Supplementary Table S1. Description of the experimental ERP papers included in the review.

Reference	Experimental groups	Paradigm/task	Main results
Fragile X syndrome			
(Castrén и др., 2003)	5 FXS patients 4 control subjects	1. auditory oddball paradigm: standard tones (85% occurrence) at a frequency of 800 Hz and deviant ones at a frequency of 560 Hz 2. auditory gating task (four identical tones)	↑ amplitude of N1 to auditory stimuli in both tasks no N1 habituation in gating task
(Rojas и др., 2001)	11 FXS patients 11 control subjects	1000-Hz pure tones	↑ amplitude of N100m
(Van der Molen и др., 2012b)	16 FXS patients 20 control subjects	auditory oddball paradigm: standard tones (90% occurrence) at a frequency of 1000 Hz and deviant ones at a frequency of 1500 Hz	↑ amplitude of N1 to standard stimuli ↑ amplitude of P2 to standard stimuli ↓ MMN amplitude ↓ P3a amplitude to deviant stimuli
(Ethridge и др., 2019)	38 FXS patients 40 control subjects	1. four 50-ms white noise bursts of 50 ms duration 2. chirp stimuli (white bursts modulated by sinusoid in frequency from 0 to 1000 Hz)	↑ amplitude of N1 ↑ amplitude of P2
(Ethridge и др., 2016)	14 FXS patients 15 control subjects	auditory gating task (four identical tones)	↓ habituation in N1 component ↓ amplitude of N2
(Knoth и др., 2014)	12 FXS patients 12 control subjects	1. auditory modality: 50 ms broadband noise presented 150 times 2. visual modality: black-and-white checkerboard pattern	↑ amplitude of N1 to auditory stimuli ↑ amplitude of P2 to auditory stimuli ↑ latency of N2 to auditory stimuli ↑ amplitude of N70 to visual stimuli
(Côté и др., 2021)	14 FXS patients 55 control subjects	sequences of four vowels	↑ N1-P2 peak-to-peak value
(Van der Molen и др., 2012a)	16 FXS patients 22 control subjects	1. auditory modality: auditory oddball paradigm: standard tones (90% occurrence) at a frequency of 1000 Hz and deviant ones at a frequency of 1500 Hz 2. visual modality: blue and yellow smiley faces	↑ amplitude of N1 and N2 to both auditory and visual stimuli ↓ P3b amplitude
(Rigoulot и др., 2017)	17 FXS patients 26 control subjects	neutral faces, each repeated successively ten times	↑ N170 amplitude for the second presentation of a stimulus compared to controls
(St Clair и др., 1987)	33 FXS patients 83 control subjects	auditory oddball paradigm: standard tones at a frequency of 1000 Hz and deviant ones at a frequency of 1500 Hz	↑ amplitude of N1 to standard stimuli ↑ amplitude of P2 to standard stimuli ↓ P3 amplitude
Angelman syndrome			

(Key и др., 2018)	15 del AS patients 15 control subjects	Sequence of nonwords, random stimuli were repeated	Larger parietal responses within 200-500 latency were associated with better communication skills reported by caregivers
(Key & Jones, 2019)	13 del AS patients	Novel names and names of participants and their close relatives were presented	No differences in ERP components on response to novel and familiar names
(Egawa и др., 2008)	11 del AS patients 2 non-del AS patients 6 patients with epilepsy (non-AS) 11 control subjects	Electrical median nerve stimulation	↑ N1m and P1m latencies in del-AS compared with non-del AS patients and control subjects ↑ N1m amplitude in del-AS patients
(Guerrini и др., 1996)	11 AS patients	Electrical median nerve stimulation Transcranial magnetic stimulation to evoke motor potentials	↑ SEPs were prolonged in 5 patients ↓ silent period following motor evoked potentials
Phelan-McDermid Syndrome			
(Grosman и др., б. д.)	5 PMS patients 8 ASD patients 9 control subjects	auditory steady-state response paradigm, ASSR (40-Hz click trains)	↓ ASSR for both PMS and ASD patients
(Neklyudova и др., 2021)	1 patient with microduplication of SHANK3 gene 32 control subjects	auditory steady-state response paradigm, ASSR (40-Hz click trains)	↓ ASSR
(Isenstein и др., 2018)	6 PMS patients 7 control subjects	1000-Hz pure tones	↓ P2 amplitude ↑ P2 habituation
(Reese, 2019)	37 PMS patients 15 control subjects	auditory gating task: broadband noise bursts in pairs	↓ P50 amplitude
(Ponson и др., 2018)	10 PMS subjects no data about control group	auditory oddball paradigm: standard tones (85% occurrence) at a frequency of 1000 Hz and deviant ones at a frequency of 1100 Hz	↑ N250 latency in patients with ASD than in norm
(Brittenham, 2017)	17 PMS patients 24 ASD patients 12 control subjects	black-and-white checkerboard	↓ P60-N75 amplitude ↓ N75-P100 amplitude
(Siper и др., 2021)	31 PMS patients 79 patients with idiopathic ASD 45 control subjects	black-and-white checkerboard	↓ amplitude of P60-N75 deletion size was negatively correlated with P60-N75 amplitude
Rett syndrome			
(Sysoeva и др., 2020)	12 RS patients 21 control subjects	1. auditory oddball paradigm for tones: standard tones (85% occurrence) at a frequency of 1000 Hz and deviant ones at a frequency of 500 Hz 2. auditory oddball paradigm for phonemes: standard phonema (85% occurrence) was ‘ba’ and deviant one was ‘da’	↑ P1 amplitude was greater for phonemes in control subjects, but not in RS patients no P2 component for both tones and phonemes in RS patients negative correlation between P2 amplitude and severity of symptoms

(Badr и др., 1987)	7 RS patients 58 control subjects	1. tone bursts 2. auditory oddball paradigm: standard tones (75% occurrence) at a frequency of 1000 Hz and deviant ones at a frequency of 2000 Hz 3. visual modality: flash stimulation	↑ N1, P2 latencies in auditory modality ↑ P3 latency to deviant stimuli in auditory modality ↑ P1 latency in visual modality
(Foxe и др., 2016)	14 RS patients 22 control subjects	auditory oddball paradigm: standard tones (85% occurrence) at a frequency of 503 Hz and deviant ones at a frequency of 996 Hz	↑ MMN latency
(Brima и др., 2019)	11 RS patients 24 control subjects	auditory oddball paradigm: standard stimuli had duration of 100 ms and deviant ones had duration of 180 ms. Interstimulus intervals were different: 450, 900 and 1800 ms	↓ MMN with interstimulus interval of 450 ms and no MMN with longer intervals
(Saunders и др., 1995)	17 RS patients 18 control subjects	1. visual oddball paradigm 2. auditory oddball paradigm: standard tones (80% occurrence) at a frequency of 440 Hz and deviant ones at a frequency of 880 Hz	no developmental changes (reduction in amplitude and latency) of P1 components to visual stimuli in RS patients absence of developmental changes (reduction in amplitude and latency) of N2 components to auditory stimuli in RS patients no P3 component to deviant auditory stimuli
(LeBlanc и др., 2015)	34 RS patients 20 control subjects	visual modality: black and white checks	↓ N1-P2 complex amplitude ↑ N2 latency
(Yoshikawa и др., 1991)	10 RS patients	Electrical median nerve stimulation	↑ SEP in 7 of 10 patients
(Yamanouchi и др., 1993)	9 RS patients 54 control subjects	visual modality: white flashed somatosensory modality: electrical median nerve stimulation	↑ P30-N35 amplitude to somatosensory stimulation
Tuberous sclerosis			
(Côté и др., 2021)	9 TSC patients 55 control subjects	sequences of four vowels	↓ P1-N1 complex amplitude
(Seri и др., 1999)	14 TSC patients (7 with ASD)	auditory oddball paradigm for tones: standard tones (80% occurrence) at a frequency of 1000 Hz and deviant ones at a frequency of 1500 Hz	↓ N1 amplitude ↑latency subgroup with ASD ↑ MMN latency in subgroup with ASD
(O'Brien и др., 2020)	9 TSC patients 9 control subjects	auditory oddball paradigm for tones: standard tones (85% occurrence) at a frequency of 800 Hz and deviant ones at a frequency of 400 Hz auditory oddball paradigm for phonemes: standard phoneme (85% occurrence) was 'a' and deviant one was 'u'	↑ P1 and N2 amplitude to vowels compared to tones in controls, but not in TSC patients = MMN between control subjects and TSC, however in patients with both TSC and ASD ↓ MMN amplitude

(Jeste и др., 2013)	28 TSC patients 26 control subjects	presentation of pictures of a caregiver and gender- and age-matched stranger	↑ N290 latency
(Tye и др., 2015)	14 TSC patients (4 with ASD) 13 control subjects	Presentation of faces, either upright or inverted	↑ N170 in TSC and ASD to typical faces ↑ N170 to inverted faces in controls and TSC, but not in TSC with ASD
(Varcin и др., 2016)	16 infants with TSC patients 18 control infants	black-and-white checkerboard	no difference in amplitude of latencies of ERP components were found
Neurofibromatosis type 1			
(Ammendola и др., 2006)	21 NF1 patients	1. black-and-white checkerboard 2. electrical stimulation of posterior tibial nerve at the ankle	↑ P100 latency in visual modality ↑ P37 latency somatosensory modality
(Yerdelen и др., 2011)	39 NF1 patients	1. black-and-white checkerboard 3. electrical stimulation of the median nerve at the level of the wrist	↑ P100 latency in visual modality ↑ latency of somatosensory EP
(Begum-Ali и др., 2021)	25 NF1 patients (infants) 52 control subjects (infants)	auditory oddball paradigm for tones: standard vowels /u/ (50% occurrence) at a frequency of 500 Hz and deviant ones were /u/ at a frequency of 650 Hz (25%) of deviant vowel /i/ at a frequency of 500 Hz (25%)	↑ latency of pitch -change detection in infants with NF1
(Iannaccone и др., 2002)	16 NF1 patients 13 control subjects	pattern-reversal and flash stimuli	↑ P1 latency absent P2 component in 3 patients
(Ribeiro и др., 2015)	16 NF1 patients 16 control subjects	visual Go/NoGo task	↓ P1 amplitude ↓ P3 amplitude P3b in response to irrelevant stimuli was not reduced
(Bluschke и др., 2017)	14 NF1 patients 22 control subjects	Flanker task	↓ the conflict-modulation of N2 in NF1 group ↑ N450 amplitude of N450 component
(Pobric и др., 2021)	16 NF1 patients 16 control subjects	1 N-back and 2 N-back tasks	↓ P3 latency