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RESEARCH STATEMENT

Last update:
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I am interested in the influence of motivational and affective processes on cognitive control and effort. I study this in humans using lab reaction time tasks in combination with a wide variety of neuroimaging and physiological tools. My background in electronic engineering has enabled me to gain expertise in using many different techniques over the last ten years. These include EEG, (f)MRI, pupillometry, skin conductance, facial EMG and cardiovascular measures of effort. I am also interested in developing new methods to advance our field. For example, our lab has developed an online tool to measure reaction times (QRTEngine), and we recently developed a new method to measure task-evoked cardiac effort. I am also main author on an introduction book to E-Prime® (2nd edition published in 2019), a popular software package to program psychological experiments (see below).

An overview of our current research projects is available on [my lab website](#).

Fields: Psychophysiology, Cognitive Neuroscience, Affective Neuroscience, Psychology

PROFESSIONAL CAREER

- 2015 – present Principal Investigator, Affect Motivation & Action lab, Leiden Institute for Brain and Cognition, The Netherlands
- 2015 – present Assistant Professor (tenured), Cognitive Psychology Unit, Institute of Psychology, Leiden University, The Netherlands
- 2018 Visiting Researcher, Motivation Brain Behavior lab, Brain & Spine Institute, Paris, France
- 2014 Visiting Researcher, Department of Psychiatry and Mental Health, University of Cape Town, South Africa
- 2012 – 2015 Post-doc / Assistant Professor (70% research), Cognitive Psychology Unit, Institute of Psychology, Leiden University, The Netherlands
- 2007 – 2012 PhD student Cognitive Neuroscience cum laude (highest distinction), Cognitive Psychology Unit, Institute of Psychology, Leiden University, The Netherlands

EDUCATION

- 2005 – 2007 MPhil Cognitive Neuroscience cum laude (highest distinction), Leiden University, The Netherlands
- 2002 – 2007 BA Philosophy of Psychology (average grade > 8 out of 10), Leiden University, The Netherlands
- 2002 – 2005 BSc Psychology cum laude (highest distinction), Leiden University, The Netherlands

SUPERVISION OF PHD STUDENTS

- 2013 – 2019 Janna Marie Bas-Hoogendam: Profiling neural endophenotypes of social anxiety using structural and function MRI
- 2012 – 2016 Mikael Kowal: Influence of cannabis on creativity and cognitive control

SUPERVISION OF POSTDOCS

- 2019 – present Dr. Floor van Meer: collaborative research project "Work hard, play hard: Neuropsychological correlates and behavioural implications of hedonic compensation" with Lotte van Dillen and Wilhelm Hofmann

MEMBER OF PHD COMMITTEES

- 2013 – present Eefje Rondeel (2013; Radboud University Nijmegen); Rudy van den Brink (2017; Leiden University); Lien De Saedeleer (2017; Ghent University); Hester Ruigendijk (2018; Free University Amsterdam)

TEACHING

- 2011 – present Instructor and course coordinator Research Master course "Experimentation I: Programming Psychological Experiments"
- 2012 – present Instructor and course coordinator Bachelor 3rd year course "Cognitive Neuroscience"
- 2008 – present Supervision of Bachelor theses
- 2011 – present Supervision of Master theses

DOCTORAL AND POST-DOCTORAL TRAINING

- 2015 – present Workshops "E-Prime for researchers" (basic and advanced), Leiden University, The Netherlands.
- 2013,2014 Workshops "Programming Psychological Experiments in E-Prime". Two-day workshops (basic and advanced) at Ghent University, Belgium

REVIEWING AND EDITORSHIPS

- 2019 Guest Editor Special Issue "Affect and Cognitive Control" for *International Journal of Psychophysiology*
- 2018 – present Consulting Editor for *Social, Cognitive and Affective Neuroscience*
- 2017 – present Consulting Editor for *Cognition & Emotion*
- 2012 – present Reviewer for various professional journals, including: *Acta Psychologica*; *Advances in Cognitive Psychology*; *Anxiety, Stress & Coping*; *Biological Psychology*; *Cerebral Cortex*; *Cognition*; *Cognition & Emotion*; *Cognitive, Affective, and Behavioral Neuroscience*; *Emotion*; *Experimental Brain Research*; *Frontiers in Behavioral Neuroscience*; *Frontiers in Psychology*; *International Journal of Psychophysiology*; *Journal of Cognitive Neuroscience*; *Journal of Experimental Psychology: Learning, Memory, and Cognition*; *Memory and Cognition*; *Motivation and Emotion*;

PlosONE; Psychological Research; Psychonomic Bulletin & Review; Psychophysiology; Quarterly Journal of Experimental Psychology; Scientific Reports.

GRANTS AND AWARDS

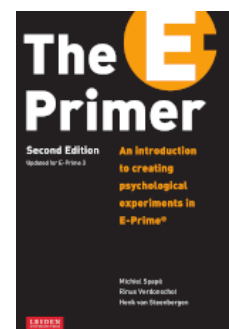
- 2018 Open Research Area funding “Work hard, play hard. Neuropsychological correlates and behavioural implications of hedonic compensation” (co-PI, with Lotte van Dillen and Wilhelm Hofmann; 550,000 euros)
- 2018 Internal funding collaborative PET Dopamine imaging project (co-PI; 100,000 euros)
- 2017 Leiden University Fund / Gratama Fund (25,000 euros)
- 2014 Travel grant European and South African Research Network in Anxiety Disorders (EUSARNAD) (2,100 euros)
- 2012 Best presentation award NWO BCIA-Programmes for Excellence meeting, Utrecht
- 2011 Best poster award NIMH IBSC Conference on “How do Executive Function and Emotion Interact?”, Boulder, Colorado, USA
- 2011 NIMH IBSC, Travel grant to visit annual conference in Boulder, USA
- 2009 Leids Universiteits Fonds (LUF), Travel grant to visit SAN Conference New York

OTHER PROFESSIONAL ACTIVITIES

- 2017 – 2018 Co-organizer Conference European Society for Cognitive and Affective Neuroscience (ESCAN) 2018, Leiden, The Netherlands
- 2017 – present Coordinator working group Developing Advanced Neuroscientific Methods, Faculty of Social and Behavioral Sciences, Leiden University The Netherlands
- 2016 – present Member of Steering Committee High Performance Computing Centre, Leiden University, The Netherlands
- 2016 – present Member of ICT Committee Faculty of Social and Behavioral Sciences, Leiden University, The Netherlands
- 2016 Co-organizer Conference Consortium for European Research on Emotion (CERE) 2016, Leiden, The Netherlands
- 2014 – present Key-user and coordinator high performance computer cluster, Faculty of Social and Behavioral Sciences, Leiden University, The Netherlands
- 2008 – 2010 Member of Dutch Graduate Research Institute Cognitive Psychology EPOS Curriculum committee
- 2008 – 2010 Member of Dutch Psychonomic Society (NVP) Web committee

ACADEMIC BOOKS

- 2019 Spapé M.M.*, Verdonschot, R.G., & **van Steenbergen, H.*** (2019) *The E-Primer: An introduction to creating psychological experiments in E-Prime; 2nd edition updated for E-Prime 3*. Leiden: Leiden University Press.



Spapé M.M.* , Verdonschot, R.G., Van Dantzig, S., & **van Steenbergen, H.*** (2014) *The E-Primer: An introduction to creating psychological experiments in E-Prime*. Leiden: Leiden University Press

*) Main authors contributing equally

E-Prime, the software suite by Psychology Software Tools, is used for designing, developing and running custom psychological experiments. The E-Primer is the first introductory textbook to this software package. Aimed at students and researchers alike, many tutorials are provided to teach the reader how to develop experiments typical for the broad fields of psychological and cognitive science. Apart from explaining the basic structure of E-Prime and describing how it fits into daily scientific practice, this book also offers an introduction into programming using E-Prime's own E-Basic language. See also: www.e-primer.com

INTERNATIONAL TALKS

Over the past ten years I have presented my work at international conferences (typically 1 or 2 times a year), including: Association for Psychological Science (APS) Convention; Consortium of European Research on Emotion (CERE) Conference; European Society for Cognitive and Affective Neuroscience (ESCAN) conference; European Society for Cognitive Psychology (ESCoP) Conference; International Convention of Psychological Science (ICPS); International Society for Research on Emotion (ISRE) Conference; Society for Psychophysiological Research (SPR) Annual Meeting; Society for the Study of Motivation (SSM) Annual Meeting.

In addition I have given invited talks at several institutes, including: Donders Institute, Nijmegen, The Netherlands; Ghent University, Belgium; Radboud University, Nijmegen, The Netherlands; University of Cape Town, South Africa; University of Amsterdam, The Netherlands; University of Wuerzburg, Germany.

PUBLICATION TRACK RECORD

Number of publications: 47

Number of first-author publications: 22

Number of senior-author publications (PI, last and corresponding author): 4

For more details, see [my Google Scholar profile](#)

LIST OF PUBLICATIONS

1. Langeslag, S.J.E.* & **van Steenbergen, H.*** (in press). [Cognitive control in romantic love: The roles of infatuation and attachment in interference and adaptive cognitive control](#). *Cognition and Emotion*.
2. Bas-Hoogendam, J.M., **van Steenbergen, H.**, Tissier, R.L.M., van der Wee, N.J.A., & Westenberg, P.M. (in press). [Altered neurobiological processing of unintentional social norm violations: a multiplex, multigenerational fMRI study on social anxiety endophenotypes](#). *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging*.
3. **van Steenbergen, H.***, Eikemo, M.* , & Leknes, S. (in press). [The role of the opioid system in decision making and cognitive control: A review](#). *Cognitive, Affective, & Behavioral Neuroscience*. Preprint: <http://doi.org/10.17605/OSF.IO/WS9DR>
4. Spapé M.M.* , Verdonschot, R.G., & **van Steenbergen, H.*** (2019) *The E-Primer: An introduction to creating psychological experiments in E-Prime. Second edition updated for E-Prime 3*. Leiden: Leiden University Press. www.e-primer.com

5. Warren, C.M., Tona, K.D., Ouwerkerk, L., van Paridon, J., Poletiek, F., **van Steenbergen, H.**, Bosch, J.A., & Nieuwenhuis, S. (2019). [The neuromodulatory and hormonal effects of transcutaneous vagus nerve stimulation as evidenced by salivary alpha amylase, salivary cortisol, pupil diameter, and the P3 event-related potential](#). *Brain Stimulation*, *12*, 635-642.
6. van der Wel, P. & **van Steenbergen, H.** (2018). [Pupil dilation as an index of effort in cognitive control tasks: A review](#). *Psychonomic Bulletin & Review*, *25*, 2005-2015.
7. Bas-Hoogendam, J.M., **van Steenbergen, H.**, Tissier, R.L.M., Houwing-Duistermaat, J.J., Westenberg, P.M., & van der Wee, N.J.A. (2018). [Subcortical brain volumes, cortical thickness and cortical surface area in families genetically enriched for social anxiety disorder – a multiplex multigenerational neuroimaging study](#). *EBioMedicine*, *36*, 410-428.
8. Bas-Hoogendam, J.M., Harrewijn, A., Tissier, R.L.M., van der Molen, M., **van Steenbergen, H.**, van Vliet, I., Reichart, C., Houwing-Duistermaat, J., Slagboom, P.E., van der Wee, N., & Westenberg, P.M. (2018). [The Leiden Family Lab study on Social Anxiety Disorder: a multiplex, multigenerational family study on neurocognitive endophenotypes](#). *International Journal of Methods in Psychiatric Research*, *27*, e1616.
9. van Dillen, L.F.* & **van Steenbergen, H.*** (2018) [Tuning down the hedonic brain: Working memory load reduces neural responses to high-calorie food images in the nucleus accumbens](#). *Cognitive, Affective, & Behavioral Neuroscience*, *18*, 447-459.
10. Spruit, I.M., Wilderjans, T.M., & **van Steenbergen, H.** (2018). [Heart work after errors: Behavioral adjustment following error commission involves cardiac effort](#). *Cognitive, Affective, & Behavioral Neuroscience*, *18*, 375-388.
11. Bas-Hoogendam, J.M., **van Steenbergen, H.**, Kreuk, T., van der Wee, N.J.A., & Westenberg, P.M. (2018). [Not intended, still embarrassed: social anxiety modulates the experience of unintentional social norm violations](#). *European Psychiatry*, *52*, 15-21.
12. Bas-Hoogendam, J.M.* , **van Steenbergen, H.*** , Pannekoek, J.N., Fouche, J.-P., Lochner, C., Hattingh, C.J., Roelofs, K., Furmark, T., Månsson, K.N.T., Frick, A., Engman, J., Boraxbekk, C.-J., Carlbring, P., Andersson, G., Fredrikson, M., Straube, T., Peterburs, J., Klumpp, H., Phan, K.L., Cremers, H.R., Stein, D.J., & van der Wee, N.J.A. (2017). [Voxel-based morphometry multi-center mega-analysis of brain structure in social anxiety disorder](#). *NeuroImage: Clinical*, *16*, 678-688.
13. van Peer, J.M.* , Enter, D.* , **van Steenbergen, H.**, Spinhoven, P., & Roelofs, K. (2017). [Exogenous testosterone affects early threat processing in socially anxious and healthy women](#). *Biological Psychology*, *129*, 82-89.
14. Kuipers, M., Richter, M., Scheepers, D., Immink, M., Sjak-Shie, E., & **van Steenbergen, H.** (2017). [How effortful is cognitive control? Insights from a novel method measuring single-trial evoked beta-adrenergic cardiac reactivity](#). *International Journal of Psychophysiology*, *119*, 87-92.
15. **van Steenbergen, H.**, Watson, P., Wiers, R.W., Hommel, B., & de Wit, S. (2017). [Dissociable corticostriatal circuits underlie goal-directed versus cue-elicited habitual food seeking after satiation: Evidence from a multimodal MRI study](#). *European Journal of Neuroscience*, *46*, 1815–1827.
16. **van Steenbergen, H.**, Warren, C.M., Kühn, S., de Wit, S., Wiers, R.W., & Hommel, B. (2017). [Representational precision in visual cortex reveals outcome encoding and reward modulation during action preparation](#). *NeuroImage*, *157*, 415-428.
17. Bas-Hoogendam, J.M., **van Steenbergen, H.**, Kreuk, T., van der Wee, N.J.A., & Westenberg, P.M. (2017). [How embarrassing! The behavioral and neural correlates of processing social norm violations](#). *PLoS ONE*, *12*, e0176326.
18. **van Steenbergen, H.**, Weissman, D., Stein, D.J., Malcolm-Smith, S., & van Honk, J. (2017). [More pain, more gain: Blocking the opioid system boosts adaptive cognitive control](#). *Psychoneuroendocrinology*, *80*, 99-103.
19. **van Steenbergen, H.*** & Bocanegra, B.R.* (2016). [Promises and pitfalls of web-based experimentation in the advance of replicable psychological science. A reply to Plant](#). *Behavior Research Methods*, *48*, 1713–1717.

20. Kowal, M.A., **van Steenbergen, H.**, Colzato, L.C., Hazekamp, A., van der Wee, N., Manai, M., Durieux, J., & Hommel, B. (2015). [Dose-dependent effects of cannabis on the neural correlates of error monitoring in regular cannabis users](#). *European Neuropsychopharmacology*, 25, 1943-1953.
21. Watson, P., **van Steenbergen, H.**, de Wit, S., Wiers, R.W., & Hommel, B. (2015). [Limits of action-outcome acquisition](#). *Brain Research*, 1626, 45-53.
22. Barnhoorn, J., Haasnoot, E., Bocanegra, B.R., & **van Steenbergen, H.** (2015). [QRTEngine: An easy solution for running online reaction time experiments using Qualtrics](#). *Behavior Research Methods*, 47, 918-929. www.qrtengine.com
23. Rondeel, E.W.M., **van Steenbergen, H.**, Holland, R.W., & van Knippenberg, A. (2015). [A closer look at cognitive control: Differences in resource allocation during updating, inhibition and switching as revealed by pupillometry](#). *Frontiers in Human Neuroscience*, 9:494.
24. **van Steenbergen, H.**, Band, G.P.H., & Hommel, B. (2015). [Does conflict help or hurt cognitive control? Initial evidence for an inverted U-shape relationship between perceived task difficulty and conflict adaptation](#). *Frontiers in Psychology*, 6:974.
25. Bas-Hoogendam, J.M.*, Andela, C.D.*, van der Werff, S.J.A., Pannekoek, N., **van Steenbergen, H.**, Meijer, O.C., van Buchem, M.A., Rombouts, S.A.R.B., van der Mast, R.C., Biermasz, N.R., van der Wee, N.J.A., & Pereira, A.M. (2015). [Altered neural processing of emotional faces in remitted Cushing's disease](#). *Psychoneuroendocrinology*, 59, 134-146.
26. **van Steenbergen, H.**, Band, G.P.H., Hommel, B., Rombouts, S.A.R.B., & Nieuwenhuis, S. (2015). [Hedonic hotspots regulate cingulate-driven adaptation to cognitive demands](#). *Cerebral Cortex*, 25, 1746-1756.
27. **van Steenbergen, H.**, Haasnoot, E., Bocanegra, B.R., Berretty, E.W., & Hommel, B. (2015). [Practice explains abolished behavioural adaptation after human dorsal anterior cingulate cortex lesions](#). *Scientific Reports*, 5:9721.
28. Kowal, M.A., Hazekamp, A., Colzato, L.C., **van Steenbergen, H.**, van der Wee, N., Durieux, J., Manai, M., & Hommel, B. (2015). [Cannabis and creativity: highly potent cannabis impairs divergent thinking in regular cannabis users](#). *Psychopharmacology*, 232, 1123-1134.
29. **van Steenbergen, H.** (2015). [Affective modulation of cognitive control: A biobehavioral perspective](#). In G. Gendolla, M. Tops, S. Koole (Eds.) *Handbook of Biobehavioral Approaches to Self-Regulation* (pp. 89-107). Springer.
30. Spapé M.M.*, Verdonschot, R.G., Van Dantzig, S., & **van Steenbergen, H.*** (2014) [The E-Primer: An introduction to creating psychological experiments in E-Prime](#). Leiden: Leiden University Press. www.e-primer.com
31. Hengstler, M., Holland, R.W., **van Steenbergen, H.**, van Knippenberg, A. (2014). [The influence of approach-avoidance motivational orientation on conflict adaptation](#). *Cognitive, Affective, & Behavioral Neuroscience*, 14, 548-560.
32. **van Steenbergen, H.**, Langeslag, S.J.E., Band, G.P.H., & Hommel, B. (2014). [Reduced cognitive control in passionate lovers](#). *Motivation and Emotion*, 38, 444-450.
33. Brown, S.B.R.E, **van Steenbergen, H.**, Kedar, T., Nieuwenhuis, S. (2014). [Effects of arousal on cognitive control: Empirical tests of the conflict-modulated Hebbian-learning hypothesis](#). *Frontiers in Human Neuroscience*, 8:23.
34. **van Steenbergen, H.** & Band, G.P.H. (2013). [Pupil dilation in the Simon task as a marker of conflict processing](#). *Frontiers in Human Neuroscience*, 7:215.
35. Bruyneel, L., **van Steenbergen, H.**, Band, G.P.H., Hommel, B., De Raedt, R., & Koster, E.H.W. (2013). [Happy but still focused: Failures to find evidence for a mood-induced widening of visual attention](#). *Psychological Research*, 77, 320-332.
36. Kowal, M.A., Hazekamp, A., Colzato, L.C., **van Steenbergen, H.**, & Hommel, B. (2013). [Modulation of cognitive and emotional processing by cannabidiol: the role of the anterior cingulate cortex](#). *Frontiers in Human Neuroscience*, 7:147.

37. de Laat, S., Hengstler, M., Holland, R.W., **van Steenbergen, H.**, & van Knippenberg, A. (2013). Dat kan niet goet zijn: Domein-generiek conflict verhoogt cognitieve controle. In R. Dotsch, E.K. Papies, T.M. Pronk, B.T. Rutjens, J. van der Toorn, & E.G. Ufkes (Eds.), *Jaarboek sociale psychologie 2013* (pp. 121-124). Groningen: Aspo Pers.
38. **van Steenbergen, H.** (2012) [*The Drive to Control: How Affect and Motivation Regulate Cognitive Control \[Dissertation\]*](#). Enschede: Ipskamp Drukkers B.V.
39. **van Steenbergen, H.**, Band, G.P.H., & Hommel, B. (2012). [*Reward valence modulates conflict-driven attentional adaptation: Electrophysiological evidence*](#). *Biological Psychology*, *90*, 234-241.
40. **van Steenbergen, H.**, Booij, L., Band, G.P.H., Hommel, B., & van der Does, A.J.W. (2012). [*Affective regulation of cognitive-control adjustments in remitted depressive patients after acute tryptophan depletion*](#). *Cognitive, Affective, & Behavioral Neuroscience*, *12*, 280-286.
41. Brown, S.B.R.E., **van Steenbergen, H.**, Band, G.P.H., de Rover, M., & Nieuwenhuis, S. (2012). [*Functional significance of the emotion-related late positive potential*](#), *Frontiers in Human Neuroscience*, *6*:33.
42. Jepma, M., Verdonschot, R.G., **van Steenbergen, H.**, Rombouts, S.A., & Nieuwenhuis, S. (2012). [*Neural mechanisms underlying the induction and relief of perceptual curiosity*](#). *Frontiers in Behavioral Neuroscience*, *6*:5.
43. Hengstler, M., Holland, R.W., **van Steenbergen, H.**, & van Knippenberg, A. (2012). Conflict Adaptatie Gereguleerd: De Invloed van Lichaamsfeedback op Conflict Adaptatie. In N. van de Ven, M. Baas, L. van Dillen, D. Lakens, A.M. Lokhorst, & M. Strick (Eds.) *Jaarboek Sociale Psychologie 2011*, 75-86. Groningen: ASPO Pers.
44. **van Steenbergen, H.**, Band, G.P.H., & Hommel, B. (2011). [*Threat but not arousal narrows attention: evidence from pupil dilation and saccade control*](#). *Frontiers in Psychology*, *2*: 281.
45. **van Steenbergen, H.**, Band, G.P.H., & Hommel, B. (2010). [*In the mood for adaptation: How affect regulates conflict-driven control*](#). *Psychological Science*, *21*, 1629-1634.
46. **van Steenbergen, H.**, Band, G.P.H., & Hommel, B. (2009). [*Reward counteracts conflict adaptation: Evidence for a role of affect in executive control*](#). *Psychological Science*, *20*, 1473-1477.
47. Band, G.P.H., **van Steenbergen, H.**, Ridderinkhof, K.R., Falkenstein, M., & Hommel, B. (2009). [*Action-effect negativity: Irrelevant action effects are monitored like relevant feedback*](#). *Biological Psychology*, *82*, 211-218.