

Leon Kroczek, Dr. rer. nat., Dipl.-Psych.

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Date of Birth: 22.03.1988

Place of Birth: Nürnberg, Germany

1 daughter (*2017), 2 sons (*2021)



Current Position

Since 2021 Akademischer Rat, Department of Clinical Psychology and Psychotherapy, University of Regensburg, Germany; Prof. Dr. Mühlberger

Academic Education

2019 PhD in Psychology, Max Planck Institute for Human Cognitive and Brain Sciences/Leipzig University, „The impact of speaker information on language processing“ (*summa cum laude*)

2008 – 2013 Diploma (MSc equivalent), Psychology, University of Regensburg, Germany

2007 Abitur (A-Level equivalent)

Awards

2022 XR Research Awards – 1st Prize

2020 Otto Hahn medal by the Max Planck Society for outstanding scientific achievements in connection with the doctorate

Academic Experience

- 2018 – 2020** PostDoc, Department of Clinical Psychology and Psychotherapy, University of Regensburg, Germany, Prof. Dr. Mühlberger
- 2013 – 2018** PhD, Department of Neuropsychology, Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Germany, Supervisors: Prof. Dr. Friederici and Dr. Thomas Gunter
- 2012 – 2013** Undergraduate research assistant, Department of Neuropsychology, Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Germany
- 2012** Intern, fMRI group Bergen, Bergen, Norway, Supervisors: Prof. Dr. Hugdahl, Dr. Westerhausen
- 2011 – 2012** Undergraduate research assistant, Department of Cognitive Psychology, University of Regensburg, Prof. Dr. Bäuml
- 2011** Intern, Department of Neuropsychology, Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Germany, Prof. Dr. Friederici

Acquired Funding

- 2023** DFG project (Sachbeihilfe) "Influence of audio rendering in virtual environments on realism, presence and socio-cognitive processing (2nd funding period)" together with Prof. Dr. Matthias Blau, Prof. Dr. Andreas Mühlberger, Prof. Dr. Steven van de Par (Nr. 444832396; Amount 284.304 €)
- 2022** XR Research Award for my project "The impact of social reciprocity on attitudes and behavior in virtual social interactions" (Amount: 20.000€ comprising financial and technical support)
- 2019** UR Fellows program to foster interdisciplinary research projects (Amount: 10.000 €; With Prof. Dr. Angelika Lingnau, Prof. Dr. Christian Wolff and Prof. Dr. Andreas Mühlberger)

Academic Self-Government

Since 2022	Member of the ethics committee at Regensburg University
2022 - 2023	PostDoc Representative at the Center for Graduate & Postgraduate Researchers at Regensburg University
Since 2018	Member of the committee regarding applicant selection of the MSc Psychology program at Regensburg University

Reviewing

Since 2023	Review Editor at <i>Frontiers in Psychology Emotion Science</i> Review Editor at <i>Frontiers in Behavioral Neuroscience</i>
Ad-hoc	<i>Psychophysiology, Cerebral Cortex, SCAN, IEEE-VR, CHI, Biological Psychology, Behavior Research and Therapy, British Journal of Psychology, Collabra: Psychology, Computers in Human Behavior, International Journal of Human-Computer Interaction, F1000, Sensors, Klinische Psychologie und Psychotherapie, Journal of Environmental Psychology, Frontiers in Human Neuroscience, Frontiers in Psychology, PLOS One, Language, Cognition & Neuroscience, Brain Research</i>

Memberships

Society of Affective Neuroscience (SANS), German Psychological Society (DGPS), DGPS section “Biological Psychology and Neuropsychology”, Interest Group Open and Reproducible Research (IGOR)

Publications

Peer-reviewed

- Kroczek, L. O. H.**, & Mühlberger, A. (2025). Neural mechanisms underlying the interactive exchange of facial emotional expressions. *Social Cognitive and Affective Neuroscience*, 20(1), nsaf001. <https://doi.org/10.1093/scan/nsaf001>
- Paul, K., Angus, D. J., Bublitzky, F., Dietrich, R., Endrass, T., ..., **Kroczek, L. O. H.**, ... & Pourtois, G. (2025). Revisiting the electrophysiological correlates of valence and expectancy in reward processing—A Multi-lab replication. *Cortex*. 184, 150-171. <https://doi.org/10.1016/j.cortex.2024.12.017>
- Roßkopf, S., **Kroczek, L. O. H.**, Stärz, F., Blau, M., Van de Par, S., & Mühlberger, A. (2024). The impact of binaural auralizations on sound source localization and social presence in audiovisual virtual reality: converging evidence from placement and eye-tracking paradigms. *Acta Acustica*, 8, 72. <https://doi.org/10.1051/aacus/2024064>
- Kroczek, L. O. H.**, Lingnau, A., Schwind, V., Wolff, C., & Mühlberger, A. (2024). Observers predict actions from facial emotional expressions during real-time social interactions. *Behavioural Brain Research*, 471, 115126. <https://doi.org/10.1016/j.bbr.2024.115126>
- Kroczek, L. O. H.**, Roßkopf, S., Stärz, F., Blau, M., Van de Par, S., & Mühlberger, A. (2024). The influence of affective voice on sound distance perception. *Journal of Experimental Psychology: Human Perception and Performance*. 50 (9), 918-933. <https://dx.doi.org/10.1037/xhp0001222>
- Schröder, B., Kroczek, A., **Kroczek, L.O.H.**, Ehlis, A. C., Batra, A., & Mühlberger, A. (2024). Cigarette craving in virtual reality cue exposure in abstainers and relapsed smokers. *Scientific Reports*, 14(1), 7538. <https://doi.org/10.1038/s41598-024-58168-7>
- Schroen, J., Gunter, T.C., Nummsen, O., **Kroczek, L. O. H.**, Hartwigsen, G., & Friederici, A.D. (2023). Causal Evidence for a Coordinated Temporal Interplay within the Language Network. *Proceedings of the National Academy of Sciences*. 120 (47), e2306279120. <https://doi.org/10.1073/pnas.2306279120>
- Kroczek, L. O. H.**, & Mühlberger, A. (2023). Public speaking training in front of a supportive audience in Virtual Reality improves performance in real-life. *Scientific Reports*, 13, 13968. <https://doi.org/10.1038/s41598-023-41155-9>
- Kroczek, L. O. H.**, & Mühlberger, A. (2023). Time to Smile: How Onset Asynchronies Between Reciprocal Facial Expressions Influence the Experience of Responsiveness

of a Virtual Agent. *Journal of Nonverbal Behavior*, 1-16.
<https://doi.org/10.1007/s10919-023-00430-z>

Kroczek, L. O. H., & Mühlberger, A. (2022). Returning a smile: Initiating a social interaction with a facial emotional expression influences the evaluation of the expression received in return. *Biological Psychology*,
<https://doi.org/10.1016/j.biopspsycho.2022.108453>

Kroczek, L.O.H., Böhme, S. & Mühlberger, A. (2022). Face masks reduce interpersonal distance in virtual reality. *Scientific Reports*, 12, 2213.
<https://doi.org/10.1038/s41598-022-06086-x>

Pfaller M., **Kroczek L.O.H.**, Lange B., Fülöp R., Müller M. and Mühlberger A. (2021) Social Presence as a Moderator of the Effect of Agent Behavior on Emotional Experience in Social Interactions in Virtual Reality. *Front. Virtual Real.* 2:741138.
<https://doi.org/10.3389/frvir.2021.741138>

Kroczek, L.O.H., Lingnau, A., Schwind, V., Wolff, C. & Mühlberger, A. (2021). Angry facial expressions bias towards aversive actions. *PLOS One*. 16 (9): e0256912.
<https://doi.org/10.1371/journal.pone.0256912>

Kroczek, L.O.H., & Gunter, T.C. (2021). The time course of speaker-specific language processing. *Cortex*, 141, 311-321. <https://doi.org/10.1016/j.cortex.2021.04.017>

Biehl, S.C., Schmidmeier, M., Wechsler, T. F., **Kroczek, L.O.H.**, Mühlberger, A. (2021). Widespread recommendations can change our habits of hand-washing and physical distance during the Covid-19 pandemic. *Clinical Psychology in Europe*, 3, 1, e3061. <https://doi.org/10.32872/cpe.3061>

Kroczek, L.O.H., Pfaller, M., Lange, B., Müller, M. & Mühlberger, A. (2020). Interpersonal distance during real-time social interaction: Insights from subjective experience, behavior, and physiology. *Frontiers in psychiatry*, 11, 561.
<https://doi.org/10.3389/fpsyg.2020.00561>

Kroczek, L.O.H., & Gunter, T.C. (2020). Distinct neural networks relate to common and speaker-specific language priors. *Cerebral Cortex Communications*, 1, 1-11.
<https://doi.org/10.1093/texcom/tgaa021>

Kroczek, L.O.H., Gunter, T.C., Rysop, A.U., Friederici, A.D., & Hartwigsen, G. (2019). Contributions of left frontal and temporal cortex to sentence comprehension: Evidence from simultaneous TMS-EEG. *Cortex*, 115, 86-98.
<https://doi.org/10.1016/j.cortex.2019.01.010>

Kroczek, L.O.H. & Gunter, T.C. (2017). Communicative predictions can overrule linguistic priors. *Scientific Reports*, 7, 17581. <https://doi.org/10.1038/s41598-017-17907-9>

Preprints

Kroczek, L. O. H., May, A., Hettenkofer, S., Ruider, A., Ludwig, B., & Mühlberger, A. (2024). The influence of persona and conversational task on social interactions with a LLM-controlled embodied conversational agent. *arXiv preprint arXiv:2411.05653*. <https://doi.org/10.48550/arXiv.2411.05653>

Kroczek, L. O. H., Roßkopf, S., Stärz, F., Ruider, A., Blau, M., Van de Par, S., & Mühlberger, A. (2023). A room of one's own: A high-accuracy calibration procedure to align spatial dimensions between a virtual and a real room. *PsyArXiv*, <https://doi.org/10.31234/osf.io/erb49>

Conference Proceedings (Peer-reviewed)*

Stärz, F., **Kroczek, L. O. H.**, Roßkopf, S., Mühlberger, A., Van de Par, S., & Blau, M. (2024). Acoustically Transparent Headphones as an Add-On for a Head-Mounted Display. Fortschritte der Akustik – DAGA 24, Hamburg

Roßkopf, S., **Kroczek, L. O. H.**, Stärz, F., Blau, M., Van de Par, S., & Mühlberger, A. (2024). Auditory Distance Perception in VR: The Influence of Visual Room Presentation and Estimation Method. Fortschritte der Akustik – DAGA 24, Hamburg

Roßkopf, S., **Kroczek, L. O. H.**, Stärz, F., Blau, M., Van de Par, S., & Mühlberger, A. (2023)*. Comparable Sound Source Localization Of Plausible Auralizations And Real Sound Sources Evaluated In A Naturalistic Eye-Tracking Task In Virtual Reality. Forum Acusticum 2023, Turin.

Stärz, F., **Kroczek, L. O. H.**, Roßkopf, S., Mühlberger, A., Van de Par, S., & Blau, M. (2023)*. Comparing Room Acoustical Ratings In An Interactive Virtual Environment To Those In The Real Room. Forum Acusticum 2023, Turin.

Roßkopf, S., **Kroczek, L.O.H.**, Stärz, F., Blau, M., van de Par, S., & Mühlberger, A. (2023). The Effect of Audio-Visual Room Divergence on the Localization of Real Sound Sources in Virtual Reality. Fortschritte der Akustik - DAGA 2023, Hamburg, 1431–1434.

- Stärz, F., **Kroczek, L.O.H.**, Roßkopf, S., Mühlberger, A., van de Par, S., & Blau, M. (2023). Mounting extra-aural headphones to a head-mounted display using a 3D-printed support. *Fortschritte der Akustik - DAGA 2023*, Hamburg, 1636–1639.
- Stärz, F., **Kroczek, L.O.H.**, Rosskopf, S., Mühlberger, A., van de Par, S., & Blau, M. (2022). Perceptual comparison between the real and the auralized room when being presented with congruent visual stimuli via a head-mounted display. *Proc. 24th Int. Congr. on Acoustics*, Gyeongju (Korea).
- Kroczek, L. O. H.**, Rosskopf, S., Stärz, F., Blau, M., van de Par, S., & Mühlberger, A. (2022). The influence of affective voice on sound distance perception. *Proceedings of the 48th Annual Conference on Acoustics DAGA 2022*, Stuttgart, Germany.

Theses

- Kroczek, L. O. H. (2019). *The impact of speaker information on language processing*. Dissertation, Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig.
- Kroczek, L. O. H. (2013): *May I get a beat with that? Neural correlates of gesture-syntax interaction*. Diploma thesis, Regensburg university, Regensburg.

Invited Talks

- Kroczek, L.O.H. (2024). *The influence of communicative style on social interactions with AI-controlled embodied conversational agents in Virtual Reality*. VR Summit 2024, Bochum, Germany.
- Kroczek, L.O.H. (2024). *Emotions in Action –Studying Social Interaction in Virtual Reality*. Research Colloquium at the Chair for Cognitive Neuroscience at Regensburg University, Regensburg, Germany.
- Kroczek, L.O.H. (2023). *When a Smile Deceives: Conflict Adaptation in Social Interactions*. Research Colloquium at the Chair for General and Applied Psychology at Regensburg University, Regensburg, Germany.
- Kroczek, L.O.H. (2023). *From reality into the lab (and back again): Mechanisms of social interaction in Virtual Reality*. Institute Colloquium of the psychological institute at Kiel University, Kiel, Germany.
- Kroczek, L.O.H. (2021). *Interpersonal Distance in Virtual Reality*, Online Workshop. Psychosoziales Lagebild der Bevölkerung während der Corona-Pandemie (LaBeCo), Berlin, Germany.
- Kroczek, L.O.H. (2021). *Virtuelle Realität bei sozialer Angst*. Klinik Sonnenhalde AG, Psychiatrie und Psychotherapie, Riehen, Swiss Confederation.

Talks

- Kroczek, L.O.H. (2024). *When facial expressions and actions do not fit: Conflict adaptation in social interactions.* Conference of Experimental Psychologists, Regensburg, Germany.
- Kroczek, L.O.H. (2023). *Investigating Reciprocity in Face-to-Face Dyadic Interaction in Virtual Reality.* XR-Meeting Würzburg, Würzburg, Germany.
- Kroczek, L.O.H. (2022). *How reciprocity shapes social interactions: Insights from Virtual Reality.* Tagung Psychologie und Gehirn, Freiburg, Germany.
- Kroczek, L.O.H. (2022). *Social Context Conditioning in Virtual Reality.* European Meeting of Human Fear Conditioning, Nijmegen (Virtual), Netherlands.
- Kroczek, L.O.H. (2021). *How facial emotions affect action understanding during social interactions: Insights from action recognition and experience in Virtual Reality.* Tagung Psychologie und Gehirn, Tübingen (Virtual), Germany.
- Kroczek, L.O.H. (2019). *Returning a smile: The impact of social interaction on the processing of facial emotions.* Hengstenberg Symposium on Social Interaction, Heidelberg, Germany.
- Kroczek, L.O.H. (2014). *Neural correlates of gesture-syntax interaction.* 12th Biannual Conference of the German Cognitive Science Society, Tübingen, Germany.

Poster (selected)

- Kroczek, L.O.H., & Mühlberger, A. (2023). *Social interaction modulates neural responses to facial emotional expressions.* Tagung Psychologie und Gehirn, Tübingen, Germany.
- Kroczek, L. O. H., Lingnau, A., Schwind, V., Wolff, C., & Mühlberger, A. (2022). *Observers predict actions from facial emotional expressions during real-time social interactions.* Minerva-Gentner Symposium 'Perception, Recognition and Control of Goal-Directed Actions', Regensburg, Germany.
- Kroczek, L. O. H., Rosskopf, S., Stärz, F., Blau, M., van de Par, S., & Mühlberger, A. (2022). The influence of affective voice on sound distance perception. 48th Annual Conference on Acoustics DAGA 2022, Stuttgart, Germany.
- Kroczek, L.O.H., & Mühlberger, A. (2019). *Returning a smile: The impact of social interaction on the processing of facial emotions.* 59th Annual Meeting of the Society for Psychophysiological Research, Washington D.C., USA.

Kroczek, L.O.H., & Mühlberger, A. (2019). *Returning a smile: The impact of social interaction on the processing of facial emotions*. Tagung Psychologie und Gehirn, Dresden, Deutschland.

Kroczek, L.O.H., Friederici, A.D., & Gunter, T.C. (2017). *Investigating the neural mechanisms of syntactic expectations*. 9th Annual Meeting for the Neurobiology of Language , Baltimore, USA.

Kroczek, L.O.H., & Gunter, T.C. (2017). *Dynamic formation of syntactic predictions based on speaker identity*. Tagung experimentell arbeitender Psychologen (TeaP), Dresden, Deutschland.

Kroczek, L.O.H., Friederici, A. D., & Gunter, T.C. (2016). *Expectation effects on the processing of syntactic structure*. 8th Annual Meeting for the Neurobiology of Language , London, GB.

Kroczek, L.O.H., & Gunter, T.C. (2015). *Expectation effects in syntactic processing – Evidence from ambiguous sentence structures*. 45th Annual Meeting of the Society for Neuroscience, Chicago, IL, USA.

Kroczek, L.O.H., & Gunter, T.C. (2014). *Is syntactic processing modulated by expectation effects?*. 4th IMPRS NeuroCom Summer School, London, GB.

Teaching

- 2024/25** Lecture Biological Psychology: Social and Affective Neuroscience (B.Sc., Regensburg University)
 Mental disorders: Virtual Reality (B.Sc., Regensburg University)
 Mental disorders: Biomarkers (B.Sc., Regensburg University)
- 2024** Mental disorders (B.Sc., Regensburg University)
 Project seminar experimental psychology (B.Sc., Regensburg University)
 Practical research seminar (M.Sc, Regensburg University)
- 2023** Project seminar experimental psychology (B.Sc., Regensburg University)
 Mental disorders (B.Sc., Regensburg University)
- 2022/23** Mental disorders: Biomarkers (B.Sc., Regensburg University)
 Mental disorders: Experimental paradigms (B.Sc., Regensburg University)
- 2022** Affective disorders (B.Sc., Regensburg University)
 Autism spectrum disorders (M.Sc, Regensburg University)
- 2021/22** Anxiety disorders (B.Sc., Regensburg University)
 Psychosis (B.Sc., Regensburg University)
- 2020/21** Emotion regulation and mental health (M.Sc, Regensburg University)
 New technologies in psychotherapy (B.Sc., Regensburg University)
- 2020** Autism spectrum disorders (M.Sc, Regensburg University)
 Research colloquium (B.Sc., M.Sc., Regensburg University)
- 2019** Practical research seminar (M.Sc, Regensburg University)
- 2018/19** Psychological, neural and therapeutic aspects of anxiety disorders (B.Sc., Regensburg University)
 Project seminar experimental psychology (B.Sc., Regensburg University)
- 2016/17** Psychological experiments: A practical course (B.Sc., Leipzig University)