

# Affect & Emotion

## Newsletter of the NCCR Affective Sciences

### THE EMOTIONAL POWER OF ODORS



#### RESEARCH FOCUS

Our NCCR and Firmenich S.A. recently signed a 5-year research agreement. Sylvain Delplanque describes the scientific challenges.

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Julien Deonna and Fabrice Teroni have written a book entitled "Qu'est-ce qu'une émotion?"

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**RESEARCH FOCUS**

# Investigating odor-elicited emotions



The FRUCEE team devotes its efforts to the understanding of emotions triggered by odors. SYLVAIN DELPLANQUE tells us more about the new research collaboration with FIRMENICH S.A., a company specialised in flavors and fragrances, and a major worldwide chemical manufacturer.

The preference for an odour is defined as the individual's attitude towards this odour, often leading to an explicit decision-making process concerning the object associated with this odour. The attitude is mainly determined by 1) the actual pleasure elicited by the odour (i.e. the liking); 2) the current motivational state that drives an individual (i.e. the wanting); and 3) the values and cultural representations of the individual. Although the processes involved in human preferences have been investigated in psychology, neuroscience, and economy in the past, to the best of our knowledge, no research program has attempted to understand the emotional sources and the motivational origins of preference acquisition and organization using an appraisal-based framework.

In order to further the scientific knowledge concerning the emotional and motivational foundations of olfactory processing, the Research and Development Department of FIRMENICH, S.A., the Swiss Centre for Affective Sciences, and the Geneva Interfaculty Neuroscience Centre have signed a 5-year research agreement. This agreement follows a three-year period of fruitful collaboration between the different partners. Therefore, the spirit of the new phase is: i) to build upon the effective human capabilities and technical facilities that emerged from the preceding collaboration and ii) to reinforce the human resources and the functioning budget to support the new project. This core structure will guarantee the stability of competences in the domains of expertise and is also thought to favour a high degree of adaptation to the evolutions of the fundamental research. In addition to the fundamental dimension of the research intended, this collaboration will foster the potential for knowledge transfer and industrial applications.

The scientific project, called EmOdor and directed by David Sander and Patrik Vuilleumier (University of Geneva), is divided

into four main subprojects that encompass under-explored research axes in the field. In a first part, we plan to investigate the perceived liking or perceptual relevance of fragrances and how relevance is modulated by the context. This includes the influence of implicit memory and trigeminal perception on liking and preferences. In a second axis we will look at the major aspects of "wanting" or goal/need-relevance (e.g., the current motivational state of the individual). This concerns the influence of an individual's basic drives (e.g., satiety, social chemosignals) as well as more elaborated goals (i.e., values-related goals) on liking and preferences. A third sub-project will address the influence of fragrances on cognitive performance (i.e., spatial and temporal aspects of attention) and mood. The last axis concerns investigation of cultural influences on emotional verbalization during odor perception.

The FRUCEE (Firmenich Research Unit on Chemosensory Elicited Emotions) team currently involves the following people:

Géraldine Coppin, Sylvain Delplanque, Camille Ferdenzi, Didier Grandjean, Matthieu Ischer, Sophie Jarlier, David Sander, Klaus Scherer and Patrik Vuilleumier.

Traditionally, three emotion components—physiological activation, motor expression, and subjective feeling—have been postulated and investigated. These emotional response modalities are rarely studied in combination, even though most affective scientists implicitly expect a high degree of interaction and coordination among the components. In addition to the classical response triad, most scholars also suggest that motivational action tendencies are part of the response patterning elicited by cognitive processes.

Following the experimental strategy developed in the preceding project, we will adopt a multicomponential approach devised to measure behavioral, subjective, physiological, and brain reactions to odors while participants are engaged in controlled experimental conditions. Additionally, new methodological tools will complement this approach (e.g., functional Magnetic Resonance Imagery (fMRI), an olfactometer, electroencephalography, etc.). The newly inaugurated Brain and Behavior Laboratory (see p.4) will be the perfect platform for this approach. ■

INTERVIEW

# Emotions as experiences of evaluative properties



In a very pedagogical book entitled “Qu’est-ce qu’une émotion ?”, JULIEN DEONNA and FABRICE TERONI use philosophical tools to analyze what constitutes an emotion. Just as they wrote the book with four hands, they naturally answered our questions with two voices.

**PA: What is not an emotion?**

**JD:** The main thesis of this book is that an emotion is an experience of an evaluative property or value. For example fear is the experience of danger. This definition applies also to unconscious emotions. So, everything that does not fit this definition is not an emotion. For example, an evaluative judgement is not an emotion because it is not an experience, it is a cold assessment of the situation.

**FT:** To talk about “experiences” is to talk about mental occurrences. This is why we have other categories, like those of sentiments or character traits, to speak about affective dispositions.

**PA: The second part of your book is dedicated to the commentaries of two short texts from David Hume and John Rawls. Why did you choose these two authors?**

**FT:** Two important topics were not covered in the first part of the book. The first one is the analysis of the connections between values and emotions. Hume is well known for his influential attempt at analyzing values in terms of emotions: for him, the danger exemplified by an object is to be analyzed in terms of the fear response.

**JD:** We defend, against Hume, the idea that the values are already there. The emotions do not create the values, they only detect them.

**FT:** The second topic we wanted to address is the link between emotions and morality. Rawls is very interesting in that respect, because he is at the interface be-

tween two traditions. On the one hand, as a Kantian heir, he is careful not to allocate too important a role to the emotions. On the other, the development of his theory of justice naturally extends to the conception of the good life and its emotional underpinnings.

**PA: If emotions only detect values, are they universal?**

**JD:** Obviously, we do not all react to the same object with the same emotion. Still, fear is always an experience of danger.

**FT:** Yet, there exists a rich repertoire of culturally determined behavioural responses for each stimulus. And, similarly, the same response can be elicited by different stimuli in different cultures.

**JD:** But each emotion being a distinct experience of a distinct value, emotions are in this sense universal. And this is entirely compatible with a contextual thesis regarding emotional triggers and responses.

**FT:** This contextualism is by the way compatible with realism about values, a position we are sympathetic to. But we do not consider values as intrinsic properties of objects. For example, a picture qualifies as ‘admirable’ as a function of its place in the history of painting.

**PA: Are the feelings of emotions biased by the way we think and speak about them?**

**FT:** The felt quality of an emotion, the ‘how it is like’ dimension of the fear experience, is not biased by our cognition.

**JD:** Although jealousy, anger etc. involve thoughts, these emotions do not require the mastery or deployment of the concepts of jealousy or anger.

**FT:** But what we think of the emotions we currently experience will affect the way the emotion will unfold. If you think your emotion does not fit its object, this will influence what you feel next.

**JD:** Another interesting point: labelling your emotional experience as “anger” versus “jealousy” might make you act and consequently feel differently.

**PA: What distinguishes philosophers from psychologists in their approach of emotions?**

**JD:** As philosophers, we are interested in necessary and sufficient conditions for various phenomena. Psychologists are more interested in statistical correlations, typicality. Another methodological difference: to test what is possible and what is not, we think on the basis of invented and sometimes bizarre examples. These are thought experiments, the lab of the philosopher.

**FT:** Another important difference is that psychologists are mostly interested in mechanisms and causes, whereas philosophers tend to insist on the epistemological and rational dimensions of mental phenomena. But this, of course, leaves room for plenty of interesting interactions. We draw on psychological studies extensively to develop our theories. But this involves a long process of interpretation of the relevant evidence ■

## NEWS

### Events

On January 29, 2009, the workshop "Media and Emotions" was organized in Geneva with D. Unz and F. Schwab, from the University of Saarbrücken.

In February, March and May 2009, the NCCR seminars gave an opportunity to listen to and discuss with the invited speakers L. Goette, D. Stern and T. Götz, our internal speakers T. Aue and T. Cochrane and the professional-skill speakers P. Achard, C. Haessig, C. Vuille and S. Jaunin.

From March to May, 2009, an international doctoral workshop on Interpersonal Emotion Regulation and Empathy was organized at the university of Fribourg in association with the European Society on Family Relations, including leading experts in the field: W. Cook (Maine), W. Ickes (UT at Arlington), M. Schulz (Bryan Mawr).

On March 4, 2009, the exhibition "Stigmates" opened at the Musée International de la Croix-Rouge et du Croissant-Rouge. A few weeks later, D. Grandjean offered a guided tour and K. Scherer gave a conference. Several scientists from our NCCR wrote a booklet that contributed new insights on the theme of this exhibition.

On March 21, 2009, our NCCR took an active part in the public day organized at the University of Geneva on the occasion of the Brain Awareness Week. Several booths were devoted to the affective side of the brain.

On March 26-27, 2009, we held our Annual Research Forum in Geneva. The participation was large and the presence of our International Scientific Committee generated many interesting discussions.

On April 1, 2009, K. Scherer, B. Bediou and L. Goette presented the NCCR and recent developments in affective research during the Alliance General Assembly. The audience mainly consisted of small and medium enterprise CEOs.

On April 9, 2009, P. Totterdell from Shef-

field gave a public lecture on the Emotion Regulation of Others and Self, in Bern.

On May 1, 2009, the Conservatoire et Jardin Botaniques in Geneva opened an exhibition entitled "Collection des emotion, emotion des collections", designed in coordination with our NCCR. Workshops were also organized during the week-end of May 15-16, and planned for

September 5-6.

On May 6, 2009, the CISA hosted the interdisciplinary workshop "Emotions in translation: Lost or Found?". Talks were given by J.-M. Dewaele (London), D. Cairns (Edinburgh), C. Solèr, D. Nelis, T. McNamée, A. Monnier, A. Ogarkova, C. Soriano and C. Lehr (Geneva). The event counted with the participation of professional translators and interpreters ■

## Brain and Behaviour Laboratory

On March 12, 2009, the University of Geneva inaugurated its pluridisciplinary Brain and Behaviour Laboratory (BBL) in Geneva.

The BBL is an initiative of several leading research groups at the University of Geneva to bring together their resources and expertise in cognitive and affective sciences, with the purpose of building a new neuro-imaging facility dedicated to the neurosciences at the University Medical Centre (CMU). In particular, the aim for BBL is to combine in a 400 square meter single facility a range of new equipments required to conduct cutting-edge research on cognition and emotion, from a coordinated pluridisciplinary perspective. This platform will provide the space and technical tools (including Virtual Reality) necessary for the experimental induction of cognitive and affective states, and for state-of-the-art acquisition of behavioural and brain measures (including MRI, EEG, physiological monitoring).

More specifically, the acquisition of a new 3T MRI scanner has been funded by a private donation to the University of Geneva for the laboratory of Prof. P. Vuilleumier. Its installation allowed a joint facility for cognitive brain research under the supervision of the Neuroscience Centre, including an EEG and TMS laboratory for clinical brain mapping groups at the CMU (directed by Prof. C. Michel), as well as a sleep monitoring laboratory (directed by Dr S. Schwartz), and the psycho-physiological and behavioural laboratories for cognitive and affective research of the Psychology Department and CISA (directed by Prof. K. Scherer).

The inauguration constituted a multi-part event. A press conference started the day, followed by the inauguration *per se*, with P. Couchepin, head of the Federal Department of Home Affairs, C. Beer, head of the Education Department of the Canton of Geneva and D. Vassali, rector of the University of Geneva. Guided visits to the BBL and a buffet were then scheduled for the guests. In the afternoon, a scientific conference took place, featuring J. Gottfried, R. Davidson, J. Driver, M. Rocca and A. Pascual-Leone. Finally, a broad audience conference was given by B. Cyrulnik, French-speaking neuropsychologist and popular writer. The presence of the renowned speakers attracted a large audience and the inauguration of the new center was amply covered by the media ■

NEWS

## The emotional power of music

Several workshops, conferences and concerts are organized around the theme “the emotional power of music” by the Aesthetic Emotions research focus, together with the Department of Musicology, the Institute of the History of Medicine and Health, the Conservatoire of Geneva, and the Grand Theatre of Geneva.

“Déclamer et chanter à l’antique”, “Les intervalles et l’expression des émotions en musique”, or “Les tambours de la nuit” were amongst the themes addressed.

The full program is available at <http://www.unige.ch/emotionalpowerofmusic> ■

## Awards and grants

T. Brosch was awarded a SNF postdoctoral fellowship to go to the Phelps Lab, New York University, from October 2009.

J. Péron together with D. Grandjean obtained a CHF 90’000 funding grant from AXA to sponsor Péron’s post-doctoral research entitled “Electrophysiological activity of the ventral striatum in response to emotional prosody among patients suffering from resistant and chronic depression”.

D. Grandjean also received a three-year grant from the SNSF on the theme “Emotional prosody: an integration of cognitive psychology and cognitive neuroscience approaches”.

T. Pun, S. March-Maillet and D. Grandjean received funding for a two-year project on “Emotion-driven personalized content-based multimedia management”.

The Fribourg research team was involved in the foundation of the new Society for Ambulatory Assessment ([www.ambulatory-assessment.org](http://www.ambulatory-assessment.org)). P. Wilhelm is part of the executive committee of the SAA and M. Perrez belongs to the Scientific Advisory Board. A first international conference of the SAA will take place in June 09 in Greifswald ([www.saa2009.org](http://www.saa2009.org)) with the intense involvement of the NCCR members in Fribourg.

Jointly with D. Courvoisier, S. Cullati

## Staff changes

After S. Hauger left Project 11, Nicholas Stücklin, a social anthropologist, and Virgile Perret, a political scientist, have joined the team as scientific collaborators and will work on the organ donation’s side of the Project.

Visiting scholar M. Schulz (Bryan Mawr, USA) is spending his spring term in Fribourg during his sabbatical year, allowing for an in depth exchange on empathic processes in couples.

Swann Pichon, from Paris, joined P. Vuilleumier’s lab and will work on emotion effects on attention and action

Flavie Martin started in March as lab manager for the PROPEREMO project.

Since February, Laura Bless works as a part-time assistant in the management team.

For vacancies at the NCCR, see our website [www.affective-sciences.org/positions](http://www.affective-sciences.org/positions) ■

and T. Pernegger of the Clinical Epidemiology Division of the University Hospital Geneva, R. E. Schmidt was awarded a research grant of CHF 36’242 to launch a pilot study on the role of regrets in medical decision making. It is hoped that a better understanding of affective aspects of medical decision making will help improve service quality in the hospital ■

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## Affect & Emotion

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