



R/D Fe/ proceso  
2010.04.26

Bial Foundation  
À. Av. da Siderurgia Nacional  
4745-457 S. Mamede do Coronado Portugal  
Porto, Portugal

Your ref:   
FINAL SCIENTIFIC REPORT FOR PROJECT 161/06

Our ref:

Date: 13.04.2010

Dear Sirs,

This is the final scientific report for Project 161/06 "The relation of mind to body: Psychophysiological studies of the placebo effect" led by Professor Dr. Magne Arve Flaten, with documented expenses relating to the remaining 10% in the grant (4.500 €).

Below is the schedule of the project from the application:

**January 2007: Start running Experiment 1.**  
**Autumn 2007: Finished running Experiment 1. Blood sample analyses. Statistical analyses Experiment 1. Starting running Experiment 2.**  
**Winter 2007: Writing report 1. Spring 2008: Finishing Experiment 2. Submission of report 1. Statistical analyses Experiment 2.**  
**Autumn 2008: Starting Experiment 3. Writing and submitting Experiment 2.**  
**Winter 2008: Finishing Experiment 3. Statistical analyses Experiment 3.**  
**Spring 2009: Performing Experiment 4. Submission of Experiment 3.**  
**Autumn 2009: Finishing Experiment 4. Blood sample analyses. Statistical analyses.**  
**Winter 2009: Writing and submitting Experiment 4.**

The status of Project 161/06 is as follows: Of the four planned experiments, all have been run. The manuscript from the first experiment was published in 2008, the manuscript from the second was published in 2010 (Lyby et al., 2010). The manuscript from the third has been submitted (Aslaksen et al., submitted). The manuscript from the fourth was submitted to *Pain* in April 2010 (Bjørkedal, Aslaksen & Flaten, submitted). The three first experiments are described below. Two review papers have also been published (Flaten, 2009; Flaten, in press).

Furthermore, to receive the final 4500€ that was granted, certified copies of expenses relating to the project are documented, amounting to the sum of NOK 41530,04 (equivalent to € 5127,16).

The studies have been presented at several conferences. The general project of placebo responding and the mind-body problem has also been presented in Norwegian public media and in conferences (see Presentations below). The Bial Foundation has been acknowledged at conferences and in the publications for their support.

#### **Publications from the project:**

**Department of Psychology**  
Faculty of Health Sciences

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### Journal articles

- Aslaksen, P.M. & Flaten, M.A. (2008). The roles of physiological and subjective stress in the effectiveness of a placebo on experimentally induced pain. *Psychosomatic Medicine*, 70, 811-818.
- Flaten, M.A. (2009). Drug effects: agonistic and antagonistic processes. *Scandinavian Journal of Psychology*, 50, 652-659.
- Lyby, P.S., Flaten, M.A., Aslaksen, P.M. (2010) Is fear of pain related to placebo analgesia? *Journal of Psychosomatic Research*, 68, 369-377.
- Aslaksen, P.M., Vambheim, S.M., Bystad, M., Flaten, M.A. (submitted). Gender effects in placebo-analgesia in event-related potentials to painful stimulation. *Psychosomatic Medicine*
- Bjørkedal, E., Aslaksen, P.M., & Flaten, M.A. (submitted). The effect of caffeine as an active placebo on placebo analgesia. *Pain*
- Aslaksen, P.M., Lyby, P.S., Bjørkedal, E. & Flaten, M.A. (in prep.). The effect of gender on placebo analgesia after classical conditioning.

### Chapters in books

- Flaten, M.A. (in press). Expectations of pharmacological treatment and their effects on adjustment. In D.A. Powell (ed.) *Central nervous system control of learned autonomic adjustments*. New York: Research Signpost. ISBN 978-81-308-0391-3

### Presentations

#### 2007

- Aslaksen, P.M. & Flaten, M.A. Expectancy of pain relief reduces stress that mediates placebo analgesia. Meeting of the American Psychosomatic Society, Budapest, 7-10/3.
- Flaten, M.A. The role of gender in pain and placebo analgesia. Meeting of the American Psychosomatic Society, Budapest, 7-10/3.
- Aslaksen, P.M. & Flaten, M.A. Stress and placebo analgesia. Meeting of the American Pain Society, Washington DC, 2-5/5.
- Flaten, M.A. Placebo effekten – finnes den? Lecture, Department of Anaesthesiology, University Hospital of North Norway, 1/6.
- Flaten, M.A. The role of gender in experimental placebo research. Invited symposium, the 10<sup>th</sup> European Congress of Psychology, Praha, Checkia, 3-5/7.
- Flaten, M.A. Placebo analgesia and gender. Invited lecture, Charité Universitätsmedizin Berlin, Berlin, Germany, 6/7.
- Flaten, M.A., Aslaksen, P., Bjørkedal, E., & Lyby, P.S. The DNIC procedure reduces pain and cold sensation. World Institute of Pain Meeting, Budapest, 25-28/9.
- Aslaksen, P. & Flaten, M.A. Heart rate variability and placebo analgesia. World Institute of Pain Meeting, Budapest, 25-28/9.
- Bjørkedal, E. & Flaten, M.A. A review of active placebo. World Institute of Pain Meeting, Budapest, 25-28/9.
- Lyby, P.S., Aslaksen, P. & Flaten, M.A. The relation of fear of pain to placebo analgesia. World Institute of Pain Meeting, Budapest, 25-28/9.
- Aslaksen, P. & Flaten, M.A. Placebo analgesia related to reduced negative emotions. Meeting of the Society for Psychophysiological Research, Savannah, GA, USA, 17-21/10.
- Flaten, M.A. Doping og placebo i idretten. [Doping and placebo in sports]. Verdt å vite, NRK, [The Norwegian Broadcasting Corporation], 8/11.
- Aslaksen, P. & Flaten, M.A. The effect of subject and experimenter gender on pain and placebo analgesia. Symposium on Mechanisms of Placebo/Nocebo Responses, München, 28-30/11.
- Flaten, M.A. & Aslaksen, P. Emotional factors in placebo analgesia. Symposium on Mechanisms of Placebo/Nocebo Responses, München, 28-30/11.

## 2008

- Flaten, M.A. Om placebo-analgesi: Introduksjon og forskning ved UiT. Neurology Dept., University Hospital of North Norway (UNN), 3/1.
- Flaten, M.A. Betydinga av placebo analgesi. Norwegian Association for the study of Pain, Rikshospitalet, Oslo, 10/1.
- Flaten, M.A. Om placebo-effekten og korleis den kan studerast. Institutt for Biologisk og Medisinsk Psykologi, University of Bergen, 23.1.
- Flaten, M.A. Smerte og placebo analgesi. The Pain Clinic, St. Olavs Sykehus, Trondheim, 25/1.
- Flaten, M.A. Smerte og kjønn. Schrødingers Katt, Norwegian Broadcasting Cooperation, 14/2.
- Aslaksen, P.M. & Flaten, M.A. The relation of stress and heart rate variability to placebo analgesia. *American Pain Society meeting*, Tampa, FL, USA, 7-10/5.
- Flaten, M.A. The placebo effect exists, but does it have any consequences for health? Invited lecture at Tulsa University, Tulsa, OK, USA, 13/5.
- Aslaksen, P.M., Lyby, P.S., Bjørkedal, E. & Flaten, M.A. The effect of gender on placebo analgesia after classical conditioning. Meeting of the *International Association for the Study of Pain*, Glasgow, 17-22/8.
- Bjørkedal, E. & Flaten, M.A. A review of the effect of active placebo compared to placebo. Meeting of the *International Association for the Study of Pain*, Glasgow, 17-22/8.
- Lyby, P.S., Bjørkedal, E., Aslaksen, P.M., & Flaten, M.A. Is there a placebo responder? Meeting of the *International Association for the Study of Pain*, Glasgow, 17-22/8.
- Flaten, M.A. The role of gender in placebo analgesia. Meeting of the *International College of Behavioral Medicine*, Tokyo, Japan, 27-30/8.
- Flaten, M.A. Kva er placebo-effekten? *Norsk Psykiatrisk Forening*, Oslo, 17/9.
- Aslaksen, P.M. & Flaten, M.A. An ERP study of placebo analgesia. Meeting of the *Society for Psychophysiological Research*, Austin, TX, USA, 1-5/10.
- Åsli, O. & Flaten, M.A. Fear potentiated startle after delay and trace aversive classical conditioning. Meeting of the *Society for Psychophysiological Research*, Austin, TX, USA, 1-5/10.
- Flaten, M.A. The psychology of pain. Invitert foredrag ved Institutt for Klinisk Odontologi, UiT, 15/10.
- Flaten, M.A. Om placebo- og nocebo-effektane. Fagdag ved *Klinisk Forskingsenter*, UNN, Tromsø, 5/12.

## 2009

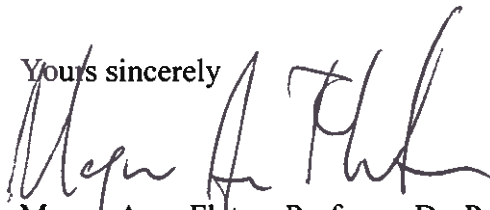
- Flaten, M.A. Neurobiology of placebo analgesia. Annual meeting of the *Norwegian Association for the Study of Pain*, Rikshospitalet, Oslo, 8-9/1.
- Aslaksen, P.M. & Flaten, M.A. Event-related potentials to painful stimuli are reduced during placebo analgesia. Meeting of the *American Psychosomatic Society*, Chicago, IL, USA, 4-7/3.
- Flaten, M.A. The role of experimenter gender in placebo analgesia. Meeting of *Deutsche Psychosomatische Gesellschaft*, Mainz, Germany, 18-21/3.
- Aslaksen, P.M., & Flaten, M.A. A methodological problem in pain research and how to deal with it. *11<sup>th</sup> European Congress of Psychology*, Oslo, 7-10/7.
- Flaten, M.A. & Enck, P. Symposium on the placebo effect across different response systems. *11<sup>th</sup> European Congress of Psychology*, Oslo, 7-10/7.
- Flaten, M.A. Truth and deception in the study of pain. University on Saturday, Tromsø, 19/9.

- Flaten, M.A. How do we know that the placebo effect exists? Invited lecture at Wake Forest University, Winston-Salem, NC, USA, 14/10.
- Bjørkedal, E. & Flaten, M.A. Does placebo analgesia modulate diffuse noxious inhibitory control. Meeting of *the Society for Neuroscience*, Chicago, IL, USA, 17-21/10.
- Lyby, P.S., Aslaksen, P.M., Vambheim, S.M., Bystad, M., Thorvaldsen, J., Solbakken, L., Nermo, T., & Flaten, M.A. Placebo analgesia: Reduced event-related potentials to painful stimulation related to decrease in stress. Meeting of *the Society for Neuroscience*, Chicago, IL, USA, 17-21/10.
- Aslaksen, P.M., Lyby, P.S., Vambheim, S.M., Bystad, M., Thorvaldsen, J., Solbakken, L., & Flaten, M.A. Objective measurement of placebo analgesia by event-related potentials. Meeting of *the Society for Psychophysiological Research*, Berlin, 21-25/10.
- Bjørkedal, E. & Flaten, M.A. The role of diffuse noxious inhibitory control in placebo analgesia. Similar mechanisms? Meeting of *the Society for Psychophysiological Research*, Berlin, 21-25/10.
- Flaten, M.A. Is the placebo effect underestimated in health care? Invited lecture at the 30-years anniversary, *Sogn og Fjordane College*, Førde, 5-6/11.
- Flaten, M.A. Negative affect as a mediator of placebo analgesia. Placebo conference, München, Germany, 27-28/11.

2010

- Flaten, M.A. Kva er det som verkar i behandling? (What is the active ingredient in treatment?) *Academia Borealis*, Tromsø, 11/2.
- Flaten, M.A. Placebo analgesia. A central topic in psychosomatic medicine. Meeting of *the American Psychosomatic Society*, Portland, OR, 10-14/3.
- Flaten, M.A. Placebo analgesia. Psychophysiological Mechanisms. *8<sup>th</sup> Bial Symposium*, Porto, Portugal, 7-10/4.
- Flaten, M.A. Mechanisms in placebo analgesic responding. Meeting of *the American Pain Society*, Baltimore, MD, 6-8/5.

Yours sincerely



Magne Arve Flaten, Professor Dr. Psychol.,  
Head of Department



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Administrative Executive Officer  
The Faculty of Health Sciences

Tromsø, 13<sup>th</sup> April 2010



Institutt  
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