



**RESEARCH REPORT**  
**Psychology Division 2022-2023**



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## Foreword

This Annual Research Report highlights the productivity, quality and impact of the psychology research conducted at Division of Psychology at Örebro University during the years 2022-2023. Our research spans diverse areas of psychology, including cognitive, developmental, social, health and clinical psychology.

Our researchers are dedicated to addressing global challenges through impactful contributions. Ongoing projects focus on evaluating treatments for common mental health issues (e.g., anxiety disorders, insomnia) and chronic medical conditions (e.g., chronic pain, gastrointestinal problems), as well as developing effective strategies to reduce sick leave. Additionally, our research tackles pressing societal topics, such as understanding youth attitudes toward climate change, identifying early-life factors that support successful cognitive and brain aging, examining the effects of parental social media use, and uncovering strategies that promote youth health and psychosocial adjustment – to merely highlight a few examples.

During the evaluation period, researcher at the division collectively published 115 peer-reviewed articles included in Web of Science, generating over 500 citations. Through a comparative bibliometric analysis with 12 Swedish universities, our division stands out in terms of impact, with high citation impact factors and a substantial proportion of our publications ranking in the top 10% of most-cited papers – well above the national and global averages. This underscores the sustained productivity and impact of our research groups, whose contributions are crucial in positioning our division among the top psychology research divisions in Sweden.

Researchers are also highly engaged in peer reviewing, editorial work, and collaborations with national and international research networks. Our research is also strengthened by international research collaboration, with over 50 countries represented in joint projects. This demonstrates our commitment to solving real-world problems through diverse, methodologically rigorous collaborative research with truly global impact.

As we move forward, we remain committed to advancing psychological science by fostering innovation across a wide range of psychological domains and strengthening our international collaborations to address complex global challenges.

Hugo Hesser

Professor and Chair of Division of Psychology Örebro University

## Research Projects

Ongoing research projects 2022-2023 presented in alphabetical order.

### Anger and emotion dysregulation

Dysregulated anger is linked to a wide variety of adverse behavioural, social and emotional and physical consequences. The inability to regulate emotions is potentially an important contributing factor to anger-related problems such as aggression. The project will aim to contribute to our understanding of the efficacy of brief internet-delivered emotion-regulation training for anger as well as its treatment mechanisms; to the dissemination of evidence-based treatments for anger; and to key theoretical insights into the links between emotion-regulation and anger.

- **Funding Source:** Wallenberg
- **Start Date:** 2019
- **Expected End Date:** 2026
- **Researchers:** Hugo Hesser (ORU), Bjureberg, J. (KI, Sweden), Larsson, J. Gross, J. J (Stanford university, USA).

### Key publications

Larsson, J., Bjureberg, J., & Hesser, H. (2023). Anger profiles among individuals seeking treatment for maladaptive anger: Associations with emotion regulation. *Clinical Psychology and Psychotherapy*, 30 (3), 599-610.

Bjureberg, J., Ojala, O., Berg, A., Edvardsson, E., Kolbeinsson, O., Molander, ..., & Hesser, H. (2023). Targeting Maladaptive Anger With Brief Therapist-Supported Internet-Delivered Emotion Regulation Treatments: A Randomized Controlled Trial. *Journal of Consulting and Clinical Psychology*, 91 (5), 254-266.

### "Better safe than sorry?" Identifying causes of overprotective parenting in a changing social world

This project is part of a larger international project on overprotective parenting with a specific focus on identifying causes for variations between parents. We have collected data from parents of adolescents on their parenting strategies at one time point in eight different European countries. Main research questions deal with differences in prevalence of overprotection in the countries, as well as whether causes differ as a function of country.

- **Funding Source:** European Research Council, Project Manager: Stijn van Petegem, Université Libre De Bruxelles.
- **Start Date:** 2022
- **Expected End Date:** Data collections ended in 2023; publications ongoing.
- **Researchers:** Research group headed by Stijn van Petegem, Université Libre De Bruxelles. Terese Glatz (ORU)

## **Cultivating Compassionate Schools: The effects of an evidence-based compassion mind training program for teachers on psychological, biophysiological and epigenetic correlates of wellbeing, prosociality and stress**

This project analyses the impact of a 8-week Compassionate Mind Training intervention for Teachers (CMT-T) on psychophysiological indicators of wellbeing, as well as on markers of the immune response and the Conserved Transcriptional Response to Adversity (CTRA), in Portuguese teachers. A pilot non-controlled study will be conducted in a sample of public-school teachers. Participants will be assessed at 4 time-points: 1) Extended Baseline Control\_M0 (8 weeks prior CMT-T) 2) Pre-intervention\_M1 (before CMT-T intervention); 3) post-intervention\_M2 (8-weeks after M1); 4) Follow-up\_M3 (3 months after CMT-T). In all assessment moments, participants will complete self-report measures of compassion and wellbeing, their heart rate variability will be measured, and biological markers assessed through blood collection - Immune Response Profiling (e.g., natural killer cells) and the CTRA gene expression (type I interferon response, antibody synthesis and pro- inflammatory genes).

- **Funding Source:** BIAL
- **Start Date:** September 2023
- **Expected End Date:** August 2026
- **Researchers:** Marcela Matos (PI), Inês Trindade (ORU), José Pinto Gouveia, Marina Cunha, Ana Galhardo, Margarida Lima, Isabel Albuquerque, Lara Palmeira, Sérgio Carvalho, Paulo Rodrigues Santos, M Santos Rosa, João José Malva, Helena Manuel Sá, Frederico Regateiro, Raquel Santiago.

## **Declarative and Procedural Learning and Memory in Children with Specific Language Impairment and Children with Dyslexia.**

Specific Language Impairment (SLI) and dyslexia are two developmental disorders estimated to affect about 5-10% of all children. SLI and dyslexia are generally defined as disorders of language and reading respectively, in the absence of frank neurological damage, hearing deficits, severe environmental or educational deprivation, or mental retardation.

This project was designed to test a novel hypothesis about the neurocognitive basis of SLI and Dyslexia, the Procedural Deficit Hypothesis (PDH). The PDH is an innovative account in two important respects. First, it brings a cognitive neuroscience approach, focusing on brain function, to these two disorders. The hypothesis offers detailed proposals as to which *brain system* may be developing atypically in SLI and in dyslexia, and how this could lead to the observed behavioural deficits in both language and reading as well as in some non-language domains. Second, the PDH emphasizes *compensation* as an important aspect of the linguistic and neurocognitive development and prognoses of SLI and dyslexia. The emphasis on examining *spared* functions in these disorders and their potential for compensation may be an important step towards the development of

innovative remediation programs designed to support neurocognitive compensatory mechanisms in developmental as well as adult-onset disorders of language and literacy.

- **Funding Source:** Riksbanken
- **Start Date:** 2017
- **Expected End Date:** 2025
- **Researchers:** Martina Hedenius, Uppsala University, Jonas Persson, Örebro University, and Gaia Olivo (Gothenburg University)

### Key publications

Olivo, G., Persson, J., & Hedenius, M. (2024), Exploring Brain Plasticity in Developmental Dyslexia: Insights from Implicit Sequence Learning. *NPJ Science of Learning*, 9(1):3.

Hedenius, M. & Persson, J. (2022). Neural correlates of sequence learning in children with developmental dyslexia. *Human Brain Mapping*, 43(11):3559-3576.

### Development, feasibility, efficacy, and cost-effectiveness of an online ACT intervention for Disorders of Gut-Brain Interaction (iACTforDGBI)

The project focuses on developing and evaluating an internet-based psychological treatment based on Acceptance and Commitment Therapy (ACT) for individuals suffering from functional gastrointestinal disorders. Using ACT as its foundation, the treatment aims to help individuals increase their psychological flexibility and improve their quality of life despite their symptoms. The evaluation will include assessments of treatment effectiveness as well as its cost-effectiveness to contribute to alleviating the burden for patients with these disorders.

- **Funding Source:** FORTE
- **Start Date:** January 2024
- **Expected End Date:** December 2026
- **Researchers:** Inês Trindade (PI), Benjamin Gürbüz, Siri Jakobsson Störe, Filipa Sampaio, Uppsala University, Gisela Ringström, Sahlgrenska University Hospital, Lance McCracken, Uppsala University, Sanna Nybacka, University of Gothenburg, Sofie Jakobsson, University of Gothenburg

### Divine Ganges, Profane Development: Sacred Geographies and the Governing of Pollution

The project examines the tension between notions of the Ganges that stem from religious and secular conceptions of it. These are often incompatible and result in dissonant ideas regarding how to manage and respond to its state of pollution, degradation and capriciousness.

To examine state activities as well as the belief systems of individuals, the project consists of two components. The first component probes attempt in India and Bangladesh to make the Ganges integral to development efforts and nation building, and the extent to which these relate to the basic tension. The second stresses how cultural and religious assumptions regarding the Ganges, in the form of lay beliefs, interact with environmental concerns ascribed to it. The objective is to grasp the ways in which discordant ideas about the river are reflected in state activities and in lay beliefs, and where we find overlaps and inconsistencies between these.

- **Funding Source:** VR
- **Start Date:** January 2020
- **Expected End Date:** 2024
- **Researchers:** Sammyh Khan, Ted Svensson (Lund University), Catarina Kinnvall (Lund University), Yashpal Jogdand (IIT Delhi)

### **Does School Context Matter in the Development of Inter-ethnic Relationships among Adolescents?**

This project examines the role of school context in the formation and development of interethnic relationships among adolescents from diverse backgrounds, with the goal of gaining a comprehensive understanding of adolescents' psychosocial functioning in diverse school settings. It is based on a three-year longitudinal data collected from adolescents, their parents, and teachers.

- **Funding Source:** VR
- **Start Date:** 2018
- **End Date:** 2023
- **Researchers:** Sevgi Bayram Özdemir (Principal Investigator, ORU), Metin Özdemir (co-investigator, Örebro University), Takuya Yanagida (University of Viena), Erik Lundberg (Dalarna University), Beatrice Bobba (University of Bologna)

#### **Key publications**

Bayram Özdemir, S., Lundberg, E., & Özdemir, M. (2021). Hur kan lärare främja positiva interetniska relationer i skolan? Förutsättningar, strategier och utmaningar. In Thalberg, S., Asplund, A., Silberstein, D. (Eds.). *Ungas uppväxtvillkor och integration* (pp. 137–164). Stockholm: Delmi.

Bayram Özdemir, S., Yanagida, T., & Özdemir, M. (2022). Bystanders of ethnic victimization: Do classroom context and teachers' approach matter for how adolescents intend to act?. *Child Development*, 93 (5), 1540-1558.

Bayram Özdemir, S., Cucurachi, S., Yanagida, T., & Özdemir, M. (2023). Understanding the association between moral disengagement and ethnic victimization: Roles of bystanders in class. *European Journal of Developmental Psychology*.

## **Early Life Determinants of Successful Cognitive and Brain Aging (IDA-BRAIN)**

There are marked individual differences in cognitive status, brain function and wellbeing in aging. It is increasingly recognized that early life characteristics account for a substantial part of the individual differences in cognition, brain function and well-being in older age. Identification of how early factors may impact human brain and cognition throughout the lifespan has remained challenging, due to a scarcity of longitudinal studies spanning from childhood to older age. In this research project, we aim to shed light on early life predictors of cognitive performance, brain structure/function, wellbeing, and health in older age. To do so, we will recruit participants from an extensive dataset that included all children in grades 3, 6, and 8 in Örebro, Sweden (The IDA-programme) in 1965. Now, when these participants have reached their late-60's, it opens up for addressing important questions about ageing in a life-span perspective and contribute insights into the developmental process across many areas. The proposed project includes cognitive testing, magnetic resonance imaging to assess brain structure and function, health testing, and extensive testing on wellbeing and mood-disorders and would provide some of the longest-term multidomain measurements to date. Generating new knowledge on this issue is critical, as it may help to personalize the focus of intervention and prevention strategies.

- **Funding Source:** Vetenskapsrådet (VR)
- **Start Date:** 2023
- **Expected End Date:** 2026
- **Researchers:** Jonas Persson (ORU), Catherine Tuvblad (ORU), Gregoria Kalpouzou (Karolinska Institute), Xin Li (Singapore University).

## **Emotion regulation and disordered eating**

There is a clear link between eating disorders and emotion regulation difficulties, but at present it is unclear how this information can be used to assess, classify and treat individuals with eating disorders. The purpose of this project is threefold: 1) to investigate the possibility of developing an alternative way of classifying individuals with eating disorders based on emotion regulation difficulties; 2) study the relationships between emotion regulation, intolerance to inner experiences and eating behaviour in individuals using repeated measurements over time; and c) test a new complementary treatment with a focus on emotion regulation for eating disorders. Data from national eating disorder registers, intensive measurements over time and experimental, clinical trials will be used in the project.

- **Funding Source:** Region Östergötland
- **Start Date:** 2017
- **Expected End Date:** 2025
- **Researchers:** Hugo Hesser (ORU), Ata Ghaderi (KI), Brjánn Ljótsson (KI), Line Nordgren (LiU)



### Key publications

Nordgren, L., Ghaderi, A., Ljótsson, B., & Hesser, H. (2022). Identifying Subgroups of Patients with Eating Disorders Based on Emotion Dysregulation Profiles: A Factor Mixture Modelling Approach to Classification. *Psychological Assessment, 34* (4), 367-378.

Nordgren, L., Monell, E., Birgegård, A., Bjureberg, J., & Hesser, H. (2020). Factor Structure of the Difficulties in Emotion Regulation Scale in Treatment Seeking Adults with Eating Disorders. *Journal of Psychopathology and Behavioral Assessment, 42* (1), 111-126.

### Empirical approach to classification of individuals with chronic pain to optimize multimodal pain rehabilitation

Chronic pain is associated with a wide range of negative consequences. Given recognized heterogeneity of individuals with chronic pain in terms of clinical characteristics, presentation and functioning, decisions about the classification of individuals with pain have significant scientific and clinical implications. In the context of machine learning, the goal of this project is to use advanced data-driven methods to classify individuals into discrete subgroups with high clinical utility in order to optimize and improve treatment selection and personalization in multidisciplinary treatment using data from the National Quality Registry for Pain Rehabilitation (NRS).

- **Funding Source:** AFA insurance
- **Start Date:** 2020
- **End Date:** 2023
- **Researchers:** Hugo Hesser (ORU), Zhao X., Dannenberg, K., Repsilber, D., Gerdle, B. (LiU), Molander, P. (LiU)

### Key publications

Zhao, X., Dannenberg, K., Repsilber, D., Gerdle, B., Molander, P., & Hesser, H. (2024). Prognostic subgroups of chronic pain patients using latent variable mixture modeling within a supervised machine learning framework. *Scientific Reports, 14* (1).

Zhao, X., Boersma, K., Gerdle, B., Molander, P., & Hesser, H. (2023). Fear network and pain extent: Interplays among psychological constructs related to the fear-avoidance model. *Journal of Psychosomatic Research, 167*.

### EurofamNet: The European Family Support Network

EurofamNet is a pan-European family support network focused on family support policies and practices, reflecting common goals across participating countries, while recognizing the specific nature of families' cultural and socio-economic contexts within them. The Network aims to inform family policies and practices towards the ultimate goal of ensuring children's rights and families' well-being. EurofamNet is doing so by building collaborations between researchers, practitioners, policymakers, children and families, public and private agencies, and general society.

- **Funding Source:** COST: European Cooperation in Science & Technology
- **Start Date:** 2019
- **Expected End Date:** 2025
- **Researchers:** Lucia Jimenez (University of Sevilla, Spain) and John Canavan (University of Galway, Ireland) are the project leaders. The project brings together 172 researcher and practitioners from 35 countries.

Metin Özdemir is the representative for Sweden, and leader of the Quality Standards Work Group.

### Key publications

Özdemir, M., Vastamaki, S., Leijeten, P., Sampaio, F., Pinto, R., Canario, A. & Cruz, O. (2023). The European Family Support Network (EurofamNet) Quality Standards for Family Support Programs. EurofamNet, Working Paper.

Jiménez, L., Canavan, J., Catarina-Canario, A., Burgund-Isakov, A., Holzer, J., Buciuceanu-Vrabie, M., & Özdemir, M. (2021). Evidence-informed family education and support in contemporary Europe: Contributions from the European Family Support Network. In María de la Paz Bermúdez (ed.), *AVANCES EN CIENCIAS DE LA EDUCACIÓN INVESTIGACIÓN Y PRÁCTICA* (ss. 328-334).

### Facing negative emotions: Evaluation of a brief training in validating communication for contact nurses in cancer care

In their daily work, contact nurses encounter people who have to deal with strong and difficult emotions in relation to the fact that they may have or have had cancer. This place demands on the communication skills of contact nurses. The overall aim of the study was therefore to develop and evaluate a short training course for contact nurses in cancer care in affirmative communication, known as validation. Validation is known for its emotion-regulating effect. Contact nurses were trained to deal with both cancer patients' emotional expressions and their own emotions (self-validation). A quasi-experimental design was used. Contact nurses from Region Värmland (RV; n=20) constituted the experimental group and contact nurses at Region Örebro County (n=20) constituted a waiting list control group that received the training after the experimental group.

- **Funding Source:** AFA Försäkring
- **Start Date:** January 2021
- **End Date:** 22/23
- **Researchers:** Sara Edlund (ORU), Johan Carstens-Söderstrand, Maria Larsson, Cecilia Olsson, Maria Tillfors

### Key publications

Edlund, S. M., Söderstrand, J. C., Åkerman, B., Hed, E., Larsson, M., Tillfors, M., & Olsson, C. (2023). Facing negative emotions: Evaluation of a brief training in validating

communication for contact nurses in cancer care. *European Journal of Oncology Nursing*, 66, 102401.

### **Impact of iron on brain structure and function in healthy aging**

In the last 2 decades, the study of the human brain in vivo has been greatly facilitated with the development and improvement of neuroimaging techniques, and more particularly magnetic resonance imaging (MRI). Rapidly, researchers took advantage of diverse neuroimaging methods to elucidate brain changes and their biological underpinnings in the course of normal and pathological aging (e.g., Alzheimer's disease). Recently, a handful of researchers have started to study the effects of iron deposition in the brain on structural and functional brain integrity, and cognition. In this project, we longitudinally investigate the impact age on iron deposition in the brain using quantitative susceptibility mapping (QSM), and how iron deposition affects cognitive function, health and wellbeing.

- **Start Date:** 2016
- **Expected End Date:** 2026
- **Researchers:** Gregoria Kalpouzou (Karolinska Institute), Jonas Persson (ORU), Goran Papenberg (Karolinska Institute), Alireza Salami (Umeå University), Lars Bäckman (Karolinska Institute).

### **Key publications**

Salami, A., Papenberg, G., Sitnikov, R., Laukka, E.J., Persson, J., Kalpouzou, G. (2021). Elevated Neuroinflammation Contributes to the Deleterious Impact of Iron Overload on Brain Function in Aging. *NeuroImage*.

Persson, J., Garzón, B., Sitnikov, R., Bäckman, L., and Kalpouzou, G. (2020). A positive influence of basal ganglia iron concentration on implicit sequence learning. *Brain, Structure, and Function*. 225(2):735-749.

Kalpouzou, G., Garzon, B., Heiland, C., Salami, A., Persson, J., and Bäckman, L. (2017). Higher striatal iron concentration underlies frontostriatal underactivation and poorer memory in normal aging. *Cerebral Cortex*. 27(6):3427-3436.

### **Inclusion and Discrimination among Youth**

This project aims to develop a comprehensive understanding about the psychosocial processes of racism and discrimination among adolescents. It is based on semi-structured interviews with early adolescents and adolescents and cohort-sequential longitudinal data.

- **Funding Source:** VR
- **Start Date:** 2021
- **Expected End Date:** 2026
- **Researchers:** Sevgi Bayram Özdemir (Principal Investigator), Metin Özdemir (co-investigator, Örebro University), Birgitta Kimber (Umeå

University), Brit Oppedal (Norwegian Institute of Public Health), Dagmar Strohmeier (University of Applied Sciences, Upper Austria)

### Key publications

Bayram Özdemir, S., Gönultas, S., & Özdemir, M. (in progress). Racial bullying and victimization during adolescence. In Sapouna, M., Willem, R. A., & Smith, P. K. (Eds.). *Cambridge Handbook of Bias-Based Bullying: Theories, Research & Interventions*.

Bayram Özdemir, S., Caravita, S., & Thornberg, R. (2023). Identity-based bullying and harassment: Addressing mechanisms and outcomes for possible interventions. *European Journal of Developmental Psychology*.

### Internet delivered cognitive behavior therapy for youths with social anxiety

The aim is to develop and evaluate an internet delivered cognitive behaviour therapy for youths, specifically aimed at young people, aged 10-17, with social anxiety disorder (social phobia). The treatment was evaluated in a pilot study and a randomized controlled trial with positive results, demonstrating that it was more effective and cost-effective than the active control treatment.

- **Funding Source:** Swedish Research Council for Health, and Working Life and Welfare
- **Start Date:** 2018
- **End Date:** 2023
- **Researchers:** Hugo Hesser (ORU), Högström, J. (KI), Serlachius, E. (Principal investigator, KI), Martina Nordh (KI)

### Key publications

Nordh, M., Serlachius, E., Hesser, H., Mataix-Cols, D., & Högström, J. (2022). Clinical, demographic and theory-derived maintaining factors as moderators of treatment outcome in internet-delivered cognitive behavioural therapy for children and adolescents with social anxiety disorder. *Behaviour Research and Therapy*, 159.

Nordh, M., Wahlund, T., Jolstedt, M., Sahlin, H., Bjureberg, J., Ahlen, J., Lalouni, M., Salomonsson, S. & et al. (2021). Therapist-Guided Internet-Delivered Cognitive Behavioral Therapy vs Internet-Delivered Supportive Therapy for Children and Adolescents With Social Anxiety Disorder: A Randomized Clinical Trial. *JAMA Psychiatry*, 78 (7), 705-713.

### 'Is It Well With My Soul?' - Effects of Contemporary African Religious Practices on Well-Being

Hegemonic conceptions of well-being are rooted in the modern individualist models of person associated with WEIRD – western, educated, industrialized, rich, democratic – settings (Henrich, Heine, & Norenzayan, 2010). These conceptions may not apply to

contexts of embeddedness (such as found in West Africa) and in developing countries (See White, 2010; 2017). This project will therefore investigate well-being across different cultural ecologies in Ghana and contrast them with notions of well-being in mainstream scientific research (in the West). The project includes both qualitative and quantitative methodologies. Project participants include religious leaders and religiously involved individuals in Christianity, Islam, and African Traditional Religion in Ghana. The project will contribute towards a better understanding of well-being that might be important to consider in social and development policy framing.

- **Funding Source:** Volkswagen Foundation
- **Start Date:** 2019
- **Expected End Date:** 2022
- **Researchers:** Annabella Osei-Tutu, Jan Carlsson

### **Key publications**

Pedersen, L., Hjelmström, S., Osei-Tutu, A., Carlsson, J., & Norberg, J. (2023). How do Ghanaian Pentecostal Charismatic Christian university students experience well-being? – balancing the needs of self and others. *Mental Health, Religion & Culture*, 26(1), 49-61.

### **Learning and development in professional psychology**

Professional psychology involves applying methods of assessment and intervention to achieve positive outcomes for clients. Much research has focused on finding optimal methods to meet these ends. However, the outcome of professional psychology also depends on the individual psychologist delivering these methods. Therefore, this project investigates identity formation, social processes, and learning processes involved in the development of professional psychologists. The project will contribute towards a better understanding of applied professional psychology, which might be important to consider to further improve client outcomes.

- **Funding Source:** None
- **Start Date:** 2007
- **Expected End Date:** Ongoing
- **Researchers:** Joakim Norberg, Jan Carlsson, Johannes Larsson, Osame Salim, Max Olsson, Sofia Bergbom and many other valuable colleagues at Örebro University

### **Key publications**

Larsson, J., Werthén, D., Carlsson, J., Salim, O., Davidsson, E., Vaz, A., ... & Norberg, J. (2023). Does deliberate practice surpass didactic training in learning empathy skills? –A randomized controlled study. *Nordic Psychology*, 1-14.

## **Mind programme for cancer patients: A randomized controlled trial testing the programme's cost-effectiveness and efficacy in changing psychological and biological outcomes in women with breast cancer**

This project encompasses two randomized controlled trials that have the main aim of testing the efficacy and cost-effectiveness of the Mind programme in Portuguese women with BC. The Mind programme is an integrative, face-to-face ACT and compassion-based intervention tailored for women with breast cancer, which aims to prepare women for survivorship by promoting psychological flexibility and self-compassion. A pilot study of the Mind programme has shown acceptability and preliminary efficacy in improving psychological health. We now aim to optimize the intervention and test its efficacy in improving cancer-specific quality of life, psychological health, and inflammatory and epigenetic indicators, as well as economic cost-effectiveness.

- **Funding Source:** Portuguese Foundation for Science and Technology (FCT)
- **Start Date:** September 2021
- **Expected End Date:** August 2025
- **Researchers:** Inês Trindade (ORU), <https://www.projetomind.com/equipa>

## **No Sound Sounds as Loud as the One You are Trying Not to Hear: The Delayed Costs of Suppressed (Tinnitus) Sounds**

The project focuses on an avoidant attentional strategy (i.e., suppression) for dealing with the intrusiveness of task-irrelevant sounds. This line of work is most relevant for tinnitus, i.e. the experience of sounds without an identified source. Preliminary observations suggest that the rebound effect of suppression – the re-emergence of the suppressed experience over time – observed in other domains has an analogue in the experience of sounds. This finding will be explored in a series of laboratory experiments in which tinnitus will be mimicked in normal hearing participants.

- **Funding Source:** Swedish Research Council (VR)
- **Start Date:** 2017
- **End Date:** 2023
- **Researchers:** Hugo Hesser (ORU), Kolbeinsson, Ö. (LiU), Asutay, E. (LiU)

### **Key publications**

Kolbeinsson, Ö., Asutay, E., Enström, M., Sand, J. & Hesser, H. (2022). No sound is more distracting than the one you're trying not to hear: delayed costs of mental control of task-irrelevant neutral and emotional sounds. *BMC Psychology*, 10 (1).

Kolbeinsson, Ö., Asutay, E., Wallqvist, J., & Hesser, H. (2022). Prior information can alter how sounds are perceived and emotionally regulated. *Heliyon*, 8 (6).

## Over 2 U: Governance transfer between parents and adolescents

Study of the joint negotiation of behavioural regulation between parents and their early adolescents

- **Funding Source:** Social Sciences & Humanities Research Council of Canada
- **Researchers:** Sheila Marshall (PI), Lauree Tilton-Weaver (ORU)

### Key publications

Marshall, S. K., Tilton-Weaver, L., Shankar\*, S., & Johnston\*, A. (2023). Parent-adolescent conflict processes and their measurement: A systematic review. *Journal of Family Theory & Review*, 15(1), 118-132.

## Paradoxical intention for insomnia disorder: A randomized, controlled trial with focus on mechanisms of change

Paradoxical intention (PI) means, in short, that you ask people to do one thing and hope that it will have the opposite effect. This treatment study aims to test if paradoxical intention for insomnia can improve sleep, by instructing people to lie awake in bed instead of trying to fall sleep. The method is not new, but it fell into oblivion when cognitive behavioural therapy for insomnia began to be implemented. A thorough review of research on PI as an insomnia treatment showed that the method was more effective than previously thought, but that there are gaps in the knowledge about who the treatment works for and what factors cause improvements. We intend to answer this in the study.

- **Funding Source:** None
- **Start Date:** 2023
- **Expected End Date:** 2025
- **Researchers:** Dr Annika Norell (PI), Dr Christina Sandlund, Dr Markus Jansson-Fröjmark, Dr Serena Bauducco, Osame Salim

### Key publications

Jansson-Fröjmark, M., Sandlund, C., & Norell-Clarke, A. (2023). Paradoxical intention as an adjunct treatment to CBT-I. *Sleep Medicine Clinics*, 18(1).

## Peers & NSSI

An examination of adolescents' perceptions of peers' NSSI in the school context, including their lived experiences, evidence of stigmatization and responses to stigmatizing behaviour

- **Funding Source:** Through International Consortium on Self-Injury in Educational Settings (ICES)
- **Start Date:** N/A
- **Expected End Date:** N/A

- **Researchers:** Lauree Tilton-Weaver (ORU), Imke Baetens (University of Brussels), Stephen Lewis (University of Toronto), Penelope Haskings (Curtin University), Nancy Heath (University of Toronto)

### Key publications

Baetens, I., Tilton-Weaver, L., et.al (2024). *Understanding students' experiences of NSSI stigmatization among peers: A qualitative analysis*. In progress.

## PIA Project - Promoting Newly Arrived Immigrant Youth's and Families' Adjustment and Well-being

PIA Project aims to develop programs to promote adjustment and well-being of the newly arrived adolescents and parents of adolescents. The project is a collaboration between researchers from Örebro University (leading institution), Karolinska Institutet, Umeå University, and Norwegian Institute of Public Health. The project developed a youth- and a parent-program, pilot tested and is currently running two randomized controlled trials to examine the program outcomes.

- **Funding Source:** VR, FORTE, and Vinnova
- **Start Date:** 2019
- **Expected End Date:** 2025
- **Researchers:** Metin Özdemir (project leader, Örebro University), Sevgi Bayram Özdemir (Örebro University), Ata Ghaderi, Pia Enebrink (Karolinska Institutet), Birgitta Kimber (Umeå University), and Brit Oppedal (Norwegian Institute of Public Health),

### Key publications

Västhagen, M., Giles, C.J., Hollander A-C., Ghaderi, A., van Leuven, L., Edenius, A., & Enebrink, P. (accepted). The efficacy of parenting interventions for forced migrant families on child internalizing and externalizing symptoms, parental self-efficacy, and parental competence: A systematic review and meta-analysis. *Transcultural Psychiatry*.

Västhagen, M., Özdemir, M., Ghaderi, A., Kimber, B., Giles, C. J., Bayram Özdemir, S., Oppedal, B., & Enebrink, P. (2022). Refugee parents' experiences of coming to Sweden. A qualitative study. *International Journal of Intercultural Relations*, 91, 97-109.

## Prefiguring sustainable futures through food activism: How young people deal with border tensions between the sustainable and unsustainable in everyday life.

Global sustainability problems are complex and young people often experience low efficacy and ambivalence when trying to live in a sustainable manner. This project focuses on one way that young people can contribute to fighting these problems, food activism, both in more organized forms and in the private sphere. The main theoretical lens is prefigurative politics/practice in which change-agents try to experimentally actualize their ideals about the future in the here and now, instead of challenging power



structures. The project focuses on border tensions that arise when trying to create a more sustainable society within the limits of the present. Internal and interpersonal struggles emerging when utopian ideals and realities clash. One interview study with young people active in food organizations explores which border tensions the young experience and how they cope with these. One survey study investigates possible predictors, with a focus on ambivalent attitudes, of climate friendly food choices. One interview study with highly ambivalent young people (as identified by the survey) pinpoints positive and negative strategies to handle ambivalence seen from an engagement perspective.

- **Funding Source:** The Swedish Research Council Formas
- **Start Date:** 2018
- **End Date:** 2022 (was finalized in September 2022)
- **Researchers:** Maria Ojala (ORU), Kirsti Jylhä, Institute for Future Studies, Stockholm University

### Key publications

Jylhä, K., Ojala, M., Odisho, S., & Riise, A. (2023). Climate-friendly food choice intentions among emerging adults: Extending the theory of planned behavior with objective ambivalence, climate-change worry, and optimism. *Frontiers in Psychology, Environmental Psychology*, 14, 1178449. Doi: 10.3389/fpsyg.2023.1178449

Ojala, M. (2022). Prefiguring sustainable futures? Young people's strategies to deal with conflicts about climate-friendly food choices and implications for transformative learning. *Environmental Education Research*, 28(8), 1157-1174, DOI: 10.1080/13504622.2022.2036326

Ojala, M. (2022). Hope through learning to live with ambivalence: Emerging adults' agency work in the face of sustainability conflicts. In M. Häggström & C. Schmidt (Eds.), *Relational and Critical Perspectives on Education for Sustainable Development. Belonging and Sensing in a Vanishing world* (pp. 129-142). Springer. DOI: 10.1007/978-3-030-84510-0.

### **Prevent Sick leave (PS): An RCT on the effects of a workplace focused program to prevent stress- and pain-related sick leave**

Problems with stress and pain are the most common reasons for long-term sick-leave, and we need preventive interventions. According to the transdiagnostic model, problems with stress and pain are maintained by similar processes. Consequently, we will test the effects of an intervention targeting both problems, with the purpose of preventing sick leave and increase work ability in the employees. Supervisors and employees in Region Örebro län will be recruited via Regionhälsan and are randomized to either a supervisor program with the focus on communication, problem-solving and time management, or a control group offering a shorter lecture/course. The effects will be evaluated by assessing sick-leave and perceived health in the employees, as well as work satisfaction, communication skills and perceived stress in the supervisors.

- **Funding Source:** Forte

- **Start Date:** 2018
- **End Date:** 2023
- **Researchers:** Katja Boersma (ORU), Ida Flink, Steven Linton, Hedvig Zetterberg

### **Key publications**

Zetterberg, H., Owiredua, C., Åsenlöf, P., Lennartsson, R., Brodda Jansen, G., Boersma, K., ... & Flink, I. (2023). Preventing pain and stress-related ill-health in employees: a 6-months follow-up of a psychosocial program in a cluster randomized controlled trial. *Journal of Occupational Rehabilitation*, 33(2), 316-328.

Zetterberg, H., Zhao, X., Bergbom, S., Golovchanova, N., Flink, I., & Boersma, K. (2024). Understanding Work Ability in Employees with Pain and Stress-Related Ill-Health: An Explorative Network Analysis of Individual Characteristics and Psychosocial Work Environment. *Journal of Occupational Rehabilitation*, 1-12.

### **Primary care Online Emotion-regulation Treatment (POET)**

The overall objective is to build an evidence base for a highly scalable transdiagnostic intervention called the Primary care Online Emotion-regulation Treatment (POET) for youth. This research program emerges from the need to find a way to help youths that seeking treatment for mild to moderate mental health problems in the primary care. In this newly started research program, we will investigate the impact of a six-week internet delivered transdiagnostic emotion regulation treatment for youth and their parents.

- **Funding Source:** Swedish Research Council (VR) and The Kavli Trust Programme on Health Research and Region Stockholm (NSV project)
- **Start Date:** 2022
- **Expected End Date:** 2027
- **Researchers:** Bjureberg J. (Principal Investigator, KI), Hugo Hesser (ORU), Hedman-Lagerlöf, E. (KI), Zetterqvist, M. (LiU), Gross J. J (Stanford University, USA)

### **Probiotic effects on gut microbiota, cognitive function, brain structure and connectivity, and psychological health**

Probiotics are defined as living microorganisms which positively impact the host's health, if consumed in adequate amounts. Probiotics can affect brain structure and function, as well as psychological health and the gut microbiota via the microbiome-gut-brain axis. However, evidence in humans remains limited. The lack of mechanistic insight hinders development of optimal treatment and understanding of possible probiotic effects on both brain and behavior. Studies that elucidate mechanistic pathways and take the bidirectional brain-gut communication into account, including neuropsychological processes of stress, depression and anxiety are highly needed. In this project a broad

spectrum of outcomes is included with the aim to characterise potential modes of action of the intervention effects. Neural effects of the probiotic intervention are investigated by analysing resting state functional connectivity, MR spectroscopy and brain volume along with autonomic nervous system function. Additionally, subjects are carefully phenotyped and monitored regarding their mental health, such as depression and anxiety symptoms, perceived stress, cognitive function, sleep quality and quality of life as well as in terms of their physical activity. Biomarkers of neuroendocrine gut-brain axis signalling as well as of gastrointestinal and systemic inflammation were assessed to elucidate underlying mechanisms of the probiotic effects on mental health.

- **Funding Sources:** Global Medical Innovation, Pfizer Consumer Healthcare, the Swedish Knowledge Foundation, AnaBio Technologies, and KK-stiftelsen.
- **Start Date:** 2020
- **Expected End Date:** 2032
- **Researchers:** Robert Brummer (ORU), Julia Rode (ORU), Jonas Persson (ORU), Ashley Hutchinson (ORU), Hanna MT Edebol Carlman (ORU), Julia König (ORU), Per Thunberg (ORU)

#### **Key publications:**

Edebol Carlman, H.M.T., Rode, J., König, J., Repsilber, D., Hutchinson, A.N., Thunberg, P., Persson, J., Kiselev, A., Pruessner, J-C., & Brummer, R.J.M. (2022). Randomised clinical trial: Probiotic mixture containing *Lacto-bacillus helveticus*, *Bifidobacterium longum* and *Lactiplanti-bacillus plantarum* affects brain responses to an arithmetic stress task in healthy subjects: A proof-of-concept study. *Nutrients*, 14(7), 1329.

Edebol Carlman, H.M.T., Rode, J., König, J., Repsilber, D., Hutchinson, AN., Thunberg, P., Andersson, P., Persson, J., Kiselev, A., Lathrop Stern, L., Salomon, B., Mohammed, AA., Labus, JS., & Brummer, R.J.M. (2022). Probiotic mixture of *Lactobacillus helveticus*, *Bifidobacterium longum* and *Lactobacillus plantarum* affects brain responses towards an emotional task in healthy subjects: A randomized clinical trial. *Frontiers in Nutrition: Nutrition, Psychology and Brain Health*, 9, 827182.

Rode, J., Edebol Carlman, H.M.T., König, J., Hutchinson, A.N., Thunberg, P., Persson, J., Brummer, R.J. (2022). Multi-strain probiotic mixture affects brain morphology and resting state brain function in healthy subjects: An RCT. *Cells*, 11(18), 2922

#### **Promoting teen sleep - short- and long-term effects on mental well-being**

An increasing number of teenagers are sleeping too little on school nights. In the short term, mental health as well as school performances are affected. Further, it increases the risk of leaving school without approved grades and developing long term health problems. It is therefore vital to buck this trend. The overall aim of this project is to advance our knowledge of effectiveness of two sleep promoting school-based programs (high- and low-intensity) in grade 7-8 and the first year of high school, which have the

potential to prevent future depression. Does a school-based sleep intervention delivered at the classroom level on five occasions affect sleep length, perceived quality of sleep, and mental health? Are effects maintained at 1-year follow-up? Does pre-bedtime mobile stop affect sleep duration, perceived sleep quality, and mental health? Are effects maintained at 1-year follow-up? Which program is most effective? We will compare the high vs low intensity program using the RE-AIM framework.

- **Funding Source:** FORTE. Swedish Research Council for Health, Working Life and Welfare, and Craafordska Stiftelsen.
- **Start Date:** 2023
- **Expected End Date:** 2026
- **Researchers:** Professor Pernilla Garmy (PI), Dr Annika Norell, Dr Christina Sandlund, Dr Serena Bauducco, Dr Gita Hedin, Osame Salim + another PhD student (tba).

### **Robots' gaze effects in older and younger adults**

This inter-disciplinary project brings together psychologists (behaviour scientists) and computer scientists (in robotics) to study social cognition in human-robot interaction (HRI), and more specifically, age-related differences in the ability to follow robotic gaze. The project consists of a series of well-controlled studies with behavioural paradigms, both in the lab and online. Novel insights on robotic gaze following might inform the design of social robots and foster more efficient HRIs.

- **Funding Source:** EU Horizon 2020 research and innovation program under the Marie Skłodowska-Curie grant agreement No 754285
- **Start Date:** Jan 2020
- **End Date:** Oct 2023
- **Researchers:** Martien Schrooten (ORU), Lucas Morillo-Mendez, Oscar Martinez Mozos

### **Key publications**

Morillo-Mendez, L., Stower, R., Sleat, A., Schreiter, T., Leite, I., Mozos, O. M., & Schrooten, M. G. S. (2023). Can the robot “see” what I see? Robot gaze drives attention depending on mental state attribution. *Frontiers in Psychology, 14*, 1215771.

Morillo-Mendez, L., Martinez Mozos, O., & Schrooten, M.G.S. (2023). Gaze cueing in older and younger adults is elicited by a social robot seen from the back. *Cognitive Systems Research, 82*, 101149.

Morillo-Mendez, L., Schrooten, M.G.S., Loutfi, A., & Martinez Mozos, O. (2022). Age-Related differences in the perception of robotic referential gaze in human-robot interaction. *International Journal of Social Robotics, 16*, 1069-1081.

## Sleepless? A study in primary care

Worry has been shown to have a perpetuating role in sleeplessness (insomnia), which is a common reason for seeking treatment in primary care. It is therefore important to treat severe worry.

The study is an evaluation of rumination-focused cognitive behavioural therapy in a group for people with insomnia in primary care. This study intends to further develop the worry-focused CBT treatment that was successfully tested in at Kronoparken's primary care clinic in Karlstad for people with various combinations of anxiety problems, depression and insomnia. The overall aim of the project is to evaluate rumination-focused CBT in a group for people with insomnia, with or without co-morbidity (anxiety and depression). Another aim is to better understand for whom it works, and in which order any changes in symptoms occurs. This is done by allowing 50 people over the age of 18 to test rumination-focused CBT in groups for 8 weeks (8-9 people in each group). Their degrees of insomnia, anxiety, rumination and psychological symptoms are measured before, during and after treatment. Weekly measurements are taken of insomnia symptoms and worry. If the therapy is beneficial, this treatment would be of great value to primary care clinics as the group format is effective in being able to treat many at the same time.

- **Funding Source:** Forskningsamverkan Region Värmland och Karlstads universitet
- **Start Date:** 2022
- **Expected End Date:** 2025
- **Researchers:** Dr Malin Anniko (PI), Dr Annika Norell, Professor Maria Tillfors, Dr Siri Jakobsson Störe, Oskar Eriksson, Elin Wejrung

## Teachers' Views and Strategies Regarding Identity-Based Exclusion in Schools

This is an international project (including 17 countries) aimed at examining how teachers respond to bullying and conflicts among children in schools, with a particular focus on identity-based exclusion.

- **Funding Source:** Edith Lando Charitable Foundation
- **Start Date:** 2022
- **Expected End Date:** 2023
- **Researchers:** Sevgi Bayram Özdemir (ORU), Wendy Craig (PI, Queen's University, Canada) and Researchers in Sweden (Jonas Bjärehed, Lund University; Marlene Bjärehed, Högskolan Kristianstad; Robert Thornberg, Linköping University; Thomas Jungert, Lund University, Nathaniel Oliver Iotti, Lund University)

### Key publications

Khanolainen, D., Hall, A., Craig, W., Trach, J., Noetzel, J., Starosta, L., Dhungana-Sainju, K., Bjärehed, J., Thornberg, R., Bayram Özdemir, S., Bjärehed, M., Görzig, A., Wright, M. F., Betts, L., Swearer, S. & Hymel, S., (2024). An international investigation of variability in teacher perceptions of bias-based bullying and their likelihood of intervening. *International Journal of Bullying Prevention*.

### The impact of online peer interactions on adolescents' sleep: A multimethod approach

The overall aim of this project is to understand whether technology use explains the rise in adolescents' sleep problems that has occurred over the last decades and to investigate the unique role of peer networking online. The project combines three different methods, 1) a longitudinal study of sleep behaviours within peer networks; 2) a new experiment to investigate whether and how adolescents' online social networking leads to sleep loss; and 3) qualitative data from 600 Australian adolescents to explore their own experience of how online peer interactions affect their sleep. The experimental study was conducted at the Sleep & Psychology sleep lab at Flinders University (Australia) in collaboration with prof. Michael Gradisar.

- **Funding Source:** Swedish Research Council (Vetenskapsrådet)
- **Start Date:** 2020
- **End Date:** 2023
- **Researchers:** Dr Serena Bauducco (PI), Professor Michael Gradisar.

### Key publications

Bauducco, S., Boersma, K., & Gradisar, M. (2024). Sleepy and popular? The association between popularity, sleep duration, and insomnia in adolescents. *Frontiers in Sleep*, section Pediatric and Adolescent Sleep.

Daniels, A., Pillion, M., Rullo, B., Mikulcic, J., Whittall, H., Bartel, K., Kahn, M., Gradisar, M. & et al. (2023). Technology use as a sleep-onset aid: Are adolescents using apps to distract themselves from negative thoughts? *SLEEP Advances*, 4 (1).

Bauducco, S., Pillion, M., Bartel, K., Reynolds, C., Kahn, M. & Gradisar, M. (2024). A Bidirectional Model of Sleep and Technology Use: A Theoretical Review of How much, For whom, And which mechanisms. *Sleep Medicine Reviews*, 76.

### The Hybrid Project. Transdiagnostic emotion focused treatment for emotional and somatic comorbidity. A SCED on implementation and effectiveness in primary care.

Pain patients often suffer from comorbid emotional problems and vice versa. The transdiagnostic perspective suggests that shared underlying mechanisms, such as emotion regulation processes, explain this. Today, patients are typically allocated treatment depending on their primary diagnosis, which may be insufficient for patients with

comorbidity. Based on this, a new treatment was developed. This hybrid emotion-focused treatment combines cognitive behaviour therapy (CBT) with an emotion regulation approach informed by Dialectical Behaviour Therapy (DBT) and was successfully tested in a pilot study and an RCT. The current study is an implementation and effectiveness study with single case experimental design. The treatment is delivered by trained clinicians in primary care and rehabilitation centres.

- **Funding Source:** AFA försäkringar
- **Start Date:** 2020
- **Expected End Date:** 2024
- **Researchers:** Katja Boersma (ORU), Ida Flink, Steven Linton, Hedvig Zetterberg

### **The PAIS-project - PArents' use of the Internet and social media-project**

The purpose of the PAIS-project is to get a better understanding of parents' use of the Internet and social media, as well as how parenthood is constructed online and what consequences that has for parents. In this project, we examine when parents' use of the Internet and social media has a negative influence on their parenting role. Hence, when it is associated with psychological, emotional, and behavioral problems. Additionally, we study potential mechanisms for these associations, such as feedback in the parenting role, parents' way of dealing with information, and their comparisons with other parents on social media.

- **Funding Source:** Örebro university internal funding
- **Start Date:** 200101
- **Expected End Date:** Data collection ended in 2022; publications ongoing
- **Researchers:** Terese Glatz (ORU), Jenny Alsarve, Kristian Daneback, Emma Sorbring, Melissa Lippold, Benedicte Mouton

### **Key publications**

Glatz, T., & Lippold, M. A. (2023). Is more information always better? Associations among parents' online information searching, information overload, and self-efficacy. *International Journal of Behavioral Development*, 47(5).

Glatz, T., Daneback, K., Alsarve, J., & Sorbring, E. (2023). Parents' Feelings, Distress, and Self-Efficacy in Response to Social Comparisons on Social Media. *Journal of Child and Family Studies*, 32, 2453-2464.

Glatz, T., Alsarve, J., Daneback, K., & Sorbring, E. (2023). An examination of parents' online activities and links to demographic characteristics among parents in Sweden. *Journal of Family Social Work*, 26(1).

## **The Prospective Investigation of Perpetuating Processes of Insomnia (PIPPi)**

The aim of the longitudinal project is to investigate different types of sleep problems in the adult general population. Both people who slept well and those with poor sleep participated by answering questions about their sleep three times over 18 months. So far, our research on the 2300 participants has focused on the links between insomnia, anxiety, and depression, and identified factors of importance for new insomnia, persistent insomnia and remission from insomnia. Now our focus is shifting to symptoms of Restless Legs Syndrome, apnea and nightmares, and towards psychometrical evaluations of more sleep-related questionnaires.

- **Funding Source:** Swedish Council for Working Life and Social Research (FAS) & Örebro University.
- **Start Date:** 2010
- **Expected End Date:** 2030
- **Researchers:** Dr Annika Norell (PI since 2023), Professor Steven Linton, Dr Markus Jansson-Fröjmark, & Osame Salim.

### **Key publications**

Jansson-Fröjmark, M., Norell-Clarke, A., & Linton, S. J. (2016). The role of emotion dysregulation in insomnia: Longitudinal findings from a large community sample. *British Journal of Health Psychology*, *21* (1), 93-113.

Norell-Clarke, A., Jansson-Fröjmark, M., Tillfors, M., & Harvey, A. G., Linton, S. J. (2014). Cognitive processes and their association with persistence and remission of insomnia: Findings from a longitudinal study in the general population. *Behaviour Research and Therapy*, *54*, 38-48.

Jansson-Fröjmark, M., Harvey, A. G., Norell-Clarke, A., & Linton, S. J. (2012). Associations between psychological factors and nighttime/daytime symptomatology in insomnia. *Cognitive Behaviour Therapy*, *41*, 273-287.

## **The role of school context in youth political activism**

An examination of the development of empathy, using data from the Political Socialization Project.

- **Funding Source:** RJ
- **Start Date:** 2020
- **End Date:** 2023
- **Researchers:** Marta Miklikowska (PI, Umea U), Lauree Tilton Weaver (ORU), William J. Burk (Radboud U).



## Key publications

Miklikowska, M., Tilton-Weaver, L., & Burk, W. J. (2022). With a little help from my empathic friends: The role of peers in the development of empathy in adolescence. *Developmental Psychology*, 58(6), 1156-1162.

## The transience and persistence of memory: Linking neurobehavioral mechanisms of adaptive forgetting to adult aging and mood.

In cognitive models of memory, forgetting is most often treated as a failure to encode, maintain, or retrieve information. However, remembering past experiences can, quite surprisingly cause forgetting, and forgetting may be imperative to efficient remembering. An inability to remove outdated and irrelevant information from memory may also cause memory failures in older age and could contribute to mood disorders that involve rumination and anxiety. In the present project we to elucidate the neurobehavioral mechanisms of adaptive forgetting and examine how such processes relate to memory deficits in adult aging and mood. In part 1 of this research program, we use novel behavioural paradigms in conjunction with functional magnetic resonance imaging to investigate age-differences and neural mechanisms underlying adaptive forgetting in memory. In part 2, we aim to validate the link between individual differences in controlling one's thoughts, memories and emotions, to neurobehavioral indicators of adaptive forgetting. The current research project has implications for understanding neurobehavioral mechanisms of forgetting and may have implications for theories of memory deficits in aging and dysfunctional regulation of mood.

- **Funding Source:** Vetenskapsrådet (VR)
- **Start Date:** January 2019
- **End Date:** 20240331
- **Researchers:** Jonas Persson (ORU), George Samrani (Karolinska Institute), Lars Bäckman (Karolinska Institute), Pernilla Andersson (ORU), Xin Li (Karolinska Institute).

## Key publications

Samrani G, & Persson J. (2024). Encoding-related Brain Activity Predicts Subsequent Trial-level Control of Proactive Interference in Working Memory. *Journal of Cognitive Neuroscience*, 19, 1-8. Doi: 10.1162/jocn\_a\_02110

Li X, Salami A, & Persson J. (2023). Hub architecture of the human structural connectome: Links to aging and processing speed. *Neuroimage*, 278, 120270. Doi: 10.1016/j.neuroimage.2023.120270

Andersson P, Li X, & Persson J. (2022). The association between control of interference and white-matter integrity: A cross-sectional and longitudinal investigation. *Neurobiology of Aging*, 114, 49-60. Doi: 10.1016/j.neurobiolaging.2022.03.002

## **The way out of sick leave: are integrated work-focused interventions effective for the treatment of stress-related illness?**

To date, there is no established evidence-based treatment for these disorders, and overall, few treatment models have succeeded in successfully addressing both symptoms and work ability. The overall purpose of this project is to evaluate such integrated interventions by comparing the effects of work-focused cognitive behaviour therapy (WCBT) to usual treatment for patients on sick leave for chronic stress disorders in a randomized controlled multicentre trial. Specifically, we aim to investigate whether WCBT is more effective in increasing self-assessed work ability and treating symptoms, and is cost-effective, compared to treatment as usual (TAU). Further, we aim to investigate potential moderators and mediators of change in WCBT for chronic stress disorders.

- **Funding Source:** Working Life and Welfare (FORTE)
- **Start Date:** 2023
- **Expected End Date:** 2026
- **Researchers:** Finnes, A. (Principal Investigator, Region Stockholm), Hugo Hesser (ORU), Bergström, G. (Högskolan Gävle), Björk Brämberg, E. (KI), Feldman, I. (Uppsala University), af Winklerfelt, S. (Region Stockholm)

## **Tired of pain or so tired it hurts? Mechanisms and factors**

This project aims to get a better understanding of the dynamic relationship between sleep and pain in adolescents over time. To increase knowledge about the predictors and mechanisms explaining co-developmental trajectories of pain and insomnia in adolescence, data from a larger longitudinal project - the Three Cities Study - are analysed and the roles of for instance mood and rumination assessed.

- **Funding Source:** The research program was supported by a grant from the Swedish research council for sustainable development (Formas), the Swedish research council for health, work life and welfare (Forte), The Swedish Research Council (VR) and Sweden's innovation agency (Vinnova) (grant number 2012-65).
- **Start Date:** 2017
- **End Date:** May 2024
- **Researchers:** Martien Schrooten, Tor Arnison, Jonas Persson, Katja Boersma (all from Örebro University)

### **Key publications**

Arnison, T., Evans, B., Schrooten, M. G., Persson, J., & Palermo, T. M. (2024). Adolescent Girls' Musculoskeletal Pain is More Affected by Insomnia Than Boys, and Through Different Psychological Pathways. *The Journal of Pain*, 104571.

Arnison, T., Schrooten, M. G., Bauducco, S., Jansson-Fröjmark, M., & Persson, J. (2022). Sleep phase and pre-sleep arousal predicted co-developmental trajectories of pain and insomnia within adolescence. *Scientific Reports*, 12(1), 4480.

Arnison, T., Schrooten, M. G., Hesser, H., Jansson-Fröjmark, M., & Persson, J. (2022). Longitudinal, bidirectional relationships of insomnia symptoms and musculoskeletal pain across adolescence: the mediating role of mood. *Pain*, 163(2), 287-298.

## **To trust or not to trust? Youth's attitudes, emotions, and trust in climate change science**

In a world characterized by different science dependent global risks, trust in science can be a way to create meaning, cope, and position oneself identity wise and is also important for taking on responsibility regarding these risks. Global climate change is the perhaps most serious threat facing humanity in the long run and is the global problem that youths seem to worry most about. We use a mixed method approach to investigate: (1) How active young people in three climate/environmental organizations in social media argue about climate change science and express trust (discourse analysis). (2) How trust/distrust in climate change science (as an attitude and as a coping strategy) relate to gender, socioeconomic status, ideology, social trust in general, trust regarding other global risks (like the corona threat), self-efficacy, CC -hope, wellbeing, and climate engagement (quantitative survey to senior high-school students). (3) The meaning of trust in climate science among youth who are high on this aspect, as identified by the survey study, and possible gender differences in the meaning of trust (semi-structured interviews).

- **Funding Source:** The Swedish Research Council, Forte
- **Start Date:** 2022
- **Expected End Date:** 2025
- **Researchers:** Maria Ojala and Karin Gustafsson, Örebro University

### **Key publications**

Jylhä, K., & Stanley, S., Ojala, M., & Clarke, E. (2023). Science denial: A narrative review and recommendations for future research and practice. *European Psychologist*.

Gustafsson, K.M. (2024). Is science to be trusted? How environmentally active youths relate to science in social media. *Public Understanding of Science*. DOI: 10.1177/09636625241249915.

## **Understanding long-term opioid treatment to patients with chronic non-cancer pain in order to develop a method that promotes proper treatment**

Prescription of opioids to patients with long-term pain is increasing despite the treatment having weak evidence. In primary care, there is a lack of competence in the treatment of long-term pain and general practitioners do not follow guidelines for opioid treatment. With the aim of reducing opioid prescribing, several interventions aimed at patients and caregivers have been tested, but have not been shown to be effective. This doctoral thesis project aims to

understand the long-term prescription of opioids in order to develop a method that promotes that these patients receive the right treatment. Specifically, the project explores communication between general practitioners and patients with chronic non-cancer pain and opioid treatment.

- **Funding Source:** ALF Funding
- **Start Date:** 2021
- **Expected End Date:** 2026
- **Researchers:** Elsa Ekelin (ORU, Region Örebro), Emma Nilsing Strid (ORU, Region Örebro), Katja Boersma (ORU), Sara Edlund (ORU), Jennifer Amin (ORU), Sofia Bergbom (ORU), Hanna Ljungvall (Uppsala U).

### **Key publications**

Ekelin, E., & Hansson, A. (2018). The dilemma of repeat weak opioid prescriptions—experiences from Swedish GPs. *Scandinavian Journal of Primary Health Care*, 36(2), 180–188.

## **Understanding the development of non-suicidal self-injury during adolescence**

Used 3 Cities data to examine the development of NSSI during adolescence, including variability in forms used, trajectories of NSSI, and examining the directionality of change between NSSI and its purported precursors.

- **Funding Source:** Forte
- **Start Date:** January 2022
- **End Date:** December 2023
- **Researchers:** Lauree Tilton-Weaver (ORU) On grant: Sheila Marshall (UBC, Canada), Delia Latina (Ulm University). Other: William J. Burk (Radboud U.), Rebecca Schwartz-Mette (SUNY-Buffalo); Johannes Larsson, Xiang Zhou, Darun Jag (ORU)

### **Key publications**

Tilton-Weaver, L., Latina, D., & Marshall, S. K. (2023). Trajectories of nonsuicidal self-injury during adolescence. *Journal of Adolescence*, 95(3), 437-453

Larsson, J., Tilton-Weaver, L. C., & Zhao, X. (2023). Anger dysregulation and non-suicidal self-injury during adolescence: A test of directionality. *Development and Psychopathology*, 1-10

Latina, D., Jaf, D., Alberti, R., & Tilton-Weaver, L. (2022). Can participation in organized sports help adolescents refrain from self-harm? An analysis of underlying mechanisms. *Psychology of Sport and Exercise*, 59, 102133

## **VR-ACT after Stroke: a feasibility RCT of a Virtual Reality delivery of ACT for pain management and mental health in patients with Chronic Post-Stroke Pain**

**Description:** This exploratory project aims to develop and pilot test, in a parallel group randomized controlled trial (RCT) design, the feasibility, acceptability and preliminary efficacy of a self-management VR 8-week program for pain management and mental health in patients with CPSP, in two assessment moments (pre- to post-intervention). Participants will be adults (age 18-80) diagnosed with CPSP and attending the neurology service and/or the pain unit of Coimbra University Hospital (N = 60). It will follow a multi-method approach (qualitative and quantitative assessment) to compare two conditions: 1) The experimental condition (EC): the VR-ACT program: 8 modules of 3D immersive skills training (e.g., attentional and emotional regulation, through mindful meditation practices, and fostering of valued behaviour change); 2) The control condition (CC): sham VR (8 2D non-immersive video-animations and distraction exercises) delivered through a VR headset.

- **Funding Source:** Portuguese Foundation for Science and Technology (FCT)
- **Start Date:** January 2025
- **Expected End Date:** September 2026
- **Researchers:** Sérgio Carvalho (PI), Ana Silva, Ana Valentim, David Skvarc, Isabel Duarte, João Diogo, João Freitas, Inês Trindade (ORU), Paula Castilho, Paulo Menezes, Teresa Lapa.

## **What role does climate change worry play in young people's life and learning processes? A longitudinal study about protective and transformational factors and implications for climate change education**

Climate change (CC) worry is common among young people and can increase when learning about this problem in formal and informal contexts. But is this worry a positive force for learning and engagement, or is it rather related to low wellbeing? In this project we perform a longitudinal questionnaire study (three waves) with senior high-school students to over time investigate: how CC-worry relates to well-being, future views, engagement, and CC -knowledge. In addition, we will focus on possible factors that can turn worry into a positive force for learning, with a maintained wellbeing, like coping, social trust, and communication with teachers/parents (mediators/moderators) and investigate factors that possibly can explain CC-worry, like values. We also conduct a qualitative interview study with highly worried young people (as identified by the survey) to get an in-depth understanding of CC-worry in young people's life and learning processes. The results are valuable for teacher education, since education for sustainable development is an important part of the whole school system, but also for parents who want to communicate with their children about climate change.

- **Funding Source:** The Swedish Research Council (VR)

- **Start Date:** 2023
- **Expected End Date:** 2026
- **Researchers:** Maria Ojala (ORU), Malin Anniko, Karlstad University

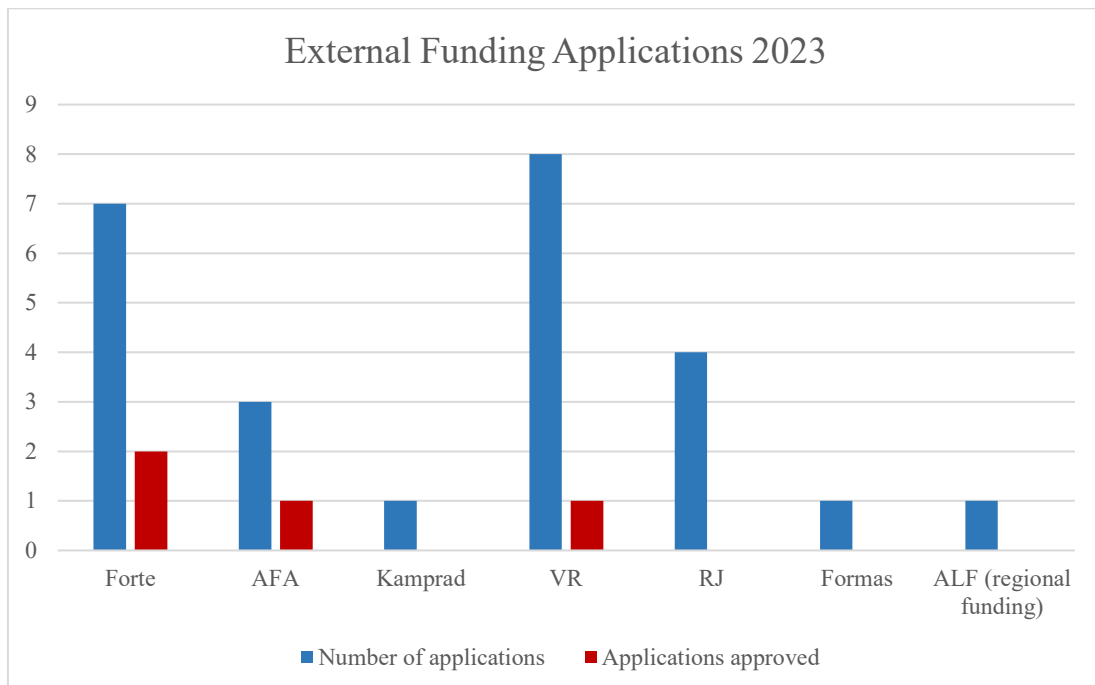
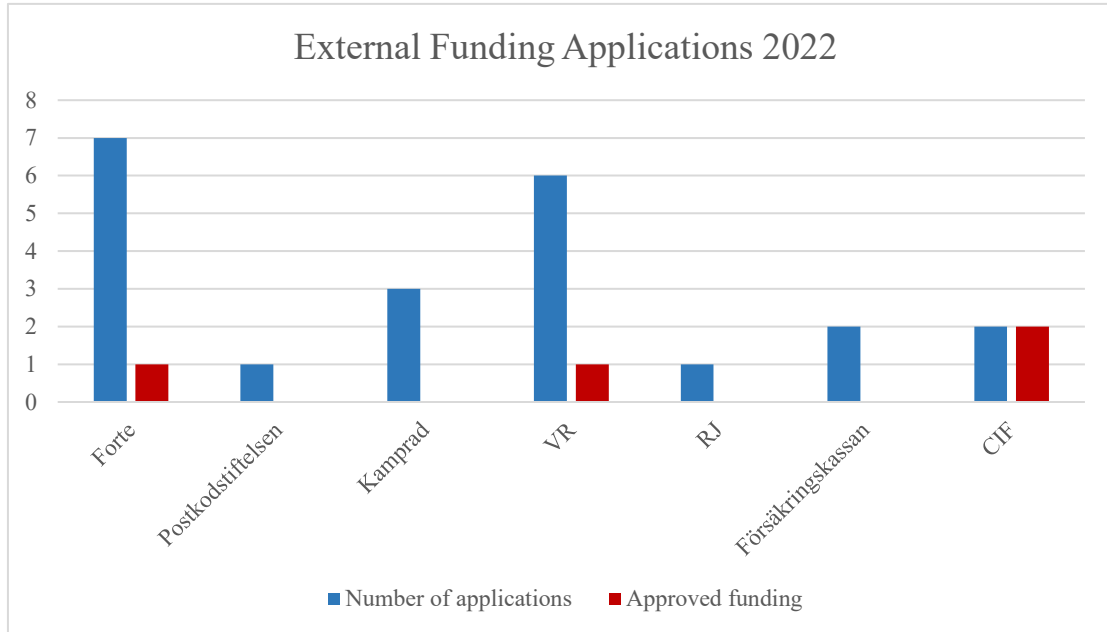
### **Key publications**

Ojala, M. (2023). Hope and climate-change engagement from a psychological perspective. *Current Opinion in Psychology*, 49, 101514

Rikner Martinsson, A., & Ojala, M. (2024). Patterns of climate-change coping among late adolescents: Differences in emotions concerning the future, moral responsibility, and climate-change engagement. *Climatic Change*, 177(12)

Rizeq, J., & Ojala, M. (2024). Climate worry and hope have different associations with wellbeing and climate friendly behaviors across young people from Sweden and Qatar. Accepted in *Ecopsychology*.

## Research Funding



## Services to the Scientific Community

Services to the Scientific Community	# of researchers
Editorial assignments	13
Reviewed papers for scientific journals	16
Reviewed grants for a funding agency	6
Reviewed academic positions	5
Served on a Board of Examiners or as an opponent in a PhD defense	7
Supervised a PhD student (as a main or co-supervisor) to completion	7

### Editorial assignments (e.g., Editor, editorial boards) for scientific journals

Thirteen researchers had editorial assignments. Example of journals are:

*Cultural Diversity and Ethnic Minority Psychology, Journal of Research on Adolescence, European Journal of Developmental Psychology, Child Development, Cultural Diversity and Ethnic Minority Psychology, Sömn & Hälsa, JCBS, BJHP, Neurobiology of Aging, Journal of Adolescence, Journal of Youth & Adolescence, Developmental Psychology, Sleep Disorders (Frontiers in Psychiatry/Neurology), Behaviour Research and Therapy, Internet Interventions*

### Reviewed papers for scientific journals

Sixteen researchers had assignments reviewing papers for scientific journals. Example of journals are:

*Journal of Environmental Psychology, American Psychologist, Environmental Education Research, Global Environmental Change, Mobilization, Journal of Adolescence, Political Psychology, Lancet Planetary Health, Wellbeing Space Society, Environment & Behavior, Cleaner Production, Child and Adolescent Mental Health, European Journal of Developmental Psychology, Cultural Diversity and Ethnic Minority Psychology, Journal of Community Psychology, Journal of Research on Adolescence, International Journal of Intercultural Relations, Sömn & Hälsa, the British journal Behavioural and Cognitive Psychotherapy, Psychology, Crime, and Law journal, Physical Therapy & Rehabilitation Journal, Neurobiology of Aging, European Journal of Pain, Pain, Developmental Psychology, Journal of Youth and Adolescence, Child Development, Journal of sleep research, Sleep Medicine, Behaviour Research and Therapy, Journal of Consulting and Clinical Psychology, Lancet Psychiatry, Internet Interventions, Cognitive Behavior Therapy, Psychotherapy Research.*



## **Reviewed grants for a funding agency**

Six researchers reviewed grant applications for funding agencies. Examples of agencies:

*Forskningssamverkan Region Värmland och Karlstads universitet, Rut och Arvid Wolffs minnesstiftelse, Forte: Barns och ungas psykiska hälsa, Association for Contextual Behavioral Science, Vetenskapsrådet, KI fonder, German Research Foundation, the Israeli Science Foundation (ISF), Research Foundation Flanders, Belgium.*



## Bibliometrics

## Background

The data in this report was obtained from Clarivate's InCites Benchmarking & Analytics™, which relies on Web of Science (WoS) data. The language used to explain the indicators is the property of Clarivate.

The purpose of this bibliometric report is to analyse the ORU Psychology Division's 2022 – 2023 performance via 1) productivity indicators, international collaborations, WoS categories and WoS research areas, and 2) comparative analysis of research output metrics as directly as possible globally, nationally, and among peer and aspirant Swedish universities.

To achieve reasonable and valid equivalent comparisons for the comparative performance analyses, an InCites "Researchers" analysis using an updated and cleaned roster of ORU Psychology Division faculty was measured in the 11 psychology-specific WoS Research Areas directly against a similar InCites "Organizations" analysis for a Global Baseline, a Swedish Baseline, and for 12 Swedish universities. Therefore, the comparative visualizations below analyse the 2022 – 2023 ORU Psychology Division's research outputs in the 11 psychology-specific research areas with the 2022 – 2023 organizational research output of the comparison universities in the same 11 psychology-specific areas.

## Search Parameters for Productivity Indicators, International Collaborations, WoS Research Areas and Categories Analyses

- Time period: 2022 – 2023
- Document Type: Article, Review
- Schema: Web of Science
- Person ID Type: All
- Dataset: InCites Dataset
  - Emerging Sources Citation Index (ESCI) included.

Exported date: 2024-09-25

InCites dataset updated: 2024-08-30

Includes Web of Science content indexed through: 2024-07-31

## Productivity Indicators, International Collaborations, Web of Science Research Areas and Categories

### Web of Science Documents and Times Cited

Productivity indicators are dependent on the extraction date of the data.

Productivity Indicators, ORU Psychology Division, 2022 – 2023	
Web of Science Documents	Times Cited
115	567

Table 1

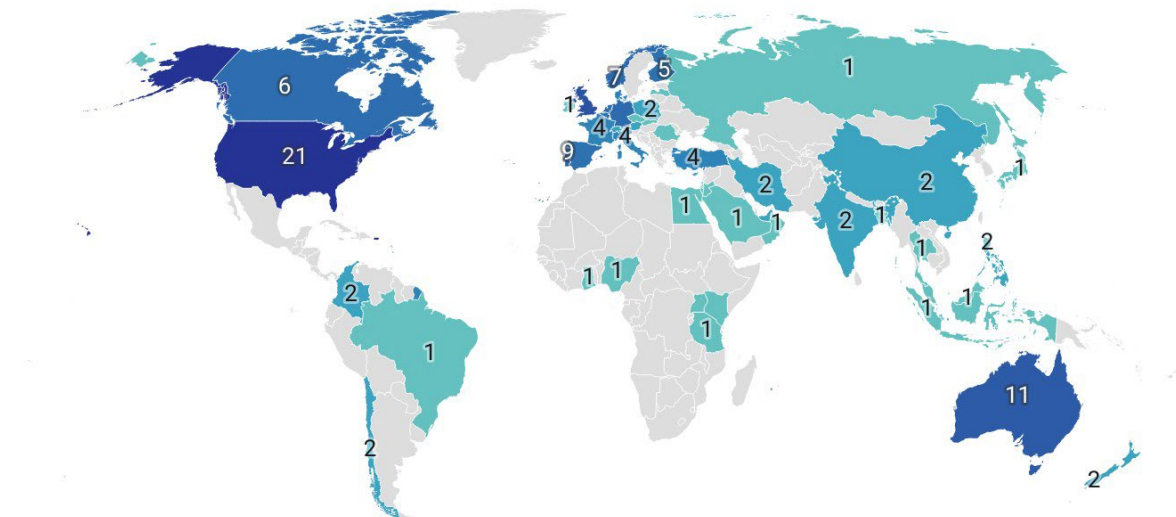
### International Collaborations by Country/Region

International collaborations are defined as a publication that contains one or more international co-authors. There were collaborations with 53 other countries/regions. ([see appendix for a full list](#))

#### International Collaborations Map

### International Collaborations, ORU Psychology Division, 2022-2023

Record Count (colorized by quintiles)



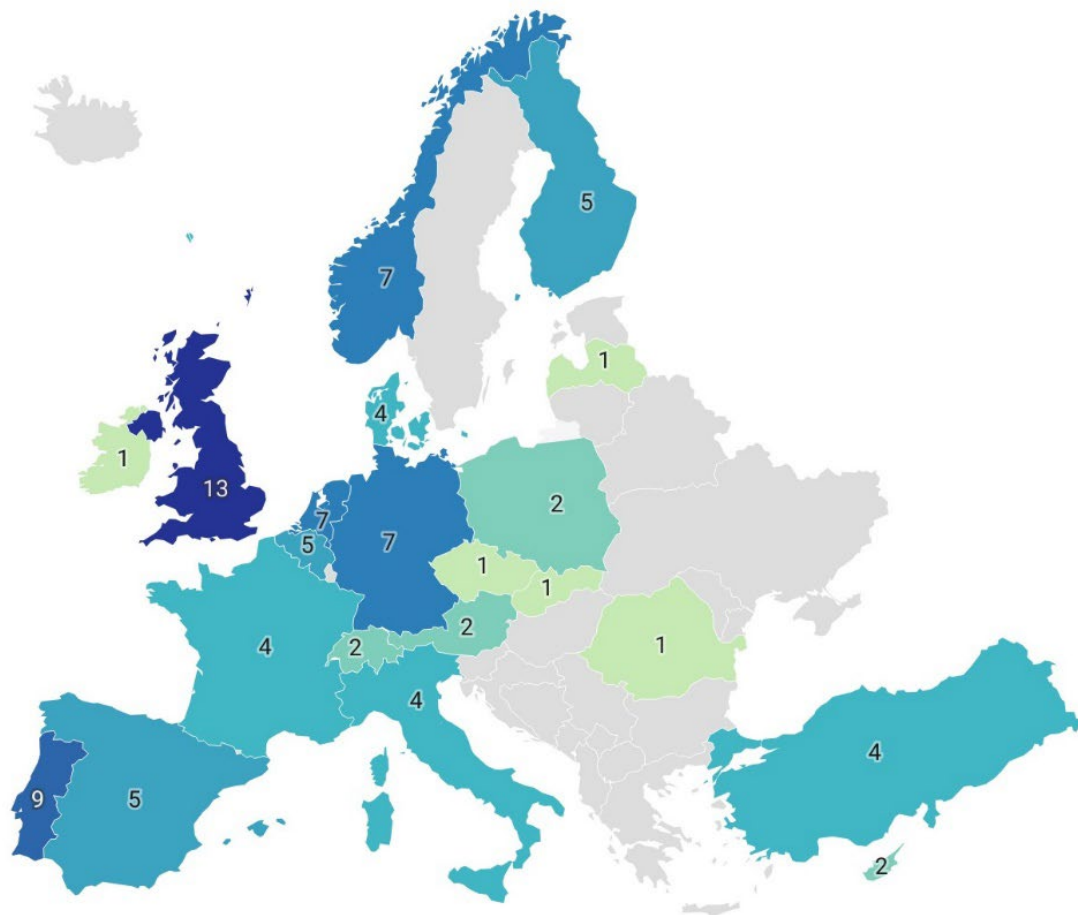
Created with Datawrapper

Figure 1 (Turkiye/Turkey and England/Scotland (as UK) results are combined)

## European Collaborations Map

### European Collaborations, ORU Psychology Division, 2022-2023

Record Count (colorized by quintiles)  
1 13



Created with Datawrapper

Figure 2 (Turkiye/Turkey and England/Scotland (as UK) results are combined)

### Top 15 International Collaborations by Country

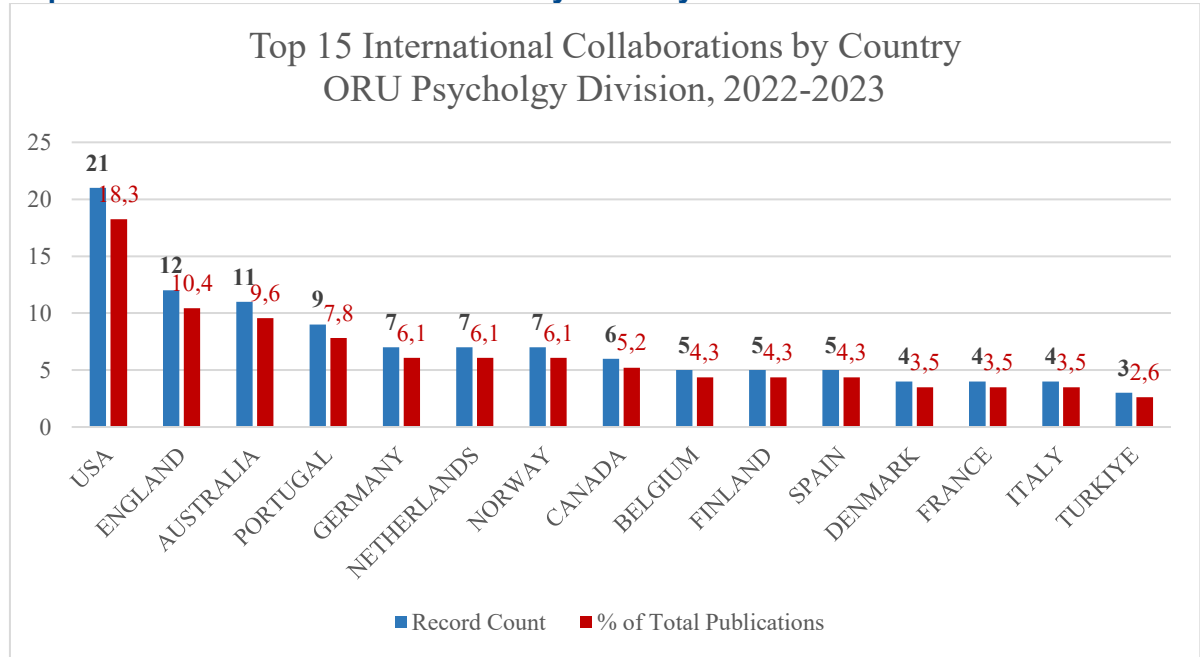


Figure 3

## Top 10 Web of Science Research Areas

To learn more about Web of Science Research Areas, please visit:

<https://incites.help.clarivate.com/Content/Research-Areas/wos-research-areas.htm>

The ORU Psychology Division published in **34** different Web of Science Research Areas in 2022 – 2023. ([see appendix for a full list](#))

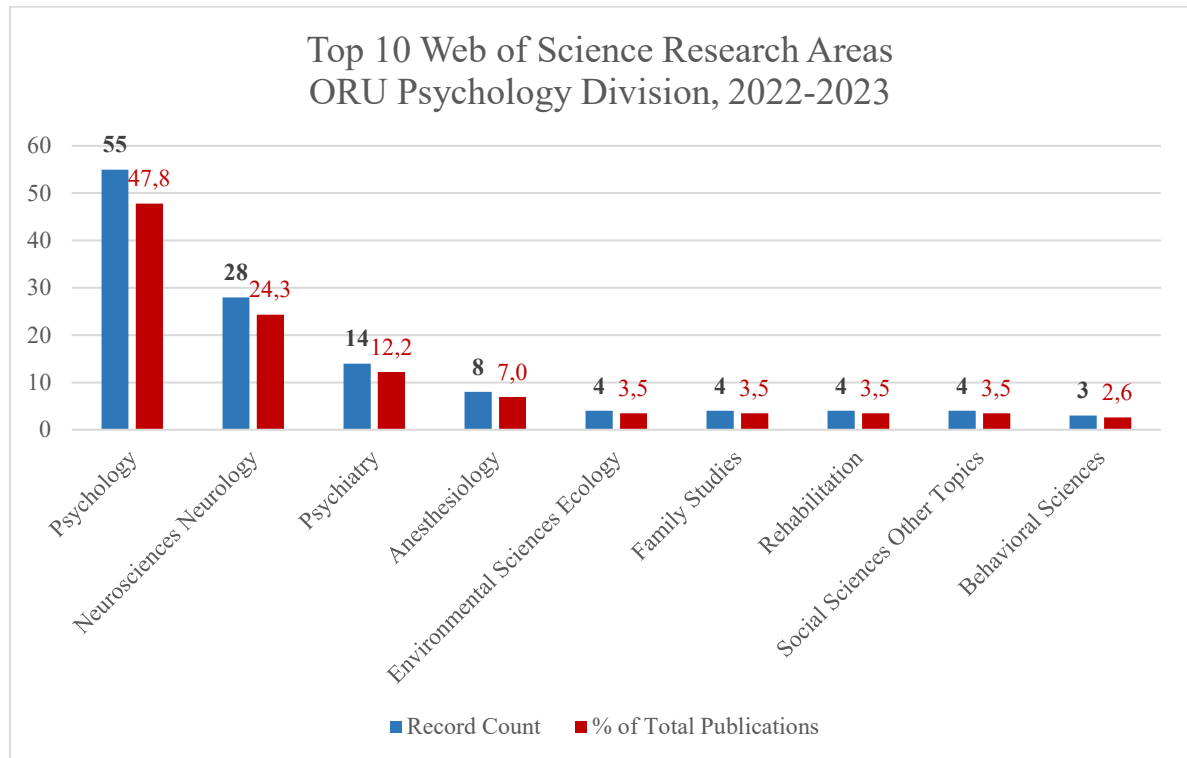


Figure 4



## Top 10 Web of Science Categories

To learn more about Web of Science Categories, please visit:

[https://support.clarivate.com/ScientificandAcademicResearch/s/article/Web-of-Science-Core-Collection-Web-of-Science-Categories?language=en\\_US](https://support.clarivate.com/ScientificandAcademicResearch/s/article/Web-of-Science-Core-Collection-Web-of-Science-Categories?language=en_US)

The ORU Psychology Division published in **46** different Web of Science Categories in 2022 – 2023. ([see appendix for a full list](#))

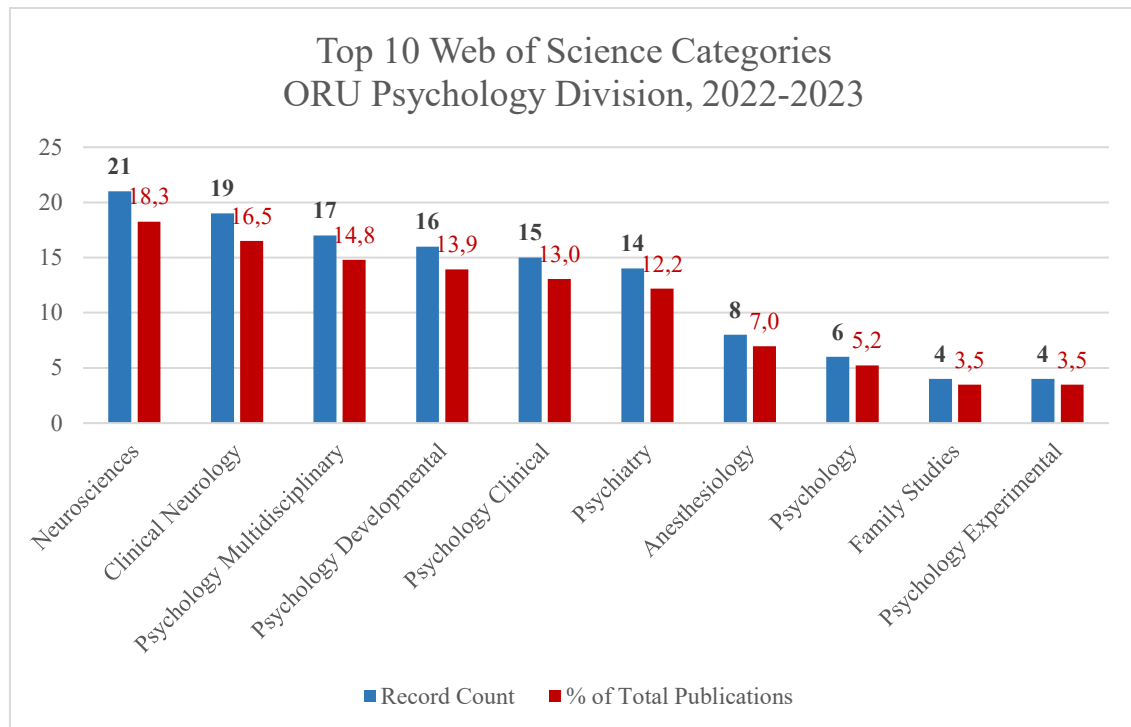


Figure 5

## Search Parameters for Comparative Analyses

<b>Researchers Analysis for ORU Psychology Division</b>	<b>Organizations Analysis for Global Baseline, Swedish Baseline, and 12 Swedish Universities</b>
<ul style="list-style-type: none"> <li>• Time period: 2022 – 2023</li> <li>• Document Type: Article, Review</li> <li>• Schema: Web of Science</li> <li>• Person ID Type: All</li> <li>• Dataset: InCites Dataset               <ul style="list-style-type: none"> <li>○ Emerging Sources Citation Index (ESCI) included.</li> </ul> </li> <li>• Research Areas:               <ul style="list-style-type: none"> <li>○ Psychology</li> <li>○ Psychology, Applied</li> <li>○ Psychology, Biological</li> <li>○ Psychology, Clinical</li> <li>○ Psychology, Developmental</li> <li>○ Psychology, Educational</li> <li>○ Psychology, Experimental</li> <li>○ Psychology, Mathematical</li> <li>○ Psychology, Multidisciplinary</li> <li>○ Psychology, Psychoanalysis</li> <li>○ Psychology, Social</li> </ul> </li> <li>• Person ID Type Group: WoS Researcher Profile</li> </ul> <p>Exported date: 2024-09-25</p> <p>InCites dataset updated: 2024-08-30</p> <p>Includes Web of Science content indexed through: 2024-07-31</p>	<ul style="list-style-type: none"> <li>• Time period: 2022 – 2023</li> <li>• Document Type: Article, Review</li> <li>• Schema: Web of Science</li> <li>• Organization Name: (see appendix)</li> <li>• Dataset: InCites Dataset               <ul style="list-style-type: none"> <li>○ Emerging Sources Citation Index (ESCI) included.</li> </ul> </li> <li>• Research Areas:               <ul style="list-style-type: none"> <li>○ Psychology</li> <li>○ Psychology, Applied</li> <li>○ Psychology, Biological</li> <li>○ Psychology, Clinical</li> <li>○ Psychology, Developmental</li> <li>○ Psychology, Educational</li> <li>○ Psychology, Experimental</li> <li>○ Psychology, Mathematical</li> <li>○ Psychology, Multidisciplinary</li> <li>○ Psychology, Psychoanalysis</li> <li>○ Psychology, Social</li> </ul> </li> </ul> <p>Exported date: 2024-09-25</p> <p>InCites dataset updated: 2024-08-30</p> <p>Includes Web of Science content indexed through: 2024-07-31</p>

## Table of Entities & Documents for Comparative Analyses

Entity	# Web of Science Documents
<b>WoS Researcher Analysis Outputs</b>	
ORU Psychology Division	56 ( <a href="#">see attached bibliography</a> )
<b>WoS Organizational Analysis Outputs</b>	
Global Baseline (organizations)	124840
Sweden Baseline (organizations)	1977
Jonkoping University	53
Karlstad University	30
Karolinska Institutet	575
Linkoping University	188
Linnaeus University	74
Lund University	276
Mid-Sweden University	41
Orebro University	123
Stockholm University	273
Umea University	121
University of Gothenburg	263
Uppsala University	261

Table 2

## Impact Indicators

### Citation Impact

Citation impact is calculated for a set of documents by dividing the total number of citations by the total number of publications. It is used extensively as a bibliometric indicator in research performance evaluation and can be applied at all organizational levels.<sup>1</sup> ([see appendix for a more detailed explanation](#))

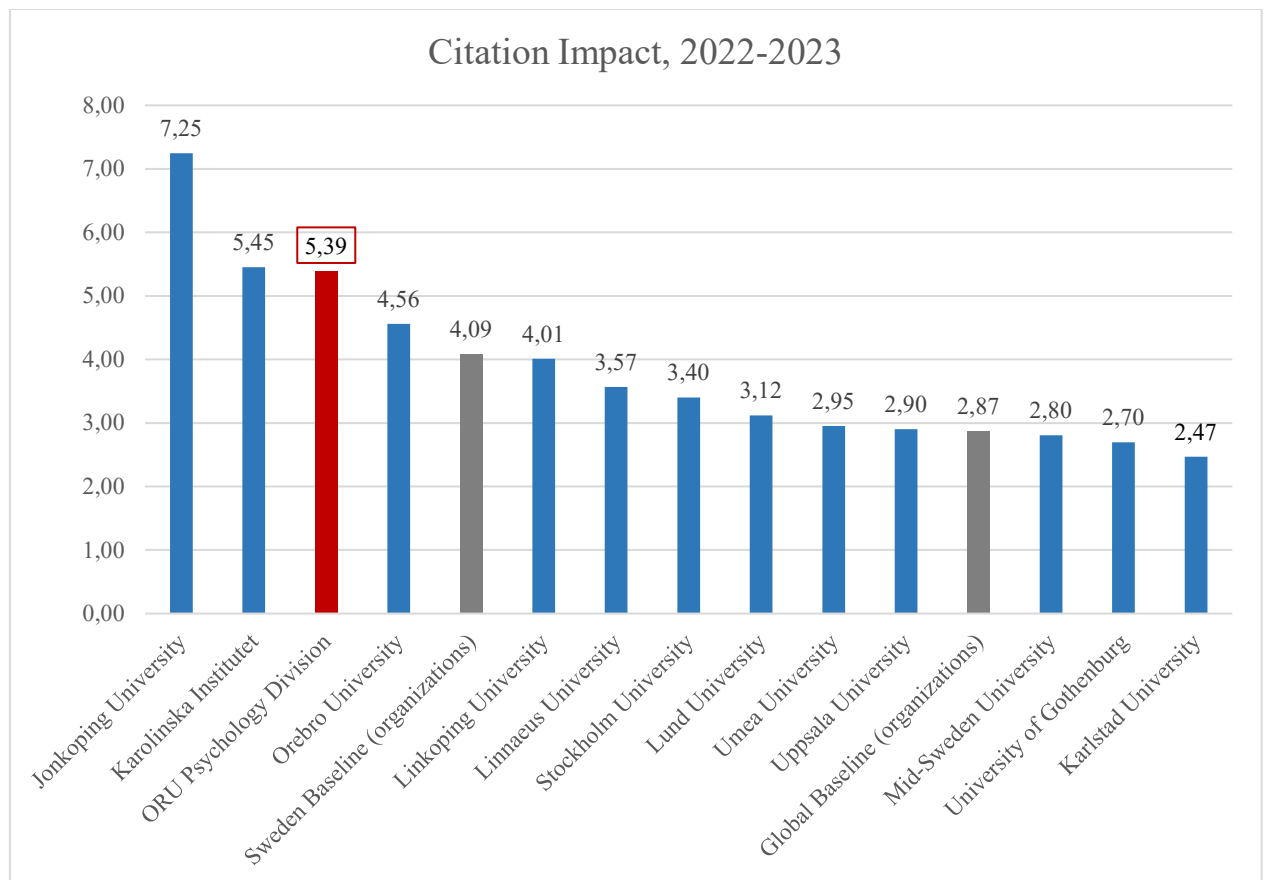


Figure 6

<sup>1</sup> "Citation Impact." *InCites Help Center*, <https://incites.zendesk.com/hc/en-gb/articles/24647918076177-Citation-Impact>. Accessed 15 September 2024.

## % Documents in Top 10%

Documents in the top 10% is the top ten percent most cited documents in a given subject category, year, and publication type divided by the total number of documents in a given set and is displayed as a percentage.<sup>2</sup> ([see appendix for a more detailed explanation](#))

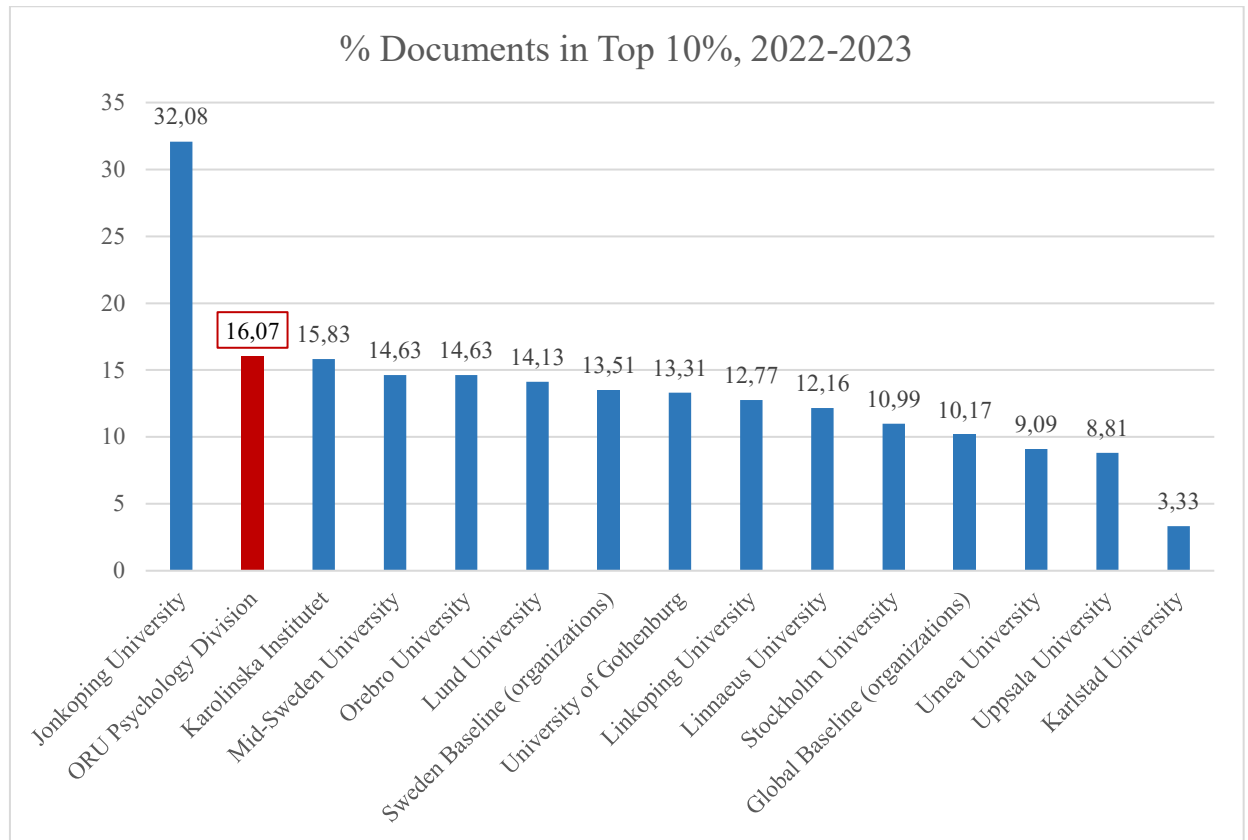


Figure 7

<sup>2</sup> "Documents in the Top 10%." *InCites Help Center*, [https://incites.zendesk.com/hc/en-gb/articles/22667533830801-Documents-in-the-Top-1-and-Top-10#h\\_01HPZ4SH20R4PRS9DKR9AAD6D5](https://incites.zendesk.com/hc/en-gb/articles/22667533830801-Documents-in-the-Top-1-and-Top-10#h_01HPZ4SH20R4PRS9DKR9AAD6D5). Accessed 15 September 2024.

## Impact Relative to World

Impact relative to the world is the citation impact of a set of outputs as a ratio of the world average.<sup>3</sup> ([see appendix for a more detailed explanation](#))

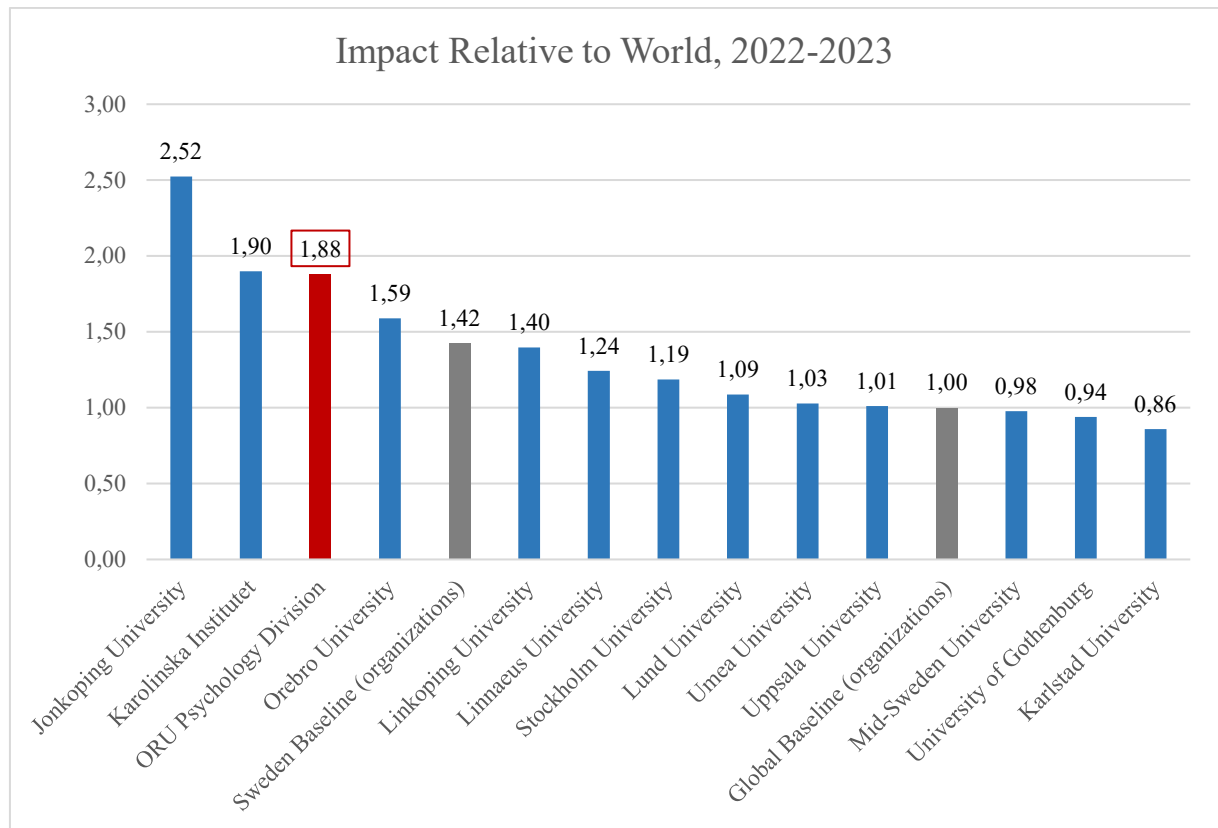


Figure 8

<sup>3</sup> "Impact Relative to World." *InCites Help Center*, <https://incites.zendesk.com/hc/en-gb/articles/25087345530513-Impact-Relative-to-World>. Accessed 15 September 2024.

## % Documents Cited

% documents cited is the percentage of publications in a set that have received at least one citation.<sup>4</sup> ([see appendix for a more detailed explanation](#))

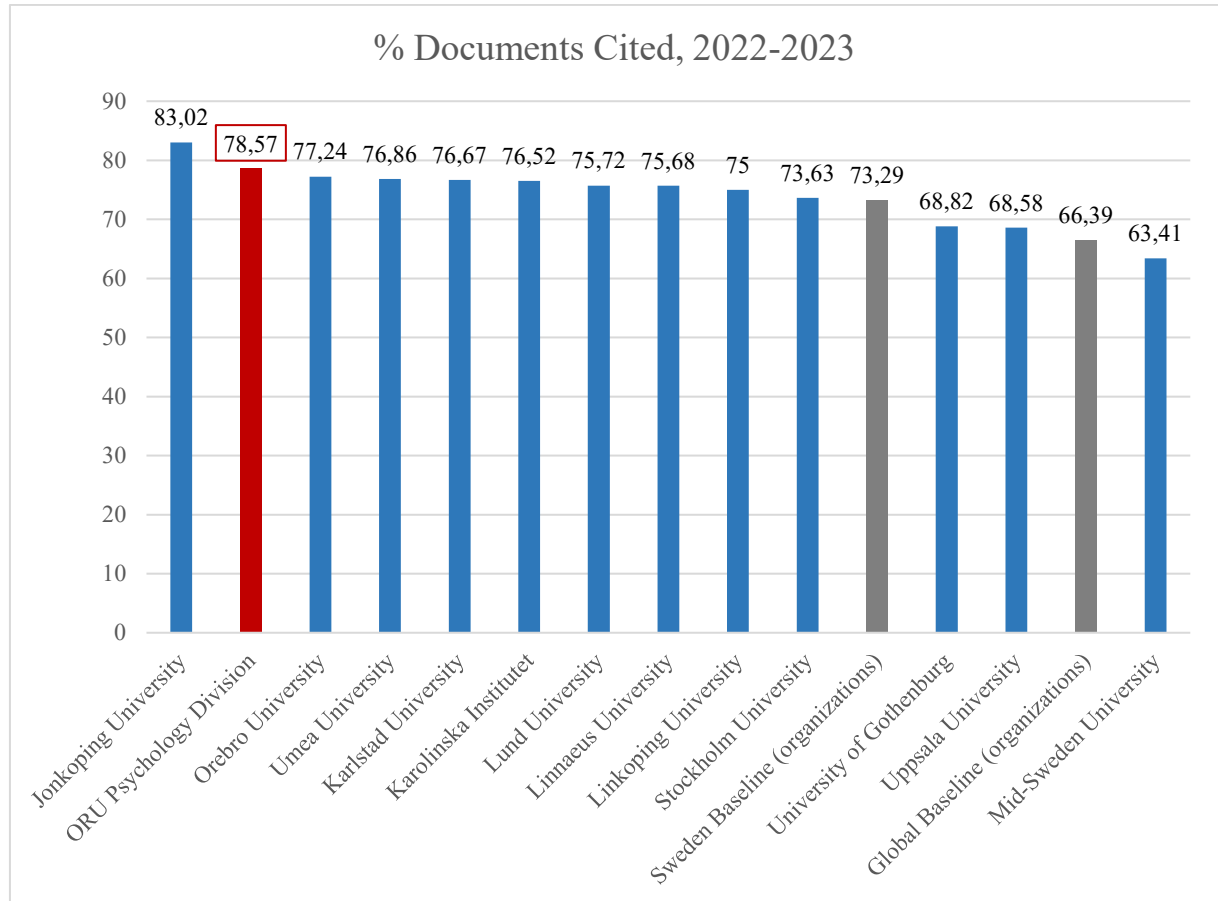


Figure 9

<sup>4</sup> "Documents Cited." *InCites Help Center*, [https://incites.zendesk.com/hc/en-gb/articles/22667664793617-Documents-Cited#h\\_01HPZ57Z294Y8E8BKC5194W9V1](https://incites.zendesk.com/hc/en-gb/articles/22667664793617-Documents-Cited#h_01HPZ57Z294Y8E8BKC5194W9V1). Accessed 15 September 2024.

## Normalized Indicators

### Category Normalized Citation Impact (CNCI)

CNCI is calculated by dividing the actual count of citing items by the expected citation rate for documents with the same document type, year of publication, and subject area. When a document is assigned to more than one subject area, an average of the ratios of the actual to expected citations is used. The CNCI of a set of documents, for example the collected works of an individual, institution, or country, is the average of the CNCI values for all the documents in the set.<sup>5</sup> ([see appendix for a more detailed explanation](#))

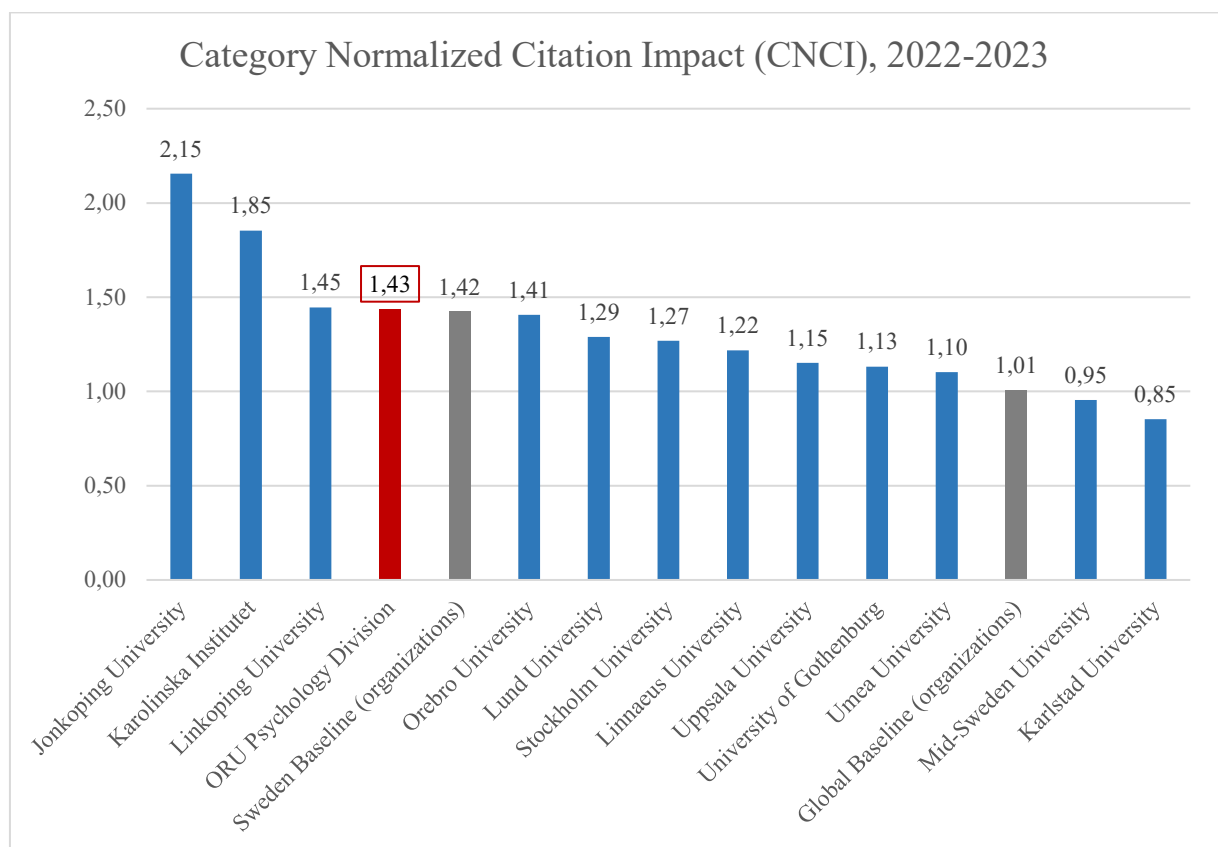


Figure 10

<sup>5</sup> "Category Normalized Citation Impact (CNCI)." *InCites Help Center*, <https://incites.zendesk.com/hc/en-gb/articles/25087312115601-Category-Normalized-Citation-Impact-CNCI>. Accessed 15 September 2024.



## Journal Normalized Citation Impact (JNCI)

JNCI normalizes the citation rate for the journal in which documents are published. The JNCI of a single publication is the ratio of the actual number of citing items to the average citation rate of publication in the same journal in the same year and with the same document type. The JNCI for a set of publications is the average of the JNCI for each publication.<sup>6</sup> ([see appendix for a more detailed explanation](#))

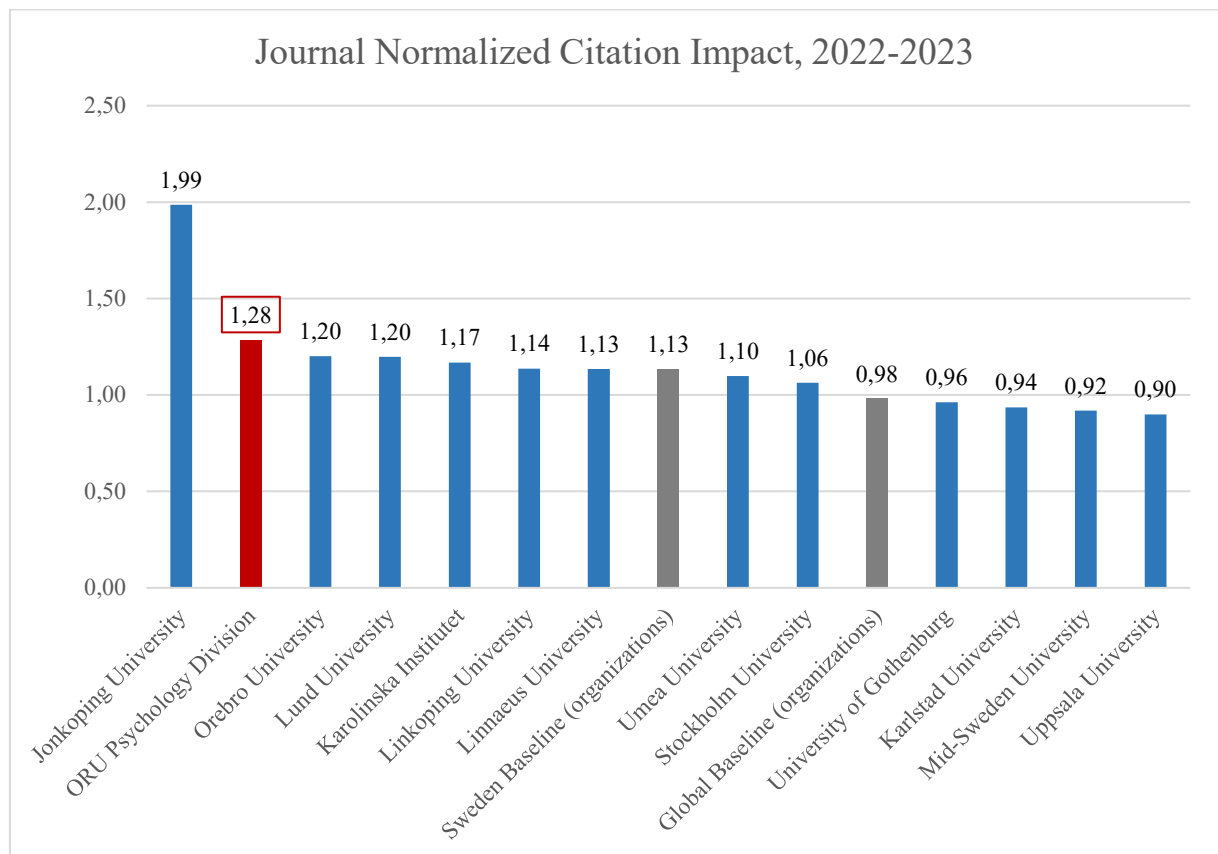


Figure 11

<sup>6</sup> "Journal Normalized Citation Impact (JNCI)." *InCites Help Center*, <https://incites.zendesk.com/hc/en-gb/articles/25087351508241-Journal-Normalized-Citation-Impact-JNCI>. Accessed 15 September 2024.

## Average Percentile

The average percentile of a publication is determined by creating a citation frequency distribution for all publication in the same year, subject category, and document type (by ascending order of citation count), and determining the percentage of papers at each level of citation. If a paper has a percentile value of 99, then 99% of the papers in the same subject category, year, and document type have a lower citation count.<sup>7</sup> ([see appendix for a more detailed explanation](#))

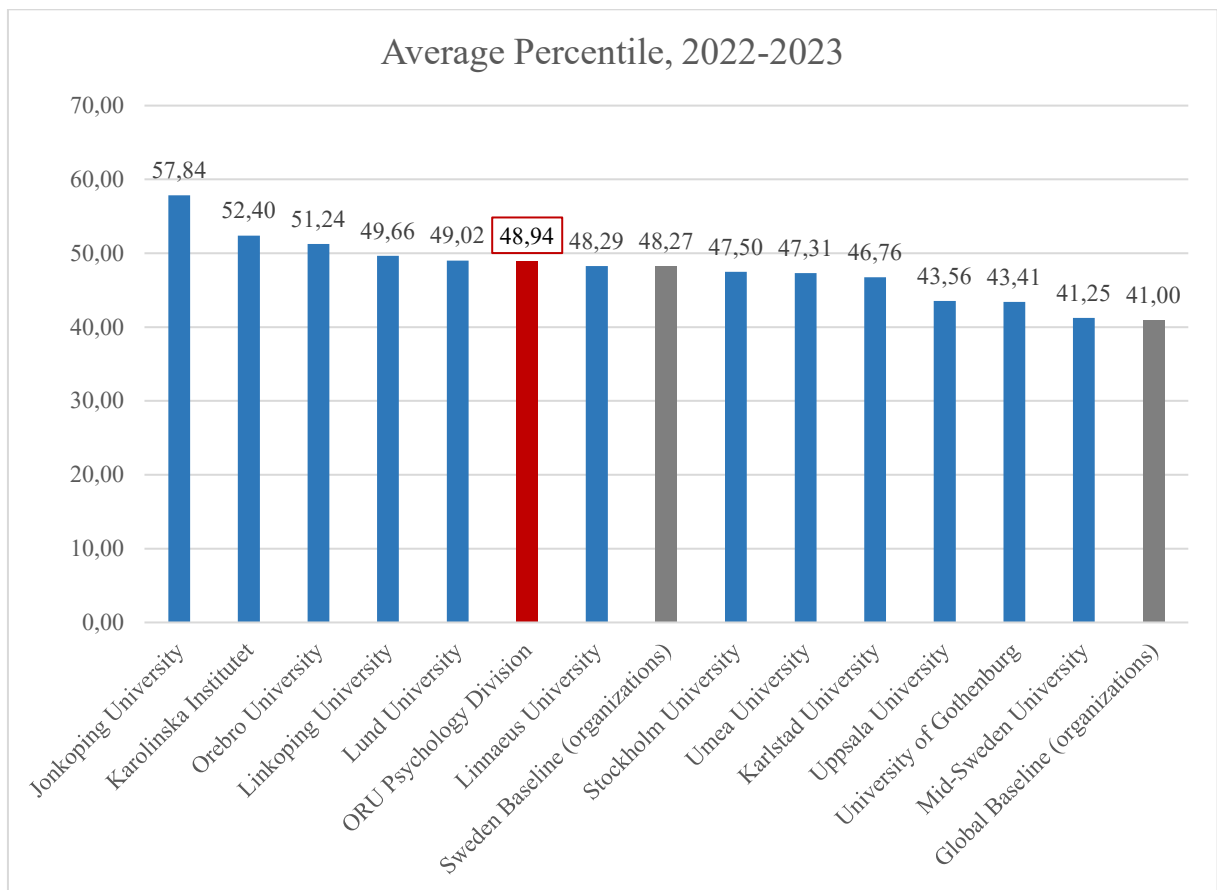


Figure 12

<sup>7</sup> "Average Percentile." *InCites Help Center*, <https://incites.zendesk.com/hc/en-gb/articles/25087394395153-Average-Percentile>. Accessed 15 September 2024.

## Journal Citation Reports Data

### % Documents in Q1 Journals

Percentage of documents that appear in a journal in a particular Journal Impact Factor Quartile in a given year. For example, if a value displays 10%, it indicates that 10% of the documents in the set were published in journals of the specified Journal Impact Factor Quartile in that year.<sup>8</sup> ([see appendix for a more detailed explanation](#))

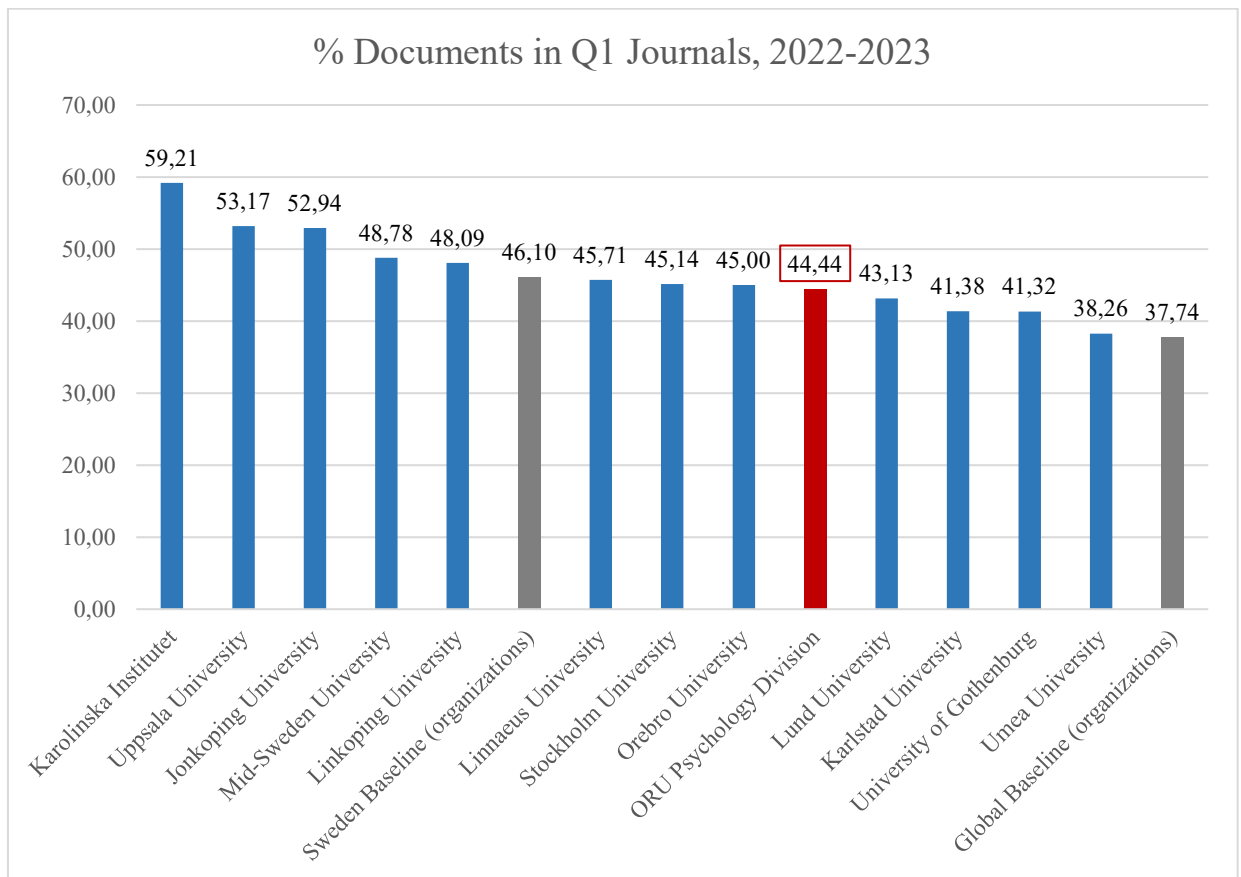


Figure 13

<sup>8</sup> "Journal Citation Reports Data." *InCites Help Center*, <https://incites.zendesk.com/hc/en-gb/articles/25088350365457-Journal-Citation-Reports-Data>. Accessed 15 September 2024.

## Collaboration Indicators

### % International Collaborations

% of international collaborations is calculated by dividing the number of international collaborations for an entity by the total number of documents for the same entity as a percentage.<sup>9</sup> ([see appendix for a more detailed explanation](#))

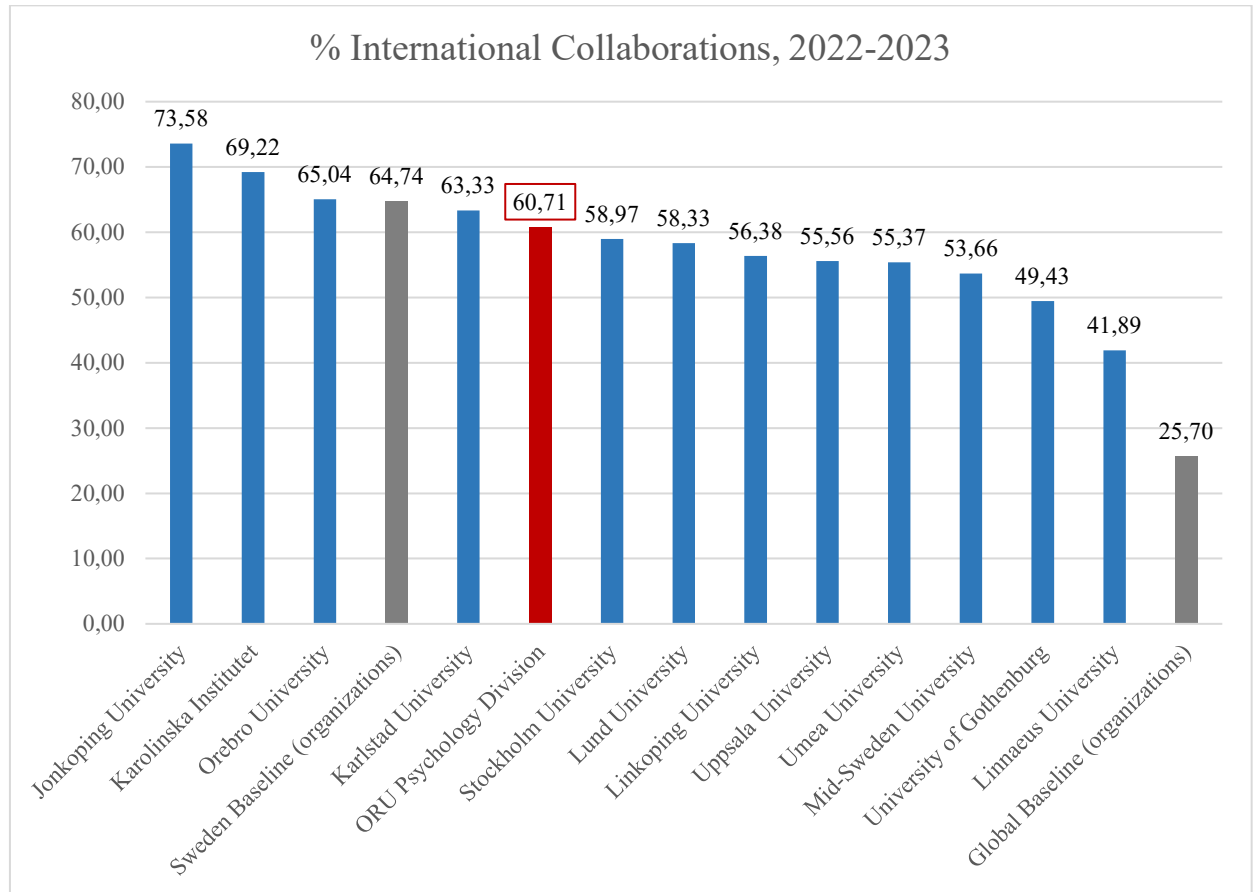


Figure 14

<sup>9</sup> "% International Collaborations." *InCites Help Center*, <https://incites.zendesk.com/hc/en-gb/articles/25087437743889-Collaboration-Indicators>. Accessed 15 September 2024.

## Essential Science Indicators

### % Highly Cited Papers

This indicator shows the number of ESI highly-cited papers for an entity (paper, author, institution, country, journal, and field) divided by the total number of documents produced by the given entity, represented as a percentage.<sup>10</sup> ([see appendix for a more detailed explanation](#))

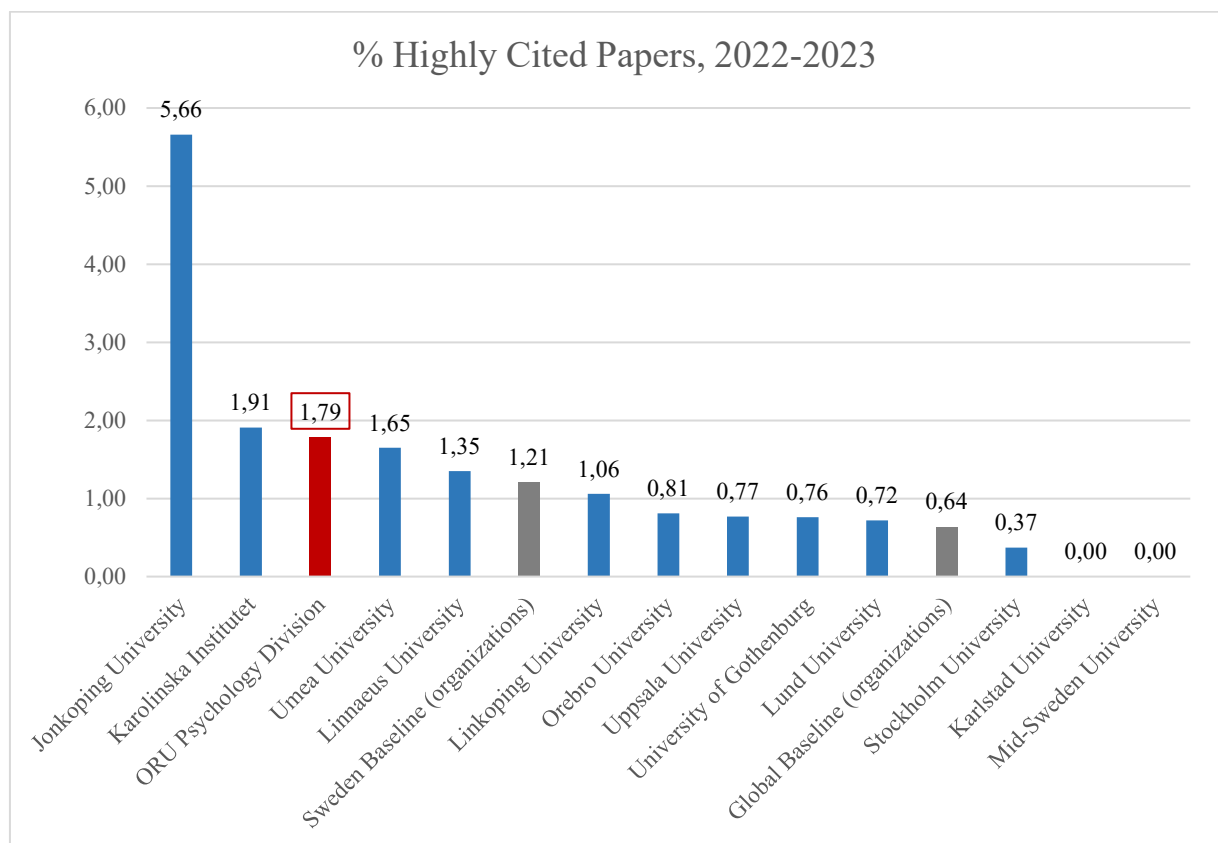


Figure 15

<sup>10</sup> "Citation Impact." *InCites Help Center*, <https://incites.zendesk.com/hc/en-gb/articles/25088233338513-Essential-Science-Indicators>. Accessed 15 September 2024.

## Web of Science Publications

NB: Documents in **BOLD** were categorized by Clarivate as belonging to one of the 11 psychology-specific WoS research areas and were used in the comparative analyses.

Abreu-Mendes, P., Baranowski, A., Berghmans, B., Borovicka, J., Cottrell, A., Dinis-Oliveira, P., Elneil, S., Hughes, J., Messelink, B., Tidman, V., Pinto, R., Tornic, J., Flink, I., Parsons, B., Zumstein, V., & Engeler, D. (2023). Myofascial Pelvic Pain: Best Orientation and Clinical Practice. Position of the European Association of Urology Guidelines Panel on Chronic Pelvic Pain. *European Urology Focus*, 9(1), 172–177. <https://doi.org/10.1016/j.euf.2022.07.007>

Andersson, P., Li, X., & Persson, J. (2022). The association between control of interference and white-matter integrity: A cross-sectional and longitudinal investigation. *Neurobiology of Aging*, 114, 49–60. <https://doi.org/10.1016/j.neurobiolaging.2022.03.002>

Arnison, T., Schrooten, M., Bauducco, S., Jansson-Fröjmark, M., & Persson, J. (2022). Sleep phase and pre-sleep arousal predicted co-developmental trajectories of pain and insomnia within adolescence. *Scientific Reports*, 12(1). <https://doi.org/10.1038/s41598-022-08207-y>

Arnison, T., Schrooten, M., Hesser, H., Jansson-Fröjmark, M., & Persson, J. (2022). Longitudinal, bidirectional relationships of insomnia symptoms and musculoskeletal pain across adolescence: The mediating role of mood. *Pain*, 163(2), 287–298. <https://doi.org/10.1097/j.pain.0000000000002334>

Askeland, K., Boe, T., Sivertsen, B., Linton, S., Heradstveit, O., Nilsen, S., & Hysing, M. (2022). Association of Depressive Symptoms in Late Adolescence and School Dropout. *School Mental Health*, 14(4), 1044–1056. <https://doi.org/10.1007/s12310-022-09522-5>

Axelsson, E., Kern, D., Hedman-Lagerlöf, E., Lindfors, P., Palmgren, J., Hesser, H., Andersson, E., Johansson, R., Olén, O., Bonnert, M., Lalouni, M., & Ljótsson, B. (2023). Psychological treatments for irritable bowel syndrome: A comprehensive systematic review and meta-analysis. *Cognitive Behaviour Therapy*, 52(6), 565–584. <https://doi.org/10.1080/16506073.2023.2225745>

Bartels, S., Johnsson, S., Boersma, K., Flink, I., McCracken, L., Petersson, S., Christie, H., Feldman, I., Simons, L., Onghena, P., Vlaeyen, J., & Wicksell, R. (2022). Development, evaluation and implementation of a digital behavioural health treatment for chronic pain: Study protocol of the multiphase DAHLIA project. *Bmj Open*, 12(4). <https://doi.org/10.1136/bmjopen-2021-059152>

Bartels, S., Taygar, A., Johnsson, S., Petersson, S., Flink, I., Boersma, K., McCracken, L., & Wicksell, R. (2023). Using Personas in the development of eHealth interventions for chronic pain: A scoping review and narrative synthesis. *Internet Interventions-the Application of Information Technology in Mental and Behavioural Health*, 32. <https://doi.org/10.1016/j.invent.2023.100619>

Bauducco, S., Gardner, L., Champion, K., Newton, N., & Gradisar, M. (2024). It's past your bedtime, but does it matter anymore? How longitudinal changes in bedtime rules relate to adolescents' sleep. *Journal of Sleep Research*, 33(2). <https://doi.org/10.1111/jsr.13940>

**Bayram Özdemir, S., Cucurachi, S., Yanagida, T., & Özdemir, M. (2024). Understanding the association between moral disengagement and ethnic victimization: Roles of bystanders in class. *European Journal of Developmental Psychology*, 21(4), 644–662. <https://doi.org/10.1080/17405629.2023.2280088>**

**Bayram Özdemir, S., Yanagida, T., & Özdemir, M. (2022). Bystanders of ethnic victimization: Do classroom context and teachers' approach matter for how adolescents intend to act? *Child Development*. <https://doi.org/10.1111/cdev.13822>**

Bejerot, S., Eklund, D., Hesser, H., Hietala, M., Kariis, T., Lange, N., Lebedev, A., Montgomery, S., Nordenskjöld, A., Petrovic, P., Soederbergh, A., Thunberg, P., Wikstroem, S., & Humble, M. (2023). Study protocol for a randomized controlled trial with rituximab for psychotic disorder in adults (RCT-Rits). *Bmc Psychiatry*, 23(1). <https://doi.org/10.1186/s12888-023-05250-5>

**Bjureberg, J., Ojala, O., Berg, A., Edvardsson, E., Kolbeinsson, O., Molander, O., Morin, E., Nordgren, L., Palme, K., Sarnholm, J., Wedin, L., Ruck, C., Gross, J., & Hesser, H. (2023). Targeting Maladaptive Anger With Brief Therapist-Supported Internet-Delivered Emotion Regulation Treatments: A Randomized Controlled Trial. *Journal of Consulting and Clinical Psychology*, 91(5), 254–266. <https://doi.org/10.1037/ccp0000769>**

Bjureberg, J., Ojala, O., Hesser, H., Häbel, H., Sahlin, H., Gratz, K., Tull, M., Claesdotter Knutsson, E., Hedman-Lagerlöf, E., Ljótsson, B., & Hellner, C. (2023). Effect of Internet-Delivered Emotion Regulation Individual Therapy for Adolescents With Nonsuicidal Self-Injury Disorder: A Randomized Clinical Trial. *Jama Network Open*, 6(7). <https://doi.org/10.1001/jamanetworkopen.2023.22069>

Bohm-Starke, N., Ramsay, K., Lytsy, P., Nordgren, B., Sjöberg, I., Moberg, K., & Flink, I. (2022). Treatment of Provoked Vulvodynia: A Systematic Review. *Journal of Sexual Medicine*, 19(5), 789–808. <https://doi.org/10.1016/j.jsxm.2022.02.008>

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## Appendix

### Indicator Explanations

**NB:** The following indicator explanations come directly from Clarivate's *InCites Help Center* <https://incites.zendesk.com/hc/en-gb>. Accessed 15 September 2024.

#### Citation Impact Explanation

Calculate the citation impact of a set of documents by dividing the total number of citations by the total number of publications. Citation impact shows the average number of citations a document received.

$$\text{Citation Impact} = \frac{\sum \text{Citations}}{\sum \text{Papers}}$$

Citation Impact has been extensively used as a bibliometric indicator in research performance evaluation. You can also apply it at all organization levels. However, there are limitations. For example, it ignores the total volume of research outputs.

The following table shows an example of the Citation Impact for two researchers. Researcher A has only one publication that received fifty citations while Researcher B has published 10 documents that received 200 citations. Researcher A has a higher Citation Impact (50) than Researcher B (20), even though Researcher B published more documents and received more citations overall.

	Total Publications	Total Citations	Citation Impact
<b>Researcher A</b>	1	50	50
<b>Researcher B</b>	10	200	20

At the field level, the Citation Impact of certain disciplines is often higher than in other scientific fields due to several factors, like the degree to which references from other fields are cited.

#### Documents in Top 10% Explanation

Number and percentage of publication in the top 1% and 10% based on citations by category, year, and document type.

The % Documents in Top 1% indicator is the top one percent most cited documents (as defined in the description of Average Percentile) in a given subject category, year and publication type divided by the total number of documents in a given set of documents,

displayed as a percentage. A higher value is considered to be higher performance. A value of “1” for a set of documents represents that one percent of the publications in that set are in the top one percent of the world regardless of subject, year and document type and would therefore be considered to be performing at the same level as world average. A value above “1” represents that more than one percent of papers in the set are in the top one percent of the world and a value of less than “1” would represent that less than one percent of the papers in the set are in the top one percent of the world.

The % Documents in Top 1% indicator is considered to be an indicator of research excellence as only the most highly cited papers would make the top one percent in their respective field, year and document type. The indicator can be used in conjunction with other indicators to provide a more complete picture of performance. The % Documents in Top 1% indicator can be applied to any level of aggregation (author, institution, national/international, field).

Although the top one percent is a relevant measure of excellence, by its nature it is typically only a small percentage of any document set and therefore the statistical relevance of small sample sizes is a significant concern.

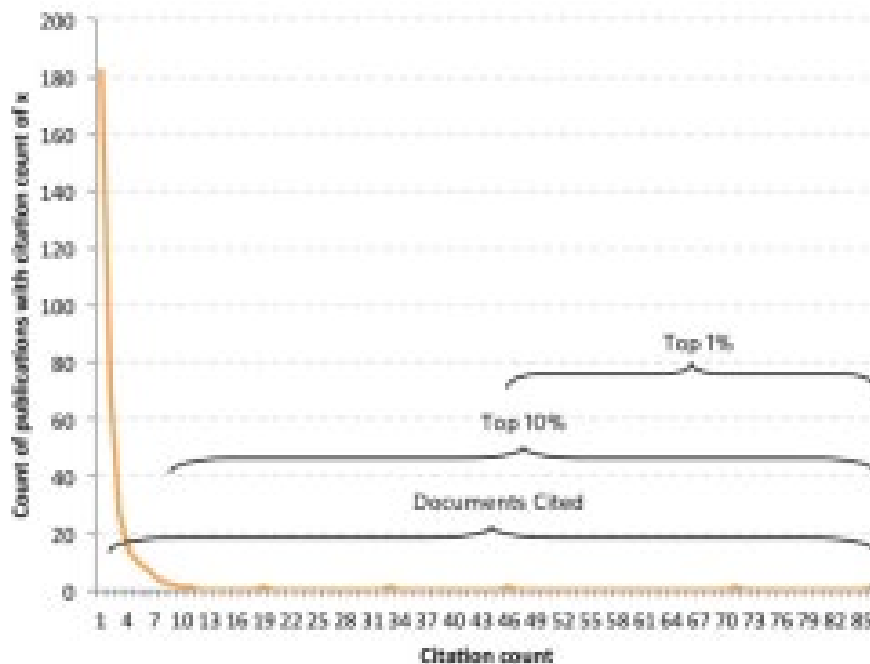
The % Documents in Top 1% is best used with large datasets such as the accumulated publications of an institution, country, or region and for a publication window of several years. The % Documents in Top 10% is very similar to the % Documents in Top 1% simply with a threshold of 10 percent instead of one percent. Therefore, typical performance will be around a value of 10 and values of higher than 10 would be considered above average performance. The two indicators complement each other very well to give a broader picture of highly performing research (10 percent) and excellence (one percent).

The % Documents in Top 10% is also more appropriate than the % Documents in Top 1% when the size of the data set is smaller. However, it is still only appropriate for large to medium size data sets and should be used with a great deal of caution when looking at small datasets such as the output of an individual author.

Complementary indicators include:

- Average Percentile

The following is a sample citation distribution. InCites also includes pre-calculated indicators of collaboration which can be used for complementary performance indicators.



## Impact Relative to World Explanation

Citation impact of the set of publications as a ratio of world average.

Apply this indicator at the institutional, national, and international level. It shows the impact of the research relative to the impact of the global research, and it is an indicator of relative research performance. The world average is always equal to one. If the numerical value of the Impact Relative to World exceeds one, then the assessed entity is performing above the world average. If it is less than one, then it is performing below the world average.

$$\text{Impact relative to World} = \frac{\text{Citation Impact}}{\text{Baseline (world citation impact)}}$$

Although this indicator does normalize for year, it does not take into account the differences in the subject mix that an institution or a country/region is publishing in; therefore, it is recommended to use it in conjunction with bibliometric indicators that do take into account the differences in the average citation rates of the set of documents under evaluation.

## % Documents Cited Explanation

The percentage of publications in a set that have received at least one citation. It shows the extent to which other researchers in the scientific community utilize the research output produced by an entity. You can also think of this indicator as the inverse of the number of papers that did not get cited.

The %Documents Cited indicator will vary depending on the selected time period and publication types included in the analysis. The % Documents Cited is not a normalized indicator. For example, if the analysis includes documents that have been published during the current or recent years, some of these documents may not have had time to accrue citations.

Complementary indicators include:

- Citation Impact
- Impact Relative to World

### Category Normalized Citation Impact (CNCI) Explanation

The Category Normalized Citation Impact (CNCI) of a document is calculated by dividing the actual count of citing items by the expected citation rate for documents with the same document type, year of publication and subject area. When a document is assigned to more than one subject area an average of the ratios of the actual to expected citations is used. The CNCI of a set of documents, for example the collected works of an individual, institution or country/region, is the average of the CNCI values for all the documents in the set.

For a single paper that is only assigned to one subject area, this can be represented as:

$$CNCI = \frac{c}{e_{ftd}}$$

For a single paper assigned to multiple subjects, the CNCI can be represented as the average of the ratios for of actual to expected citations for each subject area:

$$CNCI = \frac{\sum \frac{c}{e_{f(n)td}}}{n} = \frac{\frac{c}{e_{f(1)td}} + \frac{c}{e_{f(2)td}} \dots + \frac{c}{e_{f(n)td}}}{n}$$

For a group of papers, the CNCI value is the average of the values for each of the papers:

$$CNCI_i = \frac{\sum_i CNCI_{each\ paper}}{p_i}$$

Equation Key	
<b>e</b>	Expected citation rate or baseline

Equation Key	
<b>c</b>	Times cited
<b>p</b>	Number of papers
<b>f</b>	The field or subject area
<b>t</b>	Year
<b>d</b>	Document Type
<b>n</b>	The number of subjects to which a paper is assigned
<b>i</b>	Entity being evaluated (institution, country/region, person, etc.)

**Explorers other than Research Area with the Research Area filter applied:**

- When a document is in that unique category, a single CNCI is calculated
- When a document is in that category plus other (multiple categories), then a CNCI is calculated for each category and the average result is provided as CNCI

**Research Area explorer with one category filter:**

- When a document is in that unique category, a single CNCI is calculated
- When a document is in that category plus other (multiple categories), then a single CNCI is calculated and provided, based on the category in the filter.

This is why there can be some small differences in the values when comparing these contexts.

CNCI is a valuable and unbiased indicator of impact irrespective of age, subject focus, or document type. Therefore, it allows comparisons between entities of different sizes and different subject mixes.

- A CNCI value of 1 represents performance at par with world average.

- Values above 1 are considered above average.
- Values below 1 are considered below average.
- A CNCI value of 2 is considered twice world average.

A quirk of the way we calculate baselines (whole counting of subjects for papers in more than one subject category) and CNCI (fractional counting of subjects for papers in more than one subject category) result in the CNCI of the world not being equal to one exactly.

CNCI is an ideal indicator for benchmarking at all organizational levels (author, institution, region etc.). You can also use CNCI to identify impactful sub-sets of documents and assess any research activity. For example, an institution may use the CNCI to assess which collaborations are most impactful or identify new potential collaboration opportunities. An institution may also use CNCI to identify the performance of up-and-coming researchers compared to established ones, and aid with faculty recruitment by assessing candidates. As a funding organization, you may use the CNCI as a quantitative performance indicator to monitor the performance of funded projects or assess the track record of a research teams applying for new funding.

### **Known Issues Using CNCI**

When dealing with small sets of publications, for example, the publications of one individual, the CNCI values may be inflated by a single highly cited paper. Because CNCI is an average, when looking at larger sets of publications, such as the collected works of an institution, very highly cited papers can have a large influence on the CNCI value.

The baseline values for current year can be very low and therefore the CNCI values for current year can fluctuate more than expected.

### **Steps to Resolve CNCI Issues**

- Use the CNCI value alongside other indicators to have a picture of performance as a whole and to identify anomalies and data artifacts.
- Use larger sets of publications, when possible, for example, by extending the time period or expanding the number of subjects covered.
- Show care when analysing documents from most recent publication years. Include documents from a range of years for more meaningful analysis.
- Limit your analysis to significant research publications to the document type of Article or Review. If appropriate, to aid increased coverage of some fields, consider document types Book Chapters and Conference Proceedings.
- Always use citation indicators to aid and not replace human judgment.

Complementary Indicators Useful with CNCI



- Journal Normalized Citation Impact
- % Documents in Top 1% and % Documents in Top 10%
- Average Percentile

### Journal Normalized Citation Impact (JNCI) Explanation

The Journal Normalized Citation Impact (JNCI) indicator is a similar indicator to the Normalized Citation Impact, but instead of normalizing per subject area or field, it normalizes the citation rate for the journal in which the document is publishing.

The Journal Normalized Citation Impact of a single publication is the ratio of the actual number of citing items to the average citation rate of publications in the same journal in the same year and with the same document type. The JNCI for a set of publications is the average of the JNCI for each publication.

The JNCI indicator can reveal information about the performance of a publication (or a set of publications) in relation to how other researchers perform when they publish their work in a given journal (or a set of journals). It can provide the answers to questions, such as “How do my papers perform in the journals I publish?” If the numerical value of the JNCI exceeds one, then the assessed research entity is performing above average. If it is less than one, then it is performing below the average.

The JNCI indicator is also useful for publishers as a measure of post-publication performance and it can reveal which research work exceeds average performance and therefore increases the citation rates of a journal.

Researcher	Total Publications	Total Citations	Citation Impact	H-index	Normalized Citation Impact	Journal Normalized Citation Impact
<b>Researcher D</b>	66	290	4.39	9	1.32	1.86
<b>Researcher E</b>	62	289	4.66	9	0.45	0.72

This table shows an example of the application of the NCI and JNCI indicators at the author level. Researcher D and Researcher E both have similar numbers of publications and citations. Their Citation Impact is almost the same, and their h-index is identical. Using only the first four indicators featured in table 1, it is not possible to distinguish the performance of the two researchers. However, the two researchers may be conducting

research in very different fields and may have a different history of publication (older papers vs new papers). Using the NCI and JNCI indicators gives us a better understanding of their performance relative to their peers in terms of subject, document type and age of publication.

From the normalized indicators, one can quickly identify that Researcher D has both NCI (1.32) and JNCI (1.86) values that are above average (>1).

While Researcher E has a NCI (0.45) and JNCI (0.72) that are below average (<1). Note that the JNCI is a relative research performance indicator. Even though in many cases NCI and JNCI might correlate positively, this might not always be the case. For example, if for a given researcher the NCI indicator is above average while at the same time the JNCI indicator is below average, this might mean that the researcher receives more citations than the average for their published research work in the scientific field that the researcher is active in overall, but they publish in journals with high citation rates (e.g., Nature or Science) and received less citations than the average published work does for the given journals.

### Average Percentile Explanation

The percentile of a publication is determined by creating a citation frequency distribution for all publications in the same year, subject category, and document type (arranging the papers in ascending order of citation count), and determining the percentage of papers at each level of citation. If a paper has a percentile value of 99, then 99% of the papers in the same subject category, year, and document type have a lower citation count.

A percentile is a normalized indicator because it indicates how a paper performed relative to others in its field, year, and document type. For any set of papers, an Average Percentile can be calculated as the arithmetic mean of all the percentiles of all the papers in the set. In the case that a paper is assigned to more than one category, the category in which the percentile value is closest to 100 is used (the best performing value). Percentile values are rounded to the second decimal place.

Times Cited	Rank	Rank / Total * 100	Percentile
0	1	1/11*100	9.09
0	1	1/11*100	9.09
1	3	3/11*100	27.27
1	3	3/11*100	27.27
1	3	3/11*100	27.27

Times Cited	Rank	Rank / Total * 100	Percentile
2	6	6/11*100	54.54
2	6	6/11*100	54.54
3	8	8/11*100	72.73
10	9	9/11*100	81.81
50	10	10/11*100	90.91
1000	11	11/11*100	100

Times Cited	Rank	Rank / Total * 100	Percentile
0	1	1/11*100	9.09
0	1	1/11*100	9.09
1	3	3/11*100	27.27
1	3	3/11*100	27.27
1	3	3/11*100	27.27
2	6	6/11*100	54.54
2	6	6/11*100	54.54
3	8	8/11*100	72.73
10	9	9/11*100	81.81
50	10	10/11*100	90.91
1000	11	11/11*100	100

### % Documents in Q1 Journals Explanation

Percentage of documents that appear in a journal in a particular Journal Impact Factor Quartile in a given year. For example, if a value displays 10%, it indicates that 10% of the documents in the set were published in journals of the specified Journal Impact Factor Quartile in that year.

Formula

**% of documents in Q1 Journals = (Count of Documents in Q1 Journals) / (Count of Documents in JIF Journals)**

### **% International Collaborations Explanation**

- The number of international collaborations for an entity divided by the total number of documents for the same entity represented as a percentage.
- An indication of an institution or author’s ability to attract international collaborations.

### **% Highly Cited Papers Explanation**

This indicator shows the number of ESI highly cited papers for an entity (paper, author, institution, country, journal, and field) divided by the total number of documents produced by the given entity, represented as a percentage. It is a measure of excellence and can show what percentage of an institution’s output is among the most impactful papers in the world.

### **International Collaborations by Country (full list)**

Countries/Regions	Record Count	% of Total Publications
USA	21	18.3
ENGLAND	12	10.4
AUSTRALIA	11	9.6
PORTUGAL	9	7.8
GERMANY	7	6.1
NETHERLANDS	7	6.1
NORWAY	7	6.1
CANADA	6	5.2
BELGIUM	5	4.3
FINLAND	5	4.3
SPAIN	5	4.3
DENMARK	4	3.5
FRANCE	4	3.5
ITALY	4	3.5
TURKIYE	3	2.6

AUSTRIA	2	1.7
CHILE	2	1.7
COLOMBIA	2	1.7
CYPRUS	2	1.7
INDIA	2	1.7
IRAN	2	1.7
NEW ZEALAND	2	1.7
CHINA	2	1.7
PHILIPPINES	2	1.7
POLAND	2	1.7
SWITZERLAND	2	1.7
UNITED ARAB EMIRATES	2	1.7
BANGLADESH	1	0.9
BRAZIL	1	0.9
CZECH REPUBLIC	1	0.9
EGYPT	1	0.9
GHANA	1	0.9
INDONESIA	1	0.9
IRELAND	1	0.9
ISRAEL	1	0.9
JAPAN	1	0.9
JORDAN	1	0.9
KENYA	1	0.9
LATVIA	1	0.9
MALAYSIA	1	0.9
NIGERIA	1	0.9
OMAN	1	0.9
PALESTINE	1	0.9
ROMANIA	1	0.9
RUSSIA	1	0.9

SAUDI ARABIA	1	0.9
SCOTLAND	1	0.9
SINGAPORE	1	0.9
SLOVAKIA	1	0.9
TANZANIA	1	0.9
THAILAND	1	0.9
TURKEY	1	0.9
UGANDA	1	0.9

### Web of Science Research Areas (full list)

Research Areas	Record Count	% of Total Publications
Psychology	55	47.8
Neurosciences Neurology	28	24.3
Psychiatry	14	12.2
Anesthesiology	8	7.0
Environmental Sciences Ecology	4	3.5
Family Studies	4	3.5
Rehabilitation	4	3.5
Social Sciences Other Topics	4	3.5
Behavioral Sciences	3	2.6
Education Educational Research	3	2.6
Geriatrics Gerontology	3	2.6
Public Environmental Occupational Health	3	2.6
Radiology Nuclear Medicine Medical Imaging	3	2.6
Science Technology Other Topics	3	2.6
Urology Nephrology	3	2.6
Gastroenterology Hepatology	2	1.7
General Internal Medicine	2	1.7
Obstetrics Gynecology	2	1.7
Pediatrics	2	1.7

Social Work	2	1.7
Sport Sciences	2	1.7
Audiology Speech Language Pathology	1	0.9
Cardiovascular System Cardiology	1	0.9
Computer Science	1	0.9
Health Care Sciences Services	1	0.9
Medical Informatics	1	0.9
Meteorology Atmospheric Sciences	1	0.9
Nursing	1	0.9
Oncology	1	0.9
Orthopedics	1	0.9
Otorhinolaryngology	1	0.9
Robotics	1	0.9
Social Issues	1	0.9
Sociology	1	0.9

### Web of Science Categories (full list)

Web of Science Categories	Record Count	% of Total Publications
Neurosciences	21	18.3
Clinical Neurology	19	16.5
Psychology Multidisciplinary	17	14.8
Psychology Developmental	16	13.9
Psychology Clinical	15	13.0
Psychiatry	14	12.2
Anesthesiology	8	7.0
Psychology	6	5.2
Family Studies	4	3.5
Psychology Experimental	4	3.5
Rehabilitation	4	3.5
Behavioral Sciences	3	2.6

Education Educational Research	3	2.6
Environmental Studies	3	2.6
Geriatrics Gerontology	3	2.6
Multidisciplinary Sciences	3	2.6
Neuroimaging	3	2.6
Public Environmental Occupational Health	3	2.6
Radiology Nuclear Medicine Medical Imaging	3	2.6
Urology Nephrology	3	2.6
Gastroenterology Hepatology	2	1.7
Gerontology	2	1.7
Hospitality Leisure Sport Tourism	2	1.7
Medicine General Internal	2	1.7
Obstetrics Gynecology	2	1.7
Pediatrics	2	1.7
Psychology Applied	2	1.7
Psychology Educational	2	1.7
Psychology Social	2	1.7
Social Sciences Interdisciplinary	2	1.7
Social Work	2	1.7
Sport Sciences	2	1.7
Audiology Speech Language Pathology	1	0.9
Cardiac Cardiovascular Systems	1	0.9
Computer Science Artificial Intelligence	1	0.9
Environmental Sciences	1	0.9
Health Care Sciences Services	1	0.9
Medical Informatics	1	0.9
Meteorology Atmospheric Sciences	1	0.9
Nursing	1	0.9
Oncology	1	0.9
Orthopedics	1	0.9



Otorhinolaryngology	1	0.9
Robotics	1	0.9
Social Issues	1	0.9
Sociology	1	0.9