traits. Personality had practically no influence on reactivity levels. Within the trait approach of individual differences nearly no selective activation of traits appeared. It is concluded that relationships between autonomic activity and personality can be revealed once a process-oriented individual differences approach is employed.

Do we process odors differently during inhalation and exhalation?

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Chemosensory event-related potentials (CSERPs) are mostly obtained while the subjects are breathing through their mouth thereby blocking the connection between the nasal cavity and the trachea with the soft palate. It has been proposed that this technique of velopharyngeal closure might avoid the influence of respiratory air on the transportation of the odor to the nasal epithelium and on the EEG recording in general. Consequently, the odors are delivered non-synchronously to breathing. However, in the rabbit it has been shown that the electrical activity in the olfactory bulb changes prior to inhalation. It is suggested that the changing activity might prime the bulb for stimulation and that therefore odor processing might be different during phases of exhalation and inhalation.

The present experiment was carried out to compare the electrical brain activity during phases of inhalation and exhalation. Moreover, the kind of breathing technique was varied: The subjects were instructed to breathe either spontaneously through their mouth or with the velopharyngeal closure technique. Eight healthy female subjects (dextrals, age range: 21–33 years) participated voluntarily in the study. During each EEG session four series of odor presentations were performed, each consisting of 60 trials. After each series the subjects were asked how many odors they counted. Four subjects were required to perform normal breathing during the first and third series and to perform the closure technique during the second and fourth series. For the other half of the subjects this order was reversed. Within each series 10 stimuli were presented with an interstimulus interval of 8 s and after each set of 10 trials an interset interval of 1 min was interspersed. The odorous stimuli were presented for 600 ms each and consisted of an artificial mixture of olfactory and trigeminal stimulants (citral, eugenol, linalool, menthol and isoamylacetate) dissolved in propanediol. The odors were delivered within a constantly flowing airstream (100 ml/s) to the subject's right nostril. A thermistor was placed at the open mouth to monitor the phase of the respiratory cycle. The EEG was recorded unipolarily from Fz, Cz and Pz in reference to linked mastoids. Horizontal and vertical eye movements were monitored with five facial electrodes and corrected by a multivariate regression analysis. Signals were digitized at a rate of 128 Hz per channel. The low frequency cut-off was set at 0.016 Hz and the upper frequency cut-off at 30 Hz.

Comparing the two breathing techniques a larger negative component (N1) was found when the subjects were using the velopharyngeal closure technique, however, the late positive complex (LPC) was larger for the spontaneous breathing condition. When the subjects were breathing spontaneously the negative as well as the positive components appeared to be larger when the odors were presented during the inhalation phase. The difference for the N1 component was most pronounced at the parietal recording position, whereas the difference for the LPC was most pronounced at the frontal recording position. When the subjects were using the closure technique the potentials looked quite similar for both respiratory cycle phases. However, during phases of inhalation a large positive slow wave followed the CSERP. The results indicate that the extent of cortical activity as well as the location of maximum brain activity accompanying odor processing depend on the phase of the respiratory cycle. The smaller N1 amplitude during the spontaneous breathing condition might be due to different stimulus latencies and stimulus rise times caused by uncontrolled variations in the nasal air flow.

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Brain potentials argue for different representations of regular and irregular inflectional morphology

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Results from two ERP experiments are presented in which a highly controversial area of psycholinguistic research was investigated: the representation of regular and irregular morphology. While in connectionist models of inflection a unitary representation of both kinds of inflection is assumed, the so-called Dual-Mechanism Model proposes two qualitatively different mechanisms, linguistic rules for regulars and an associative memory system for irregulars.

In experiment 1, ERPs were recorded as German-speaking subjects read sentences that contained as critical words regular and irregular participles with correct and incorrect endings:

1) regular participle, correct ending: Sie haben die ganze Nacht *durchgetanzt.*
2) regular participle, incorrect ending: Sie haben die ganze Nacht **durchgetanzen.* (they have danced the whole night through)
3) irregular participle, correct ending: Sie haben ihre Möbel *aufgeladen.*
4) irregular participle, incorrect ending: Sie haben ihre Möbel **aufgeladet.* (they have already loaded the furniture)

ERPs showed different responses to regular and irregular participles: incorrect irregulars elicited a left