



**Social Sciences**

## **Brain & Cognition: an Integrated Approach**

**Call for Joint-Forces Network Grants**

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# 1 Introduction

**Over the past years, NWO has supported research on Brain and Cognition. The new thematic programme extends previous thematic programmes like Cognition and Evolution & Behaviour by strongly promoting integrative brain and cognition research. The aim of the current programme is to understand cognitive functions from the molecular level all the way up to the interactions between individuals.**

## **An integrative approach: the challenge**

One of the greatest challenges in current brain and cognition research is to integrate various disciplinary approaches to the understanding of specific cognitive processes - such as consciousness, language or memory- and to understand these processes from the level of molecules all the way up to behaviour, including its environmental dimensions. In the past, researchers from disciplines like psychology, neurobiology, medicine, behavioural biology, linguistics, logic, philosophy, sociology and computer science have worked on these issues, all from their own perspective but seldom in unison. The boundaries between these disciplines, however, are rapidly vanishing. Now time has come to join forces and address important questions about how the brain serves the cognitive functioning of individuals, including the interactions with their physical, social and cultural environment, in a truly integrated manner.

Presently, we have a wealth of data on events taking place at the level of molecules and proteins within single cells. There is also an increasing amount of information about behaviour and activity (particularly) in the human brain during cognitive processing in health and disease. Much is known about the ways in which individuals interact with each other and with their environment, and the role that is played therein by language, memory, learning, reasoning, and other higher cognitive functions. Considerable progress has been made through support of the current NWO Theme Cognition and Behaviour. What we still miss, however, are truly integrated theories of how these levels interact.

To bridge the gap between the different levels of aggregation and to provide truly integrated theories of how the processes at the various levels are related and mutually constraining, is arguably one of the biggest scientific challenges in the 21st century. A combined, inter- and cross-disciplinary effort is of eminent importance to achieve true integration of our insights. Molecular and cellular events, for example, need to be linked to higher order processes taking place in networks of interconnected brain cells and areas. How these networks instantiate cognitive functions and how cognitive functions express themselves in behaviour of the individual and its interaction with the environment has to be understood as a set of constraints connecting the different levels of analysis. This includes an understanding of the various mechanisms by means of which higher-level processes influence the lower-level ones and vice versa, thus producing fundamental insights in how processes at one level sustain those at another. Contemporary research in this area is increasingly characterized by collaboration amongst disciplines including psychology, neurobiology, medicine, behavioural biology, linguistics, logic, philosophy, sociology and computer science.

The behavior, interaction with the environment, and productivity of human beings all depend on the immense integrative powers of the brain. Our brain enables us to go on learning throughout our life, and to continually adapt our skills to an ever-changing and increasingly demanding environment. Brain diseases, brain injury, psychiatric disorders such as depression, schizophrenia, and stress-related diseases, and their cognitive implications, therefore have far-reaching consequences for our

functioning in society. The integrative powers of the brain are best studied by integrating ideas and methods from the various disciplines that investigate the brain by different experimental and theoretical approaches at different scales, ranging from neurotransmitters at one end, to symbolic capabilities at the other end. Such integration will facilitate the application of the growing knowledge of the brain and its cognitive functions, to learning and education, to the fight against neurological and psychiatric disorders, and to stress and antisocial behaviour.

This is a scientific challenge that can only be met by sustained interdisciplinary and cross-disciplinary efforts that are firmly rooted in disciplinary results, but aim to go beyond them and transform them into a new kind of theory, without losing sight of the many conceptual and technical difficulties. Achieving such a truly integrated vision is not only vital and challenging from a fundamental scientific point of view, it will also enable us to face important societal and economic challenges related to, for instance, life-long education, appropriate versus deviant behaviour, ageing and optimal health.

### **Embedding in a National Initiative Brain and Cognition**

The NWO programme 'Brain & Cognition: an Integrated Approach' is part of the larger National Initiative on Brain and Cognition. At this moment this NWO programme serves an initiating, facilitating and integrative role in the larger initiative.

### **Funding Instruments of the NWO programme 'Brain and Cognition: an Integrated Approach'**

In this programme three funding instruments will be made available, in which funding can be obtained on the basis of open competition:

- Formation of (inter)national networks which also serve as a platform for the preparation of national and international grant applications, i.e. the present Call for Joint-Forces Network Grants;
- Stimulation of excellent integrative research for which a Call for Programmes for Excellence is foreseen in 2009;
- To ensure high-quality research potential for the future, one needs to invest in talent at an early stage, such as very promising students at the Masters level or starting PhD students that have a strong interdisciplinary profile. The organization of (for instance) high-level summer schools is a very effective instrument to not only supply such an inspiring scientific environment to young people but also offer an opportunity for scientific staff to interact with distinguished researchers from abroad. A Call for Interdisciplinary Education is expected to be published this autumn.

### **Funding**

A total budget of up to Euro 300.000 is available for this Call for Joint-Forces Network Grants. The budget for the entire programme 'Brain & Cognition: an Integrated Approach' amounts to M€ 7,5. The programme is funded by the NWO divisions Earth and Life Sciences, Humanities, Social Sciences, and ZonMw.

## 2 Aim

General aims of the programme 'Brain & cognition: an Integrated Approach'

The overall and most important aim of the programme 'Brain & Cognition: an Integrated Approach' is to promote research that uses an integrative approach.

Within this framework, three specific goals are set:

- Stimulation of excellent research;
- Formation of (inter)national interdisciplinary networks;
- Interdisciplinary education of high-potential junior investigators.

### **Call for Joint-Forces Network Grants**

The present Call for Joint-Forces Network Grants offers scientists the possibility to apply for small grants (up to 10 k€) which allow the organization of exploratory workshops. These workshops will have to stimulate the formation of national and international networks, and at the same time serve as a platform for the preparation of national and international grant applications (including the coming NWO Programs for Excellence). Proposals for Joint-Forces Network Grants should be dedicated to integrative research.

## 3 Guidelines for applicants

### 3.1 Who can apply?

Senior scientists holding a doctor's degree and employed by a Dutch university or other research institute recognized by NWO (as specified in the 'Regeling subsidieverlening NWO' (2007), available on [www.nwo.nl](http://www.nwo.nl)) may apply.

The main applicant will be responsible for the scientific as well as the financial results of the project. All applicants should be listed in the proposal (see 3.4). Please indicate which applicant will be the co-ordinator of the project. If this is not specified, the applicant on top of the list will be considered as main applicant. The institution of the main applicant will be responsible for the regular facilities necessary to execute a Joint-Forces Network project.

### 3.2 What can be applied for?

Applicants can apply for small grants which allow the organization of exploratory workshops. Costs covered by the grant include actual costs of the organisation of a workshop, travelling expenses for invited foreign (scientific) experts, and/or other activities that contribute to a good proposal and a good consortium. Actual research costs or cost of equipment are excluded. The maximum funding that can be requested for these Joint-Forces Network Grants is Euro 10.000. Only actual expenditure may be claimed if your proposal is granted.

### 3.3 When can applications be submitted?

The deadline for submission is Tuesday 2 September 2008, 12.00h. Applications received after the deadline are not eligible for further assessment. Applications can be improved or supplemented only if applicants are invited to do so by the programme bureau (see 4.1).

### 3.4 Drawing up an application

Proposals should meet the prescribed format (see below) and should not exceed three pages A4 (max. 1500 words). The proposal must be written in English. It must specify:

- how the proposed theme will contribute to the major goals of the programme (see chapter 2);
- what practical result will be delivered: e.g. a full project proposal to a concrete funding source;
- a work plan, time schedule, and budget.
- a list of intended partners and contributors.

If your application does not meet these criteria, it will not be eligible for further assessment.

#### Prescribed format

The proposal is composed of two parts; the Iris fact sheet and the core proposal. The basic information in 3.4.1.1–3.4.1.3 should be entered in the Iris fact sheet. The descriptions in 2.1-2.6 form the core proposal. You do not need to fill out a specific application form for the core proposal; information on how to structure the application is provided in the description below.

This core proposal should be submitted as a supplement in PDF format. Please consult the Iris user manual before submitting the proposal. The Iris user manual is available on the Iris website ([www.iris.nwo.nl](http://www.iris.nwo.nl)).

#### 3.4.1 Iris fact sheet

- Title of the proposal

A short and specific title of the proposal.

- Concise summary

You are asked to give a short summary of the proposal, which serves as an explanation for the proposal's title and should be suitable for publication.

- Applicant(s)

Enter the personal information of the main applicant (see also 3.1). In the case of equal applicants you can register more names. Correspondence will be addressed to the first applicant on the list. There is no need to give suggestions for reviewers.

#### 3.4.2 Core proposal

- Co-applicants

Give the name(s) of the co-applicant(s). Co-applicants are or will be directly involved in carrying out the project. Other intended partners or contributors must be listed in 2.3.c. Please give the last name with initials and professional titles, including the name of the university, department, and research school with which they are affiliated. Motivate why these people are particularly apt for this project.

- Institutional environment

Please indicate in which (university) setting the core activities will be carried out. Naming the institute or faculty will be sufficient.

- Detailed description

Describe how the project will contribute to the goals of the programme (see chapter 2). Applicants are expected to explain explicitly and comprehensively the surplus value of their project regarding these goals. Indicate the innovative value of the project.

Indicate the practical results of the project e.g. a full research proposal, ready for submission.

Provide a brief work plan of activities. The coherence between the activities needs to be clarified. A list of intended partners and contributors should be included.

Provide a clear budget for the costs of the proposed activities.

- Time schedule

Provide a concise time schedule in which the proposed activities are planned. This time schedule must match the conditions specified in 3.5. You may assume 1 February 2009 to be the date of the formal granting letter.

- Concise curriculum vitae applicant(s)

It is explicitly not required to submit exhaustive curricula vitae. Please restrict the CV's to those activities relevant for the assessment of the proposal.

- List of key publications

Please list five recent key publications by the applicants dealing with the field pertaining to the application. The publications should give evidence of their qualifications in this field.

### **3.5 Specific conditions**

For this Call, the general criteria in the 'Regeling subsidieverlening NWO' (2007), available on [www.nwo.nl](http://www.nwo.nl) are applicable, if not specified differently in this Call. The output of the project's activities must always be a proposal to be submitted in the subsequent Call for Programmes for Excellence in the BCIA programme which will be opened next year, or directed toward some other (inter)national funding scheme, such as STW, other NWO areas, ZonMw, EU or ESF. The grant applications resulting from a Joint-Forces Network project are proof of the successful completion of a project and must be submitted to a granting organisation within one year from the start of the project (i.e. the date of the formal granting letter).

### **3.6 Submitting an application**

Applications can only be submitted using the Iris electronic application system. To access Iris you need request an access code on the NWO website ([www.iris.nwo.nl](http://www.iris.nwo.nl)). You can also find other information on Iris on this website. For any technical problems please contact the Iris helpdesk.

## 4 Assessment procedure

### 4.1 Procedure

The Call for Proposals for Joint-Forces Network Grants is formulated by the programme committee and published on May 15, 2008. After the deadline on September 2, 2008, applications are tested on technical admissibility, i.e. do applications meet the technical requirements as specified in 3.4. If necessary, applicants will be offered a chance to comply with these requirements on short notice. An international evaluation committee of six independent scientific experts will assess and rank the proposals. The final decision on funding is taken based on the advice of the evaluation committee by the Brain & Cognition Council.

### 4.2 Criteria

In evaluating and ranking proposals, the evaluation committee will use the following criteria, with a certain tolerance for unorthodox features and risk-taking:

- Interdisciplinarity of the proposal and research teams.
- Innovative potential of the proposal and research teams.
- Contribution to main goals of the programme.

### 4.3 Composition of committee

The following researchers participate in the programme committee:

- |                                     |                               |
|-------------------------------------|-------------------------------|
| – Prof. dr. C.C.A.M. Gielen (chair) | Radboud Universiteit Nijmegen |
| – Prof. dr. F.C. Verhulst           | Erasmus MC                    |
| – Prof. Dr. N.F. Ramsey             | Universiteit Utrecht          |
| – Prof. dr. H. Mansvelder           | Vrije Universiteit Amsterdam  |
| – Prof. dr. N.O. Schiller           | Universiteit Leiden           |
| – Prof. dr. A.J. Dijksterhuis       | Radboud Universiteit Nijmegen |
| – Prof. dr. M. van Lambalgen        | Universiteit van Amsterdam    |
| – Dr. L.C. Verbrugge                | Rijksuniversiteit Groningen   |
| – Prof. dr. ing. W.B. Verwey        | Universiteit Twente           |

The composition of the Brain & Cognition Council and the international evaluation committee will be published on the programme website ([www.nwo.nl/bcia](http://www.nwo.nl/bcia)).

# 5 Other information

## 5.1 Contact

– Dr. M.J. van der Kooij

Telephone +31 (0)70 344 08 66, e-mail: [kooij@nwo.nl](mailto:kooij@nwo.nl)

– Mrs. K. Snijders

Telephone +31 (0)70 344 09 33, e-mail: [snijders@nwo.nl](mailto:snijders@nwo.nl)

Further information on the programme and its annual activities, such as symposia and other events, will be announced via the e-mail alert service and on the programme website ([www.nwo.nl/bcia](http://www.nwo.nl/bcia)). You can register for this free monthly e-mail alert service by sending an e-mail with your name and address to [hersenenecognitie@nwo.nl](mailto:hersenenecognitie@nwo.nl).

For more information on the National Initiative Brain & Cognition we refer to the Brain & Cognition website ([www.nwo.nl/hersenenecognitie](http://www.nwo.nl/hersenenecognitie)).

## 6 Annexe: sample timetable

### Additional information

Following this Call for Joint-Forces Network Grants, a Call for Programmes for Excellence is scheduled for 2009. Its budget amounts to 6 M-Euro. Applications should have an explicit focus on integrated aspects of brain and cognition research, and should meet the thematic restrictions. Selection of proposals is further based on scientific excellence of the proposal and the applicants.

To decrease effort overall, applicants will submit a preliminary proposal for the Call for Programmes for Excellence. Only those who submitted a preliminary proposal may submit a full proposal. Obtaining a Joint-Forces Network Grant in the current Call is no requirement for preliminary proposals. Preliminary and full proposals will be assessed and ranked by the international evaluation committee (see chapter 4).

In addition to these general calls, starting from autumn 2008, the programme committee will open a continuous opportunity for smaller grant applications for the interdisciplinary education of master and PhD students. The opening of this call will be announced via the Cognition e-mail alert and on the programme website ([www.nwo.nl/bcia](http://www.nwo.nl/bcia)).

### Timetable

15 May 2008	Call for proposals for Joint-Forces Network Grants
2 September 2008	Deadline submission proposals
October - November 2008	Assessment and ranking by evaluation committee
December 2008	Decision on funding by involved NWO divisions or Brain & Cognition Council
Early January 2009	Applicants are informed on the decision