# Getting together; how epigenetics and family history predict sensitive caregiving behavior.

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To investigate the predictive value of methylation of the OXTR and exposure to parental behavior early in life on social-emotional behaviour related to caregiving behavior and its neural underpinnings.

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| **Ethical review** | Approved WMO |
| **Status** | Recruitment stopped |
| **Health condition type** | Family issues |
| **Study type** | Observational non invasive |

## Summary

### ID

NL-OMON42960

**Source**
ToetsingOnline

**Brief title**
Predictors of human caregiving behaviour.

### Condition

- Family issues

**Synonym**
family history, parenting style

**Research involving**
Human

### Sponsors and support

**Primary sponsor:** Universiteit Utrecht
**Source(s) of monetary or material Support:** Ministerie van OC&W

## Intervention

**Keyword:** caregiving behavior, epigenetics, family history

## Outcome measures

### Primary outcome

EEG/EMG measures:

EMG is used to index facial empathic responses (corrugator supercilii activity in response to negative affective stimuli and zygomaticus major activity in response to positive affective stimuli). Amplitudes and latencies of different EEG components will be computed to measure differences in processes in response to infant and child stimuli (N100, P200, N200, P300 measured over Fz, Cz, and Pz, and N170 measured over P7 and P8).

Behavioral Measures:

Subjective measures of reward sensitivity and empathy of the same stimuli will be collected using visual analogue scales.

### Secondary outcome

n/a

# Study description

### Background summary

Sensitivity to subtle cues from infants* faces and empathic responding to these signals are considered essential aspects of sensitive parenting; a parenting style known to facilitate a healthy outcome of children*s social emotional development (Gilbert et al., 2009; Milner, 2003). Children experiencing insensitive or harsh parenting practices, show impaired cognitive performance (Pechtel & Pizzagalli, 2011), altered reward processing, stress reactivity, and

impulsiveness (Andersen & Teicher, 2009; Repetti, Taylor & Seeman, 2002). In contrast to insensitive parenting practices, parenting styles characterized by high amounts of sensitivity and warmth, result in improved emotion regulation, self-esteem, and social-emotional functioning (Morris, Cui & Steinberg, 2013). These findings clearly demonstrate the importance of social sensitivity for the outcome of a child*s development. However, what makes people more or less sensitive to social cues is still largely unknown. In this line of studies, the aim is to unravel the critical factors predicting social sensitivity.

The first factor that will be studied is a biomarker of particular interest; (epi)genetic regulation of neuropeptide oxytocin (OXT) activity (Puglia et al., 2015). Recent studies have shown that OXT administration promotes recognition of emotional facial expressions and cognitive empathic behaviour (Bos et al., 2012). As such, sensitivity to this neuropeptide might predict social sensitivity, and thereby facilitate sensitive parenting (Rilling & Young, 2014). One way to study effects of variation in sensitivity to OXT is by looking at variation in the OXT-receptor (OXTR) gene. Research has shown that individuals homozygous for the G allele of OXTR rs53576 polymorphism expressed greater levels of sensitive parenting (Bakermans-Kranenburg & van IJzendoorn, 2008). However, predictive value of fixed variation in genetic code is limited, and this might be caused by environmental factors, such as exposure to insensitive parenting, that affect the expression of the gene without altering the underlying genetic sequence. It is these dynamic epigenetic effects of OXTR expression that we plan to investigate in relation to social sensitivity. Animal studies have demonstrated that variation in expression of the OXTR predicts altered parenting behavior in the next generation (Champagne, 2011), but in humans this remains to be tested.

The second factor of interest follows from the studies described above and concerns how you were raised by your parents. Disturbances in children*s social-emotional behavior due to insensitive and harsh parenting can result in reduced parental responsiveness later in life (Lanius, Vermetten & Pain, 2010) and increases the risk of developing a similar insensitive parenting style towards one*s own children (Milner, 2003), establishing a cyclic pattern transmitted over generations (Bailey et al., 2009).

Thus, in the current proposed study we will investigate the effect of how subjects were raised by their parents and the genetic makeup of their OXT receptor on key motivational behaviors critical for sensitive parenting. To do this, we will recruit subjects from the RADAR-sample, which is a sample that participates in a longitudinal study on child-parent relationships.

**Study objective**

To investigate the predictive value of methylation of the OXTR and exposure to parental behavior early in life on social-emotional behaviour related to

caregiving behavior and its neural underpinnings.

### Study design

The present study is observational with a correlational setup in which OXTR gene expression and exposure to parental behavior during childhood is related to physiological and behavioral measures in response to infant and child stimuli.

### Study burden and risks

Both EEG and EMG are non-invasive techniques, so there is no need for special preparation for the subject. Furthermore the EEG and EMG equipment used for this experiment is not intended for medical purposes (Biosemi, Amsterdam, The Netherlands). There are no known risks associated with EEG and/or EMG acquisition. The strain on the participant is the investment in time; about 1 hr. for the measurement, and the additional time required for traveling to the lab. The study is unique in combining longitudinal data from a cohort study with epigenetic measures along with experimental paradigms tailored to measure neural and physiological responses to infant stimuli. As such, it can give insight into the biological and environmental influences on a core social-emotional behavioral repertoire underlying human caregiving behavior. Considering the possible implications of increased insight obtained from fundamental research on the intergenerational transition of insensitive caregiving practices, the benefits strongly outweigh the minimal strain on the participants.

## Contacts

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# Trial sites

## Listed location countries

Netherlands

# Eligibility criteria

**Age**
Adults (18-64 years)
Elderly (65 years and older)

## Inclusion criteria

* Female
* Aged between 18-35
* Nulliparous
* Normal or corrected-to-normal vision
* Signed informed consent

## Exclusion criteria

* History of neurological treatment or current neurological treatment
* History of psychiatric treatment or current psychiatric treatment
* History of endocrinological treatment or current endocrinological treatment
* Medication: current use of any psychotropic medication (benzodiazepines, antidepressants, antipsychotics, anticonvulsants)

# Study design

## Design

**Study type:** Observational non invasive

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|---|---|
| Masking: | Open (masking not used) |
| Control: | Uncontrolled |
| Primary purpose: | Other |

### Recruitment

NL

| | |
|---|---|
| Recruitment status: | Recruitment stopped |
| Start date (anticipated): | 09-08-2016 |
| Enrollment: | 84 |
| Type: | Actual |

## Ethics review

Approved WMO

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| Date: | 25-05-2016 |
| Application type: | First submission |
| Review commission: | METC Universitair Medisch Centrum Utrecht (Utrecht) |

## Study registrations

### Followed up by the following (possibly more current) registration

No registrations found.

### Other (possibly less up-to-date) registrations in this register

No registrations found.

### In other registers

| Register | ID |
|---|---|
| CCMO | NL57474.041.16 |