact was present but poorly modulated at times. She directed facial expressions appropriately to the examiner. Quality of social overtures and social responses were limited as well as amount of reciprocal social communication. In her play activities she did not involve the examiner. Unusual sensory interest was evident in her smelling things. |

*Treatment & response:* In spite of intervention in kindergarten general development is considerably delayed.

*Somatic illness:* Good general health