

Erik Marsja | Curriculum Vitae

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Positions

Jan 2022 -

Nov 2022 **Researcher**

People in the transport system, Swedish National Road and Transport Research Institute, Linköping, Sweden. Working 80% of a full-time position.

Jan 2022 -

Nov 2021 **Postdoctoral Researcher**

Disability Research Division, Department of Behavioural Sciences and Learning (IBL), Linköping University.

Analyzing data from a large database (i.e., n200) and preparing manuscripts in the field of cognitive hearing science. Conducting qualitative research and about digitalization, listening effort, and work-life (see Funding and Grants). Working 20% of a full-time position.

Jan 2019 -

Dec 2021 **Postdoctoral Researcher**

Disability Research Division, Department of Behavioural Sciences and Learning (IBL), Linköping University.

Analyzing data from a large database (i.e., n200) and preparing manuscripts in the field of cognitive hearing science. Responsible for arranging the monthly HEAD seminar series (august 2020 - august 2021). This includes contacting national, and international, researchers, booking flights, hotels, as well as setting up equipment for streaming the seminars online.

Aug 2018 -

Oct 2018 **Postdoctoral Research Assistant**

Department of Psychology, Umeå University.

Project: How does humans perception of safety differ in a broken communication chain compared to an unbroken communication chain?

Literature study commissioned by SOS Alarm, an emergency agency (e.g., public-safety answering point), with the results disseminating in a report.

Oct 2012 -

June 2018 **PhD Student and Teaching Assistant**

Department of Psychology, Umeå University.

Planning of studies, programming of experiments, literature search, data analysis, scientific communication, and many more. See the section "Teaching responsibilities" for an overview of my pedagogical experience.

June 2011 **Undergrad. Research Assistant**

Department of Psychology, Umeå University.

Recruitment of participants and data collection, commenting on later manuscript that ended up in a published paper (see publication 2014).

Degrees and Titles

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|------|--|
| 2017 | Ph.D. in Psychology |
| | Department of Psychology, Umeå University. Thesis title: Attention capture by sudden and unexpected changes: a multisensory perspective. Available from the DiVA Database: http://umu.diva-portal.org/smash/record.jsf?pid=diva2 Supervisors: Associate Professor Jessica K. Ljungberg, Professor Gregory Neely, & Dr. Patrik Hansson |
| 2012 | M.Sc. in Cognitive Science |
| | Department of Psychology, Umeå University. Thesis title: Attention Capture: The Impact of Change in Spatial Sound Source on Behavior. Supervisor: Associate Professor Jessica K. Ljungberg |
| 2011 | B.Sc. in Cognitive Science |
| | Department of Psychology, Umeå University. Thesis title: Attention Capture: Studying the Distracting Effect of One's Own Name. Available from DiVA Database: http://urn.kb.se/resolve?urn=urn:nbn:se:umu:diva-46607 . Supervisor: Associate Professor Jessica K. Ljungberg |

Publications

Accepted/In press/Published

Stenbäck, V., Marsja, E., Ellis, R., & Rönnberg, J. (2022). Relationships between objective and subjective outcome measures of speech recognition in noise. *International Journal of Audiology*. <https://doi.org/10.1080/14992027.2022.2047232> (PDF)

Marsja, E., Stenbäck, V., Moradi, S., Danielsson, H., & Rönnberg, J. (2022). Is Having Hearing Loss Fundamentally different? Multi-group structural equation modeling of the effect of cognitive functioning on speech identification. *Ear and Hearing*. <https://doi.org/10.1097/AUD.0000000000001196> (PDF)

Stenbäck, V., Marsja, E., Hällgren, M., Lyxell, B., & Larsby, B. (2021). The Contribution of Age, Working Memory Capacity, and Inhibitory Control on Speech Recognition in Noise in Young and Older Adult Listeners. *Journal of Speech, Language, and Hearing Research*, 64(11), 4513–4523. https://doi.org/10.1044/2021_JSLHR-20-00251

Rosa, E., Marsja, E., & Ljungberg, J. K. (2020). Exploring Residual Capacity: The Effectiveness of a Vibrotactile Warning During Increasing Levels of Mental Workload in Simulated Flight Tasks. *Aviation Psychology and Applied Human Factors*, 10(1), 13–23. <https://doi.org/10.1027/2192-0923/a000180>

Marsja, E., Marsh, J.E., Hansson, P., & Neely, G. (2019). Examining the Role of Spatial Changes in Bimodal and Uni-Modal To-Be-Ignored Stimuli and How They Affect Short-Term Memory Processes. *Frontiers In Psychology*. <https://doi.org/10.3389/fpsyg.2019.00299> (PDF)

Marsja, E., Neely, G., & Ljungberg, K.J. (2018). Investigating Deviance Distraction and the Impact of the Modality of the To-Be-Ignored Stimuli. *Experimental Psychology*, 65(2), 61–70. <http://doi.org/10.1027/1618-3169/a000390> (R-Script & data available: <https://osf.io/amd2h/>.)

Ljungberg, K. J., Parmentier, F. B. R., Jones, D. M., **Marsja, E., & Neely, G. (2014).** “What’s in a name?” “No more than when it’s mine own”. Evidence from auditory oddball distraction. *Acta Psychologica*, 150C, 161–166. <http://dx.doi.org/10.1016/j.actpsy.2014.05.009>

In Preparation/Submitted/Under Revision

Stenbäck, V., **Marsja, E., Hällgren, M., Lyxell, B., & Larsby, B. (Submitted).** Informational masking and listening effort in speech-recognition-in-noise – the role of working memory capacity and inhibitory control in older adults with and without hearing impairment.

Marsja, E., Danielsson, H., & Stenbäck, V. (Manuscript in Preparation). The Contribution of Cognition to Speech in Noise: Informational vs. Energetic Maskers.

Marsja, E. Elbe, P., & Sörman, D.E. (Manuscript in Preparation). Examining the Factor Structure of the Swedish Translation of the Attentional Control Scale and its relation to objective measures of attention.

Marsh, J.E., Vachon, F., Sörqvist, P., **Marsja, E., Röer J.P., & Ljungberg, K.J. (Manuscript in Preparation).** Irrelevant vibro-tactile stimuli produce a changing-state effect: Implications for theories of interference in short-term memory.

Marsja, E., Neely, G., & Ljungberg, K.J (Manuscript in Preparation). Deviance distraction in the auditory and tactile modalities after repeated exposure: differential aspects of tactile and auditory deviants.

Conference Presentations

Marsja, E., Danielsson, H., Stenbäck, V., Moradi, S., Rönnberg, J. (2019, November). Examining how Cognitive Functioning, Aging, and Hearing Loss, Affect Speech-in-Noise Performance. Aging and Speech Communication conference, Tampa, Florida, USA. **Poster.**

Stenbäck, V., **Marsja, E., Danielsson, H., Rönnberg, J. (2019, November).** Logical and Auditory Inference Making: Performance in the HINT in normally-hearing and hearing-impaired listeners. Aging and Speech Communication conference, Tampa, Florida, USA. **Poster.**

Bampouni, E., **Marsja, E., Sörman, D.E., & Ljungberg, K.J (2019, November).** Do Action Gamers Have Enhanced Visual Search Skills? a Realistic Task Approach. The 15th SweCog conference of the Swedish Cognitive Science Society, Umeå, Sweden. **Poster.**

Marsja, E., Danielsson, H., Stenbäck, V., Moradi, S., & Rönnberg, J. (2019, June). Examining Relationship Amongst Cognition, Hearing Loss, Age, & Speech in Noise. Cognitive Hearing Science for Communication, Linköping, Sweden. **Poster.**

Stenbäck, V., Moradi, S., **Marsja, E., Danielsson, H., & Rönnberg, J. (2019, June).** Logical and auditory inference-making in normally-hearing and hearing-impaired listeners. Cognitive Hearing Science for Communication, Linköping, Sweden. **Poster.**

Marsja, E., Marsh, J.E., Neely G., Hansson P., & Ljungberg K.J. (2017, April). Domain-general or domain-specificity of the short-term memory: insights from a multisensory distraction paradigm. Re-thinking the Senses Spring School, Dubrovnik, Croatia. **Poster.**

Marsja, E., Marsh, J.E., Neely G., Hansson P., & Ljungberg K.J. (2016, September). Do Spatial Changes in Sounds and Vibrations Affect Visuo-spatial and Verbal Short-Term Memory? Attention and Control: Insights from Distraction, Workshop, University of Central Lancashire, Preston, UK. **Invited presentation.**

Marsja, E., Marsh, J.E., Neely G., Hansson P., & Ljungberg K.J. (2016, June). Spatial Change in Multisensory Distractors Impact on Verbal and Spatial Short Term Memory. International Multisensory Research Forum 17th annual meeting, Suzhou, CHN. **Oral presentation.**

Marsja, E., Neely G., Ma, L., & Ljungberg K.J., (2015, August). Cross-modality matches of intensity and attention capture dimensions of auditory and vibrotactile stimuli. Fechner Day 2015. The 31st Annual Meeting of the International Society for Psychophysics, Québec, CA. **Poster.**

Marsja, E., Neely, G., Parmentier, F.B.R., & Ljungberg, K.J. (2014, October) Deviance Distraction Is Contingent on Stimuli Being Presented within the Same Modality. Psychonomic Society's 55th Annual Meeting. Long Beach, CA, USA. **Poster.**

Ljungberg, K.J., Parmentier, F.B.R., **Marsja, E., Neely, & G. Jones, D.,** (2014, January). Any Tom, Dick, or Harry will do: Hearing one's own name distracts no more than any other in a cross-modal oddball task. Experimental Psychology Society Meeting. London, UK. **Poster.**

Marsja, E., Neely, G., Parmentier, F.B.R., & Ljungberg, K.J. (2013, October). Maintenance of the distractive effect of deviating vibrotactile stimuli in a cross-modal oddball paradigm. The 29th Annual meeting of the International Society of Psychophysics, Freiburg, DE. **Poster.**

Popular Science and Education-Related Articles

Marsja, E. (2016, July). Python Programming in Psychology – From Data Collection to Analysis. *JEPS Bulletin - The Official Blog of the Journal of European Psychology Students*. **Invited Blog Post.** Retrieved from <http://blog.efpsa.org/2016/07/12/python-programming-in-psychology-from-data-collection-to-analysis/>

Funding and Grants

299 235 SEK from Hörsselforskningsfonden (the Hearing Research Fund) for the project *Lyssningsansträngning hos individer med hörselnedsättning på grund av ökad digitalisering i arbetslivet* (*Listening effort in individuals with hearing impairment due to increased digitalisation in working life*), 2021.

6000 SEK from the Department of Psychology, Umeå University, for participating in the Re-thinking the Senses Spring School, Dubrovnik, Croatia, 2017.

15000 SEK from Lars Hiertas Minnesfond for the project *Är korttidsminnet domän-generellt eller domän-specifikt?* (*Is short-term memory domain-general or domain specific?*), 2016.

12 000 SEK from the Faculty of Social sciences, Umeå University, for participating in the workshop Attention and Control: Insights from Distraction, and visiting a researcher at the University of Central Lancashire, Preston, UK, 2016.

8000 SEK from the Department of Psychology, Umeå University, for participating in the conference 17th International Multisensory Research Forum 15-18 June, Suzhou, China, 2016.

10 000 SEK from JC Kempes minnesfond for the project *Is everyday distractibility related to attention capture by vibrating deviants?*, 2014.

9 000 SEK from Knut och Alice Wallenbergs Stiftelse for participating in the conferences Psychonomic Society's 55th Annual Meeting, 20-23 November, and APCAM, 20 November, Long Beach, USA, 2014.

6000 SEK from the Department of Psychology for participating in the conference Fechner Day 2013 (the 29th Annual Meeting of the International Society for Psychophysics) 21-25 October, Freiburg i.Br., Germany, 2013.

Peer-reviewed for Journals:

- Behavior Research Methods
- Frontiers in Psychology
- Journal of Cognitive Psychology

Information about my responsibilities as a peer-reviewer can be found in my Publons profile.

Skills & Training

Training

2017 Spring School *Re-Thinking the Senses*, Inter-University Centre, Dubrovnik, Croatia

Teaching

Primarily in:

- Research Methods & Basic Statistics
- Cognitive Psychology (attention, perception, & working memory)
- Applied Cognitive Psychology (attention and perception)

All lectures, seminars, lab demonstrations, supervision of group project (both involving empirical and applied projects) and supervision of thesis' have been given at the Department of Psychology, Umeå University, Sweden (2014 - 2017) and the Department of Behavioral Science and Learning, Linköping University (2019 -). At Linköping University I have also held workshops, and supervised projects. I have so far taught 950 and 824 clock hours. See Table 1 for an overview of my teaching responsibilities, clock hours, and courses.

Supervision of Bachelor Students (Undergraduate Level)

Jerdhaf, O. (2021). Department of Computer and Information Science, Linköping University. "Discovering Implant Terms in Medical Records". Bachelor's Thesis in Cognitive Science (18 ECTS). *Main supervisor*

Bridal, O. (2021). Department of Computer and Information Science, Linköping University. "Named-entity recognition with BERT for anonymization of medical records". Bachelor's Thesis in Cognitive Science (18 ECTS). *Main supervisor*

Mattila, M. (2021). Department of Computer and Information Science, Linköping University. "Synthetic Image Generation Using GANs – Generating Class-Specific Images of Bacterial Growth". Bachelor's Thesis in Cognitive Science (18 ECTS). *Main supervisor*

Rombo, A. (2020). Department of Computer and Information Science, Linköping University. "Self-determination perceived by users in support services pursuant to LSS - An analysis on a municipal level. Bachelor's Thesis in Cognitive Science (18 ECTS). *Main supervisor*

Lindberg, F. (2020). Department of Computer and Information Science, Linköping University. "Hur ungas attityder kring hörselnedsättningar orsakade av fritidsbuller påverkas av deras koppling till sitt framtida jag." (How young people's attitudes to hearing impairments caused by leisure noise are affected by their connection to their future selves.) Bachelor's Thesis in Cognitive Science (18 ECTS). *Main supervisor*

Dahlgren, S. Department of Computer and Information Science, Linköping University. "The association between cognition and speech-in-noise perception - Investigating the link between speech-in-noise perception and fluid intelligence in people with and without hearing loss." Bachelor's Thesis in Cognitive Science (18 ECTS). *Main supervisor*

Supervision of Master Students (Graduate Level)

Carlbring, J. (2020) Department of Computer and Information Science, Linköping University. "Inclusive Design for Mobile Devices with WCAG and Attentional Resources in Mind." Master's Thesis in Cognitive Science (30 ECTS). *Main supervisor*

Ma, L. (2015). Department of Psychology, Umeå University. "Cross-Modal Matching of Distractibility in Auditory and Tactile Stimuli". Master's Thesis in Cognitive Science (15 ECTS). *Co-supervisor*

Blide, M. (2014). Department of Psychology, Umeå University. "Att orka lämna ett misshandelsförhållande: Anknytningens beydelse (To cope leaving abusive relationships: The importance of attachment). Master's Thesis in Clinical Psychology (30 ECTS). *Co-supervisor*

Teaching Workshops

Oct 2018 **R Workshop "Step-by-Step"**

Department of Psychology, Umeå University.

An introduction to R statistical programming language - presented to senior researchers with a focus on basic programming and the R environment.

Additional skills

- Extensive knowledge in statistical software such as SPSS, JASP, and R statistical programming environment
- Strong scripting skills in Python (v2.7.x & v3.x.x) and R
- Substantial skills in programming and performing experiments using both E-prime and Python (i.e., PsychoPy, OpenSesame, & Expyriment)
- Good skills in Microsoft Word and Excel
- Basic programming skills in Visual Basic, E-basic (E-prime), MATLAB, Bash, JavaScript, and PHP
- Basic skills in Markdown (e.g., RMarkdown) and \LaTeX

Responsibilities

- Organizer of the monthly HEAD/DRD Seminar Series (e.g., contacting and inviting national and international researchers, booking tickets and accommodation)
- Elected chairperson of the Ph.D. students Council of the Department of Psychology, Umeå University.

Table 1: Teaching responsibilities - an overview of type of teaching, hours, etc.

| Period | Subject | Type | Clock Hours | Course/Program | Level | Language |
|---------|---|---|-------------|--|-------|----------|
| VT 2014 | Scientific communication, research methods, research ethics | Lectures, seminars, supervision | 60 | Psychological test and research methods/Statistical and Empirical Methods, the Clinical Psychologist program/the Bachelor's Program in Cognitive Science | UG | Swe |
| | Cognitive Psychology | Supervision of projects | 20 | Introduction to Psychology, the Clinical Psychologist Program | UG | Swe |
| HT 2014 | Clinical Psychology | Co-supervision of thesis project | 20 | Master Thesis in Psychology, 30 ECTS, the Clinical Psychologist Program | G | Eng |
| | Applied Cognitive Science | Supervision of projects | 40 | Project in Cognitive Science, the Bachelor's Program in Cognitive Science | UG | Swe |
| | Cognitive Psychology | Supervision of projects | 20 | Introduction to Psychology, the Clinical Psychologist Program | UG | Swe |
| VT 2015 | Cognitive Psychology | Supervision of projects | 24 | Introduction to Psychology, the Clinical Psychologist Program | UG | Swe |
| | Cognitive Psychology | Lectures, seminars, supervision of projects | 20 | Basic psychology and sport psychology, the Coaching Program | UG | Swe |
| | Cognitive Psychology | Supervision of thesis project | 15 | Master Thesis in Cognitive Science, 15 ECTS, the Master's Program in Cognitive Science | G | Eng |
| | Applied Cognitive Science | Supervision of projects | 110 | Project in Cognitive Science, the Bachelor's Program in Cognitive Science | UG | Swe |
| HT 2015 | Cognitive Psychology | Supervision of projects | 24 | Cognitive Psychology, the Clinical Psychologist Program | UG | Swe |

Table 1: Teaching responsibilities - an overview of type of teaching, hours, etc. (*continued*)

| Period | Subject | Type | Clock Hours | Course/Program | Level | Language |
|---------|--|---|-------------|--|-------|----------|
| VT 2016 | Qualitative methods | Seminars | 20 | the Psychology of Organizations, Environment and Work, the Clinical Psychologist Program | UG | Swe |
| | Cognitive Psychology | Lab demonstrations | 30 | 2:1 Cognition, the Clinical Psychologist Program | UG | Eng |
| | Cognitive Psychology: Attention | Lectures, seminars, supervision of projects | 60 | Applied Cognitive Psychology, the Bachelor's Program in Cognitive Science | UG | Swe |
| | Applied Cognitive Science | Supervision of projects | 110 | Project in Cognitive Science, the Bachelor's Program in Cognitive Science | UG | Swe |
| HT 2016 | Qualitative and Quantitative methods | Seminars, computer labs | 30 | the Psychology of Organizations, Environment and Work, the Clinical Psychologist Program | UG | Swe |
| | Cognitive Psychology | Lab demonstrations | 30 | 2:1 Cognition, the Clinical Psychologist Program | UG | Eng |
| | Qualitative and Quantitative methods | Seminars, computer labs | 30 | the Psychology of Organizations, Environment and Work, the Clinical Psychologist Program | UG | Swe |
| | Cognitive Psychology: Perception, Attention, and Consciousness | Lectures | 24 | Perception, the Bachelor's Program in Cognitive Science | UG | Swe |
| | Clinical Psychology | Seminars | 9 | Master Thesis in Psychology, 30 ECTS, the Clinical Psychologist Program | G | Swe |

Table 1: Teaching responsibilities - an overview of type of teaching, hours, etc. *(continued)*

| Period | Subject | Type | Clock Hours | Course/Program | Level | Language |
|---------|---|-------------------------|-------------|--|-------|----------|
| HT 2017 | Cognitive Psychology | Lab demonstrations | 30 | 2:1 Cognition, the Clinical Psychologist Program | UG | Eng |
| VT 2017 | Cognitive Psychology, Applied: Attention | Lectures, seminar | 20 | Applied Cognitive Psychology, the Bachelor's Program in Cognitive Science | UG | Swe |
| | Applied Cognitive Science | Supervision of projects | 40 | Project in Cognitive Science, the Bachelor's Program in Cognitive Science | UG | Swe |
| | Qualitative and Quantative research methods | Seminars, computer labs | 30 | the Psychology of Organizations, Environment and Work, the Clinical Psychologist Program | UG | Swe |
| | Clinical Psychology | Seminars | 30 | Master Thesis in Psychology, 30 ECTS, the Clinical Psychologist Program | G | Swe |
| | Cognitive Psychology | Lab demonstrations | 30 | 2:1 Cognition, the Clinical Psychologist Program | UG | Eng |
| | Cognitive Psychology: Attention and Consciousness | Lectures, seminars | 24 | Perception, the Bachelor's Program in Cognitive Science | UG | Swe |
| VT 2019 | Developmental Psychology | Seminar leader | 50 | Learning and teaching, pedagogy | UG | Swe |
| | Research Methods | Workshops in SPSS | 18 | Human Resources, Special Pedagogists | G | Swe |
| | Applied Cognitive Science | Supervision of Projects | 24 | Applied Cognitive Science, the Bachelor's Program in Cognitive Science | UG | Eng |
| | Pedagogy | Examination of Thesis | 6 | Master Thesis in Special Pedagogy, 30 ECTS, the Specialist Pedagogy Program | G | Swe |

Table 1: Teaching responsibilities - an overview of type of teaching, hours, etc. (*continued*)

| Period | Subject | Type | Clock Hours | Course/Program | Level | Language |
|----------------|---------------------------------------|--|-------------|---|-------|----------|
| HT 2019 | Quantative methods, theory of science | Seminar leader, grading exams | 62 | Theory of Science and Research Methods, Pedagogy | UG | Swe |
| | Cognitive Science | Seminar leader, grading exams | 20 | Cognitive Science - Methods, the Master's Program in Cognitive Science | G | Swe |
| | Disability Research | Lectures, workshops, examining | 40 | Theory of Science and Research Methods, Disability Research II and III | UG | Swe |
| | Perception | Lectures | 12 | Neuropsychology and Neuroscience, the Clinical Psychologist Program | G | Swe |
| | Applied Learning Disabilities | Supervision of groups (Problem-based learning) | 16 | Cognitive Psychology, the Clinical Psychologists Program | UG | Swe |
| | Adult life and Aging | Supervision of groups (Problem-based learning) | 20 | Developmental Psychology, the Clinical Psychologists Program | UG | Swe |
| HT and VT 2020 | Quantative methods | Lectures | 92 | Methods for Research and Development in Educational Institutions, Pedagogy | G | Swe |
| VT 2020 | Applied Cognitive Science | Supervision | 24 | Applied Cognitive Science, the Bachelor's Program in Cognitive Science | UG | Eng |
| | Cognitive Science | Supervision, Examining | 45 | Bachelor's Thesis in Cognitive Science, the Bachelor's Program in Cognitive Science | UG | Swe |
| | Cognitive Science | Supervision | 20 | Master's Thesis in Cognitive Science, the Master's Program in Cognitive Science | G | Swe |

Table 1: Teaching responsibilities - an overview of type of teaching, hours, etc. (*continued*)

| Period | Subject | Type | Clock Hours | Course/Program | Level | Language |
|---------|---------------------------------------|--|-------------|---|-------|----------|
| HT 2020 | Disability Research | Lectures, workshops, examining | 80 | Theory of Science and Research Methods, Disability Research II and III | UG | Swe |
| | Quantative methods, theory of science | Seminar leader, grading exams | 50 | Theory of Science and Research Methods, Pedagogy | UG | Swe |
| VT 2021 | Applied Cognitive Science | Supervision | 20 | Applied Cognitive Science, the Bachelor's Program in Cognitive Science | UG | Eng |
| | | Supervision of research project | 8 | Research Project, the Master's Programme in Cognitive Science | G | Swe |
| | Cognitive Science | Supervision, Examining | 45 | Bachelor's Thesis in Cognitive Science, the Bachelor's Program in Cognitive Science | UG | Swe |
| | Disability Research | Supervision of theses | 30 | University Diploma Thesis, Disability Research II | UG | Swe |
| HT 2021 | Disability Research | Lectures, workshops, examining | 80 | Theory of Science and Research Methods, Disability Research II and III | UG | Swe |
| | Disability Research | Lectures, examination | 40 | Introduction to Research methods and Ethics | UG | Swe |
| | Research Methods | Supervision of groups (Problem-based learning) | 36 | Research Methods, the Clinical Psychologists Program | UG | Swe |
| | Applied Learning Disabilities | Supervision of groups (Problem-based learning) | 16 | Cognitive Psychology, the Clinical Psychologists Program | UG | Swe |
| | Adult life and Aging | Supervision of groups (Problem-based learning) | 20 | Developmental Psychology, the Clinical Psychologists Program | UG | Swe |

Note:

Total of clock hours: 1774 , UG = Undergraduate, G = Graduate, VT = Spring term, HT = autumn term, * = two courses.