Table S1. Matching variables, N=342

| Category                              | Non ASD (n=171) | ASD (n=171) | p-value |
|---------------------------------------|-----------------|-------------|---------|
| Matching variables                    |                 |             |         |
| Child age, mean (SD)                  | 11.8 (3.6)      | 11.7 (3.8)  | N/A     |
| Maternal age at delivery, n (%)       | 27.1 (6.0)      | 27.1 (5.9)  | N/A     |
| Gestational age in weeks, mean (SD)   | 39.0 (1.94)     | 39.1 (1.8)  | N/A     |
| Male child, n (%)                     | 137 (50.0)      | 137 (50.0)  | N/A     |
| Female child, n (%)                   | 34 (50.0)       | 34 (50.0)   |         |
**Table S2.** Demographic and clinical characteristics of entire sample (N=342)

| Cumulative dose of synthetic oxytocin | Zero | 1st level | 2nd level | 3rd level | Overall |
|--------------------------------------|------|-----------|-----------|-----------|---------|
| All sample, n (%)                    | 136  | 69 (20.18)| 69 (20.18)| 68 (19.88)| 342 (100) |
| Sex of child, n (%)                  |      |           |           |           |         |
| Female                               | 28   | 12 (17.65)| 19 (27.94)| 9 (13.24) | 68 (100) |
| Male                                 | 108  | 57 (20.80)| 50 (18.25)| 59 (21.53)| 274 (100) |
| Age of child, mean (SD)              | 11.81| 12.33 (3.33)| 11.50 (3.78)| 11.91 (3.75)| 11.87 (3.70) |
| Gestational weeks, mean (SD)         | 38.86| 39.10 (1.44)| 39.67 (1.55)| 38.94 (2.23)| 39.09 (1.87) |
| Maternal age, mean (SD)              | 26.80| 27.17 (6.66)| 27.88 (5.67)| 26.90 (5.52)| 27.07 (5.97) |
| Maternal hypertension, n (%)         |      |           |           |           |         |
| None                                 | 130  | 64 (20.98)| 52 (17.02)| 305 (100) |
| Chronic hypertension                 | 1    | 1 (25.00)| 1 (25.00)| 4 (100) |
| Gestational hypertension             | 4    | 2 (9.09)| 7 (31.82)| 22 (100) |
| Pre-eclampsia                        | 1    | 1 (9.09)| 7 (63.64)| 11 (100) |
| Maternal diabetes, n (%)             |      |           |           |           |         |
| None                                 | 122  | 63 (20.06)| 63 (20.06)| 314 (100) |
| Non-gestational not insulin controlled| 1    | 1 (0.00)| 0 (0.00)| 0 (100) |
| Non-gestational insulin controlled   | 2    | 1 (33.33)| 0 (0.00)| 3 (100) |
| Gestational not insulin controlled   | 8    | 4 (23.53)| 3 (17.65)| 17 (100) |
| Gestational insulin controlled       | 3    | 2 (28.57)| 2 (28.57)| 7 (100) |
| Mode of delivery, n (%)              |      |           |           |           |         |
| Vaginal                              | 78   | 56 (25.23)| 40 (18.02)| 222 (100) |
| Vacuum                               | 5    | 1 (8.33)| 2 (16.67)| 12 (100) |
| Forceps                              | 2    | 2 (20.00)| 3 (30.00)| 10 (100) |
| Caesarean                            | 51   | 10 (10.20)| 23 (23.47)| 98 (100) |
| Maternal education, n (%)            |      |           |           |           |         |
| High school                          | 66   | 19 (12.42)| 28 (18.30)| 153 (100) |
| College                              | 70   | 50 (26.74)| 40 (21.39)| 187 (100) |
| Unknown                              | 0    | 0 (0.00)| 0 (0.00)| 2 (100) |
| Indication for delivery, n (%)       |      |           |           |           |         |
| Elective                             | 2    | 7 (46.67)| 4 (26.67)| 15 (100) |
| Spontaneous                          | 70   | 17 (12.41)| 11 (8.03)| 137 (100) |
| Hypertensive disease                 | 0    | 2 (11.11)| 10 (55.56)| 18 (100) |
| Diabetes                             | 3    | 1 (11.11)| 4 (44.44)| 9 (100) |
| Repeat C-section                     | 12   | 0 (0.00)| 0 (0.00)| 12 (100) |
| Dates                                | 9    | 15 (33.33)| 16 (35.56)| 45 (100) |
| Fetal indications                    | 12   | 8 (21.05)| 14 (36.84)| 38 (100) |
| Birthweight in grams, mean (SD)      | 3305 | 3536 (605)| 3460 (643)| 3382 (613) |
Table S2 (continued). Demographic and clinical characteristics of entire sample (N=342)

|                          | Maximum rate of synthetic oxytocin |
|--------------------------|-----------------------------------|
|                          | Zero          | 1st level | 2nd level | 3rd level | Overall |
| All sample, n (%)        | 136 (39.77)  | 65 (19.01)| 71 (20.76)| 70 (20.47)| 342 (100) |
| Sex of child, n (%)      |                |           |           |           |          |
| Female                   | 28 (41.18)    | 13 (19.12)| 14 (20.59)| 13 (19.12)| 68 (100)  |
| Male                     | 108 (39.42)   | 52 (18.98)| 57 (20.80)| 57 (20.80)| 274 (100) |
| Age of child, mean (SD)  | 11.81(3.83)   | 12.17 (3.29)| 11.59 (3.70)| 12.01 (3.86)| 11.87 (3.70)|
| Gestational weeks, mean (SD) | 38.86 (1.97) | 39.21 (1.58) | 39.30 (1.95) | 39.21 (1.83) | 39.09 (1.87) |
| Maternal age, mean (SD)  | 26.80 (5.99)  | 26.83 (6.26)| 27.88 (6.18)| 27.00 (5.48)| 27.07 (5.97) |
| Maternal hypertension, n (%) |                |           |           |           |          |
| None                     | 130 (42.62)   | 56 (18.36)| 65 (21.31)| 54 (17.70)| 305 (100) |
| Chronic hypertension     | 1 (25.00)     | 0 (0.00)  | 0 (0.00)  | 3 (75.00) | 4 (100)   |
| Gestational hypertension | 4 (18.18)     | 7 (31.82) | 3 (13.64) | 8 (36.36) | 22 (100)  |
| Pre-eclampsia            | 1 (9.09)      | 2 (18.18) | 3 (27.27) | 5 (45.45) | 11 (100)  |
| Maternal diabetes, n (%) |                |           |           |           |          |
| None                     | 122 (38.85)   | 63 (20.06)| 62 (19.75)| 67 (21.34)| 314 (100) |
| Non-gestational not insulin controlled | 1 (100) | 0 (0.00) | 0 (0.00) | 0 (0.00) | 1 (100) |
| Non-gestational insulin controlled | 2 (66.67) | 1 (33.33) | 0 (0.00) | 0 (0.00) | 3 (100) |
| Gestational diabetes     | 8 (47.06)     | 1 (5.88)  | 7 (41.18) | 1 (5.88)  | 17 (100)  |
| Gestational insulin controlled | 3 (42.86) | 0 (0.00) | 2 (28.57) | 2 (28.57) | 7 (100)   |
| Mode of delivery, n (%)  |                |           |           |           |          |
| Vaginal                  | 78 (35.14)    | 45 (20.27)| 56 (25.23)| 43 (19.37)| 222 (100) |
| Vacuum                   | 5 (41.67)     | 3 (25.00) | 2 (16.67) | 2 (16.67) | 12 (100)  |
| Forceps                  | 2 (20.00)     | 3 (30.00) | 2 (20.00) | 3 (30.00) | 10 (100)  |
| Caesarean                | 51 (52.04)    | 14 (14.29)| 11 (11.22)| 22 (22.45)| 98 (100)  |
| Maternal education, n (%)|                |           |           |           |          |
| High school              | 66 (43.14)    | 36 (23.53)| 22 (14.38)| 29 (18.95)| 153 (100) |
| College                  | 70 (37.43)    | 28 (14.97)| 48 (25.67)| 41 (21.93)| 187 (100) |
| Unknown                  | 0 (0.00)      | 1 (50.00) | 1 (50.00) | 0 (0.00)  | 2 (100)   |
| Indication for delivery, n (%) |          |           |           |           |          |
| Elective                 | 2 (13.33)     | 2 (13.33) | 5 (33.33) | 6 (40.00) | 15 (100)  |
| Spontaneous              | 70 (51.09)    | 38 (27.74)| 22 (16.06)| 7 (5.11)  | 137 (100) |
| Hypertensive disease     | 0 (0.00)     | 5 (27.78) | 2 (11.11) | 11 (61.11)| 18 (100)  |
| Diabetes                 | 3 (33.33)     | 0 (0.00)  | 3 (33.33) | 3 (33.33) | 9 (100)   |
| Repeat C-section         | 12 (100)     | 0 (0.00)  | 0 (0.00)  | 0 (0.00)  | 12 (100)  |
| Dates                    | 9 (20.00)     | 4 (8.89)  | 14 (31.11)| 18 (40.00)| 45 (100)  |
| Fetal indications        | 12 (31.58)    | 3 (7.89)  | 11 (28.95)| 12 (31.58)| 38 (100)  |
| Birthweight in grams, mean (SD) | 3305 (645) | 3324 (514) | 3425 (545) | 3541 (677) | 3382 (613) |
Table S2 (continued). Demographic and clinical characteristics of entire sample (N=342)

| Time of exposure to synthetic oxytocin | Zero          | 1<sup>st</sup> level | 2<sup>nd</sup> level | 3<sup>rd</sup> level | Overall |
|--------------------------------------|---------------|----------------------|---------------------|---------------------|---------|
| All sample, n (%)                    | 136 (39.77)   | 69 (20.18)           | 69 (20.18)          | 68 (19.88)          | 342 (100) |
| Sex of child, n (%)                  |               |                      |                     |                     |         |
| Female                               | 28 (41.18)    | 13 (19.12)           | 18 (26.47)          | 9 (13.24)           | 68 (100) |
| Male                                 | 108 (39.42)   | 56 (20.44)           | 51 (18.61)          | 59 (21.53)          | 274 (100) |
| Age of child, mean (SD)              | 11.81 (3.83)  | 12.34 (3.35)         | 11.86 (3.88)        | 11.54 (3.62)        | 11.87 (3.70) |
| Gestational weeks, mean (SD)         | 38.86 (1.97)  | 39.20 (1.43)         | 39.39 (1.63)        | 39.12 (2.23)        | 39.09 (1.87) |
| Maternal age, mean (SD)              | 26.80 (5.99)  | 27.53 (6.39)         | 27.18 (6.05)        | 27.02 (5.49)        | 27.07 (5.97) |
| Maternal hypertension, n (%)         |               |                      |                     |                     |         |
| None                                 | 130 (42.62)   | 58 (19.02)           | 62 (20.33)          | 55 (18.03)          | 305 (100) |
| Chronic hypertension                 | 1 (25.00)     | 1 (25.00)            | 1 (25.00)           | 1 (25.00)           | 4 (100)  |
| Gestational hypertension             | 4 (18.18)     | 9 (40.91)            | 3 (13.64)           | 6 (27.27)           | 22 (100) |
| Pre-eclampsia                        | 1 (9.09)      | 1 (9.09)             | 3 (27.27)           | 6 (54.55)           | 11 (100) |
| Maternal diabetes, n (%)             |               |                      |                     |                     |         |
| None                                 | 122 (38.85)   | 67 (21.34)           | 63 (20.06)          | 62 (19.75)          | 314 (100) |
| Non-gestational not insulin controlled| 1 (100)      | 0 (0.00)             | 0 (0.00)            | 0 (0.00)            | 1 (100)  |
| Non-gestational insulin controlled    | 2 (66.67)     | 0 (0.00)             | 1 (33.33)           | 0 (0.00)            | 3 (100)  |
| Gestational not insulin controlled    | 8 (47.06)     | 2 (11.76)            | 3 (17.65)           | 4 (23.53)           | 17 (100) |
| Gestational insulin controlled        | 3 (42.86)     | 0 (0.00)             | 2 (28.57)           | 2 (28.57)           | 7 (100)  |
| Mode of delivery, n (%)               |               |                      |                     |                     |         |
| Vaginal                              | 78 (35.14)    | 50 (22.52)           | 57 (25.68)          | 37 (16.67)          | 222 (100) |
| Vacuum                               | 5 (41.67)     | 4 (33.33)            | 1 (8.33)            | 2 (16.67)           | 12 (100) |
| Forceps                              | 2 (20.00)     | 3 (30.00)            | 1 (10.00)           | 4 (40.00)           | 10 (100) |
| Caesarean                            | 51 (52.04)    | 12 (12.24)           | 10 (10.20)          | 25 (25.51)          | 98 (100) |
| Maternal education, n (%)            |               |                      |                     |                     |         |
| High school                          | 66 (43.14)    | 35 (22.88)           | 28 (18.30)          | 24 (15.69)          | 153 (100) |
| College                              | 70 (37.43)    | 32 (17.11)           | 41 (21.93)          | 44 (23.53)          | 187 (100) |
| Unknown                              | 0 (0.00)      | 2 (100)              | 0 (0.00)            | 0 (0.00)            | 2 (100)  |
| Indication for delivery, n (%)       |               |                      |                     |                     |         |
| Elective                             | 2 (13.33)     | 4 (26.67)            | 6 (40.00)           | 3 (20.00)           | 15 (100) |
| Spontaneous                          | 70 (51.09)    | 36 (26.28)           | 21 (15.33)          | 10 (7.30)           | 137 (100) |
| Hypertensive disease                 | 0 (0.00)      | 5 (27.78)            | 4 (22.22)           | 9 (50.00)           | 18 (100) |
| Diabetes                             | 3 (33.33)     | 1 (11.11)            | 0 (0.00)            | 5 (55.56)           | 9 (100)  |
| Repeat C-section                     | 12 (100.00)   | 0 (0.00)             | 0 (0.00)            | 0 (0.00)            | 0 (0.00) |
| Dates                                | 9 (20.00)     | 5 (11.11)            | 14 (31.11)          | 17 (37.78)          | 45 (100) |
| Fetal indications                    | 12 (31.58)    | 5 (13.16)            | 6 (15.79)           | 15 (39.47)          | 38 (100) |
| Birthweight in grams, mean (SD)      | 3305 (645)    | 3341 (484)           | 3483 (664)          | 3474 (600)          | 3382 (613) |
Table S3. Oxytocin use in various delivery categories

| Category                          | Non-ASD Oxytocin /Total, n (%) | ASD Oxytocin/Total, n (%) |
|-----------------------------------|--------------------------------|---------------------------|
| Vaginal                           | 80/125 (64.0)                  | 64/97 (66.0)              |
| Vacuum/Forceps                    | 6/10 (60.0)                    | 9/12 (75.0)               |
| Caesarean, First-time             | 15/24 (62.5)                   | 30/48 (62.5)              |
| Caesarean, First-time No Fetal Indications | 9/14 (64.3)                    | 26/33 (78.8)              |
| Caesarean, First-time Fetal Indications | 6/10 (60.0)                    | 4/15 (26.7)               |
| Caesarean, Repeat                 | 0/12 (0.0)                     | 2/14 (14.3)               |
Table S4. Conditional logistic regression analysis of clinical features of sample, N=342 or 171 pairs.

| Variable               | Category/Range      | Non ASD n=171 n(%) | ASD n=171 n(%) | Test Statistic OR (CI) | p-value |
|------------------------|---------------------|--------------------|----------------|------------------------|---------|
| Any induction          | Any induction       | 110 (51.2)         | 105 (48.8)     | 1.03 (0.50-2.11)       | 0.928   |
|                        | sOT induction       | 54 (46.5)          | 62 (53.4)      | 1.07 (0.51-2.23)       | 0.857   |
| Any augmentation       | Any augmentation    | 101 (48.8)         | 106 (51.2)     | 1.26 (0.68-2.35)       | 0.457   |
|                        | sOT augmentation    | 47 (53.4)          | 41 (49.6)      | 0.89 (0.42-1.90)       | 0.766   |
| Any sOT (any dosage)   | No sOT              | 70 (51.5)          | 66 (48.5)      | 1.20 (0.68-2.10)       | 0.534   |
|                        | sOT                 | 101 (49.0)         | 105 (51.0)     | 1.12 (0.47-2.65)       | 0.800   |

OR=Odds Ratio, CI=Confidence Interval

Controlling for: maternal hypertension, maternal diabetes, maternal education, indication for delivery (including fetal indications), birth weight, maternal body mass index, mode of delivery, child race, smoking during pregnancy, alcohol use during pregnancy and paternal age. Note: The exposure variables (any induction through prostaglandin dose) were run in separate models. Each model consisted of the exposure variable, covariates, and the outcome.
### Table S5. Conditional logistic regression results on the association between clinical variables and the odds of autism spectrum disorders among girls (N=68 or 34 pairs)

| Variable 1 | N   | Level       | Result          |
|------------|-----|-------------|-----------------|
|            |     | OR (CI)     | p-value         |
| Cumulative dose of sOT (mU) |    |             |                 |
| 28         | Zero mU (ref) | 1 |                  |
| 12         | 1st level | 0.15 (0.01-4.63) | 0.278 |
| 19         | 2nd level | 0.67 (0.06-7.73) | 0.746 |
| 9          | 3rd level | 6.97 (0.13-381.64) | 0.342 |
| Maximum rate of sOT (mU/min) |    |             |                 |
| 28         | Zero rate mU (ref) | 1 |                  |
| 13         | 1st level rate | 0.16 (0.01-3.55) | 0.247 |
| 14         | 2nd level rate | 0.91 (0.08-10.16) | 0.938 |
| 13         | 3rd level rate | 2.17 (0.15-31.6) | 0.569 |
| Time of exposure to sOT (min) |    |             |                 |
| 28         | Zero (ref) | 1 |                  |
| 13         | 1st level of time | 0.35 (0.05-8.71) | 0.525 |
| 18         | 2nd level of time | 1.42 (0.14-13.84) | 0.764 |
| 9          | 3rd level of time | 0.07 (0.01-34.77) | 0.403 |

1 All variables are categorical, variables are coded such that an OR>1 indicates higher odds of ASD.
2 OR=Odds ratio; CI=Confidence interval.

Variables controlled were maternal hypertension, maternal diabetes, maternal education, mode of delivery, indication for delivery, birth weight, maternal body mass index, mode of delivery, child race, smoking during pregnancy, alcohol use during pregnancy and paternal age. Note: The exposure variables (Cumulative dose of sOT, Maximum dose rate, Time of exposure) were run in separate models. Each model consisted of the exposure variable, covariates, and the outcome.
Table S6. Conditional logistic regression results on the association between clinical variables and the odds of autism spectrum disorders among girls (N=68 or 34 pairs)

| Variable                                      | OR    | 95% CI    | p-value |
|-----------------------------------------------|-------|-----------|---------|
| Cumulative dose of sOT /per 500 mU²            | 1.048 | 0.964-1.130 | 0.288   |
| Maximum dose rate/per 10 mU/min³              | 2.061 | 0.530-8.020 | 0.297   |
| Time of exposure/per 500 min⁴                 | 1.380 | 0.425-4.475 | 0.592   |

OR > 1 indicates higher odds of ASD. OR=odds ratio, CI=confidence interval. Variable controlled for were maternal hypertension, maternal diabetes, maternal education, indication for delivery (including fetal indications), birth weight, maternal body mass index, mode of delivery, child race, smoking during pregnancy, alcohol use during pregnancy and paternal age.

¹The exposure variables (Cumulative dose of sOT, Maximum dose rate, Time of exposure) were run in separate models. Each model consisted of the exposure variable, covariates, and the outcome.
²The odds ratios presented for cumulative dose of sOT is to be interpreted as, on average, the odds ratio associated with every 500 mU increase in dose.
³The odds ratios presented for maximum dose of rate is to be interpreted as, on average, the odds ratio associated with every 10 mU/min increase in maximum dose rate.
⁴The odds ratios presented for time of exposure is to be interpreted as, on average, the odds ratio associated with every 500 minute increase time of exposure.