



Universiteit
Leiden

The Netherlands

Resonating emotions: an embodied perspective on alterations in facial emotion processing in autism and social anxiety

Folz, J.

Citation

Folz, J. (2025, January 17). *Resonating emotions: an embodied perspective on alterations in facial emotion processing in autism and social anxiety*.

Retrieved from <https://hdl.handle.net/1887/4177240>

Version: Publisher's Version

License: [Licence agreement concerning inclusion of doctoral thesis in the Institutional Repository of the University of Leiden](#)

Downloaded from: <https://hdl.handle.net/1887/4177240>

Note: To cite this publication please use the final published version (if applicable).



Bibliography

- Achaïbou, A., Pourtois, G., Schwartz, S., & Vuilleumier, P. (2008). Simultaneous recording of EEG and facial muscle reactions during spontaneous emotional mimicry. *Neuropsychologia*, 46(4), 1104–1113. <https://doi.org/10.1016/j.neuropsychologia.2007.10.019>
- Actis-Grosso, R., Bossi, F., & Ricciardelli, P. (2015). Emotion recognition through static faces and moving bodies: A comparison between typically developed adults and individuals with high level of autistic traits. *Frontiers in Psychology*, 6(OCT). <https://doi.org/10.3389/fpsyg.2015.01570>
- Ainley, V., Apps, M. A. J., Fotopoulou, A., & Tsakiris, M. (2016). "Bodily precision": A predictive coding account of individual differences in interoceptive accuracy. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 371(1708). <https://doi.org/10.1098/rstb.2016.0003>
- Albohn, D. N., Brandenburg, J. C., & Adams, R. B. (2019). Perceiving Emotion in the "Neutral" Face: A Powerful Mechanism of Person Perception. In S. Hess Ursula and Hareli (Ed.), *The Social Nature of Emotion Expression: What Emotions Can Tell Us About the World* (pp. 25–47). Springer International Publishing. https://doi.org/10.1007/978-3-030-32968-6_3
- Alkire, D., Warnell, K. R., Kirby, L. A., Moraczewski, D., & Redcay, E. (2021). Explaining Variance in Social Symptoms of Children with Autism Spectrum Disorder. *Journal of Autism and Developmental Disorders*, 51(4), 1249–1265. <https://doi.org/10.1007/s10803-020-04598-x>
- Alpers, G. W., Adolph, D., & Pauli, P. (2011). Emotional scenes and facial expressions elicit different psychophysiological responses. *International Journal of Psychophysiology*, 80(3), 173–181. <https://doi.org/10.1016/j.ijpsycho.2011.01.010>
- Altman, D. G., & Royston, P. (2006). The cost of dichotomising continuous variables. *British Medical Journal*, 332(7549), 1080. <https://doi.org/10.1136/bmj.332.7549.1080>
- Alvi, T., Koursos, C. D., Lee, J., Fulford, D., & Tabak, B. A. (2020). Social Anxiety Is Negatively Associated With Theory of Mind and Empathic Accuracy. *Journal of Abnormal Psychology*, 129(1), 108–113. <https://doi.org/10.1037/abn0000493.suppl>
- Ambadar, Z., Schooler, J. W., & Cohn, J. F. (2005). Deciphering the Enigmatic Face. *Society*, 16(5), 403–410. <https://doi.org/10.1111/j.0956-7976.2005.01548.x>
- American Psychiatric Association. (2013). *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.). American Psychiatric Association. <https://doi.org/10.1176/appi.books.9780890425596>
- Amin, N., Foa, E. B., & Coles, M. E. (1998). Negative interpretation bias in social phobia. *Behaviour Research and Therapy*, 36(10), 945–957. [https://doi.org/10.1016/S0005-7967\(98\)00060-6](https://doi.org/10.1016/S0005-7967(98)00060-6)
- Antony, M. M., Brown, T. A., Craske, M. G., Barlow, D. H., M, W. B., & Mj, E. A. (1995). Accuracy of Heartbeat Perception in Panic Disorder, Social Phobia, and Nonanxious Subjects. *Journal of Anxiety Disorders*, 9(5), 355–371.
- Anwyl-Irvine, A. L., Massonnié, J., Flitton, A., Kirkham, N., & Evershed, J. K. (2020). Gorilla in our midst: An online behavioral experiment builder. *Behavior Research Methods*, 52(1), 388–407. <https://doi.org/10.3758/s13428-019-01237-x>
- App, B., McIntosh, D. N., Reed, C. L., & Hertenstein, M. J. (2011). Nonverbal Channel Use in Communication of Emotion: How May Depend on Why. *Emotion*, 11(3), 603–617. <https://doi.org/10.1037/a0023164>
- Arnaud, S. (2020). Emotional Consciousness in Autism. *Journal of Consciousness Studies*, 27(9–10), 34–59.
- Arnold, A. J., & Winkielman, P. (2020). The Mimicry Among Us: Intra- and Inter-Personal Mechanisms of Spontaneous Mimicry. *Journal of Nonverbal Behavior*, 44(1), 195–212. <https://doi.org/10.1007/s10919-019-00324-z>
- Arnold, A. J., Winkielman, P., & Dobkins, K. (2019). Interoception and Social Connection. *Frontiers in Psychology*, 10, 1–6. <https://doi.org/10.3389/fpsyg.2019.02589>
- Arrais, K. C., Machado-de-Sousa, J. P., Trzesniak, C., Filho, A. S., Ferrari, M. C. F., Osório, F. L., Loureiro, S. R., Nardi, A. E., Hetem, L. A. B., Zuadi, A. W., Hallak, J. E. C., & Crippa, J. A. S. (2010). Social anxiety disorder women easily recognize fearful, sad and happy faces: The influence of gender. *Journal of Psychiatric Research*, 44(8), 535–540. <https://doi.org/10.1016/j.jpsychires.2009.11.003>
- Åsberg Johnels, J., Hovey, D., Zürcher, N., Hippolyte, L., Lemonnier, E., Gillberg, C., & Hadjikhani, N. (2017). Autism and emotional face-viewing. *Autism Research*, 10(5), 901–910. <https://doi.org/10.1002/aur.1730>
- Asher, M., Barthel, A. L., Hofmann, S. G., Okon-Singer, H., & Aderka, I. M. (2021). When two hearts beat as one: Heart-rate synchrony in social anxiety disorder. *Behaviour Research and Therapy*, 141. <https://doi.org/10.1016/j.brat.2021.103859>
- Asher, M., Kauffmann, A., & Aderka, I. M. (2020). Out of Sync: Nonverbal Synchrony in Social Anxiety Disorder. *Clinical Psychological Science*, 8(2), 280–294. <https://doi.org/10.1177/2167702619894566>

- Aviezer, H., Ensenberg, N., & Hassin, R. R. (2017). The inherently contextualized nature of facial emotion perception. In *Current Opinion in Psychology* (Vol. 17, pp. 47–54). Elsevier B.V. <https://doi.org/10.1016/j.copsyc.2017.06.006>
- Aviezer, H., Trope, Y., & Todorov, A. (2012). Body cues, not facial expressions, discriminate between intense positive and negative emotions. *Science*, 338(6111), 1225–1229. <https://doi.org/10.1126/science.1224313>
- Ax, A. F. (1953). The Physiological Differentiation between Fear and Anger in Humans. *Psychosomatic Medicine*, 15(5), 433–442. <https://doi.org/10.1097/00006842-195309000-00007>
- Bagby, R. M., Parker, J. D. A., & Taylor, G. J. (1994). The twenty-item Toronto Alexithymia scale-I. Item selection and cross-validation of the factor structure. *Journal of Psychosomatic Research*, 38(1), 23–32. [https://doi.org/10.1016/0022-3999\(94\)90005-1](https://doi.org/10.1016/0022-3999(94)90005-1)
- Baker, J. K., Fenning, R. M., Howland, M. A., Baucom, B. R., Moffitt, J., & Erath, S. A. (2015). Brief Report: A Pilot Study of Parent–Child Biobehavioral Synchrony in Autism Spectrum Disorder. *Journal of Autism and Developmental Disorders*, 45(12), 4140–4146. <https://doi.org/10.1007/s10803-015-2528-0>
- Baldwin, M. M., Xiao, Z., & Murray, A. (2022). Temporal Synchrony in Autism: a Systematic Review. In *Review Journal of Autism and Developmental Disorders* (Vol. 9, Issue 4, pp. 596–617). Springer. <https://doi.org/10.1007/s40489-021-00276-5>
- Balsters, M. J. H., Krahmer, E. J., Swerts, M. G. J., & Vingerhoets, A. J. J. M. (2013). Emotional tears facilitate the recognition of sadness and the perceived need for social support. *Evolutionary Psychology*, 11(1), 148–158. <https://doi.org/10.1177/147470491301100114>
- Banks, S. J., Bellerose, J., Douglas, D., & Jones-Gotman, M. (2012). Bilateral skin conductance responses to emotional faces. *Applied Psychophysiology Biofeedback*, 37(3), 145–152. <https://doi.org/10.1007/s10484-011-9177-7>
- Bantin, T., Stevens, S., Gerlach, A. L., & Hermann, C. (2016a). What does the facial dot-probe task tell us about attentional processes in social anxiety? A systematic review. *Journal of Behavior Therapy and Experimental Psychiatry*, 50, 40–51. <https://doi.org/10.1016/j.jbtep.2015.04.009>
- Bantin, T., Stevens, S., Gerlach, A. L., & Hermann, C. (2016b). What does the facial dot-probe task tell us about attentional processes in social anxiety? A systematic review. *Journal of Behavior Therapy and Experimental Psychiatry*, 50, 40–51. <https://doi.org/10.1016/j.jbtep.2015.04.009>
- Baron-Cohen, S., Leslie, A. M., & Frith, U. (1985). Does the autistic child have a “theory of mind”? *Cognition*, 21(1), 37–46. [https://doi.org/10.1016/0010-0277\(85\)90022-8](https://doi.org/10.1016/0010-0277(85)90022-8)
- Baron-Cohen, S., & Wheelwright, S. (2004). The Empathy Quotient: An Investigation of Adults with Asperger Syndrome or High Functioning Autism, and Normal Sex Differences. *Journal of Autism and Developmental Disorder*, 34(2), 163–175. <https://doi.org/10.1023/b:jadd.0000022607.19833.00>
- Baron-Cohen, S., Wheelwright, S., Skinner, R., Martin, J., & Clubley, E. (2001). The Autism Spectrum Quotient (AQ): Evidence from Asperger Syndrome/High-Functioning Autism, Males and Females, Scientists and Mathematicians. *Journal of Autism and Developmental Disorders*, 31(1), 5–17. <https://doi.org/10.1023/A:1005653411471>
- Barrett, L. F. (2006). Are Emotions Natural Kinds? *Perspectives on Psychological Science*, 1(1), 28–58.
- Bates, D., Mächler, M., Bolker, B. M., & Walker, S. C. (2015). Fitting linear mixed-effects models using lme4. *Journal of Statistical Software*, 67(1). <https://doi.org/10.18637/jss.v067.i01>
- Baumeister, R. F., & Leary, M. R. (1995). The Need to Belong: Desire for Interpersonal Attachments as a Fundamental Human Motivation. In *Psychological Bulletin* (Vol. 117, Issue 3).
- Bègue, I., Vaessen, M., Hofmeister, J., Pereira, M., Schwartz, S., & Vuilleumier, P. (2019). Confidence of emotion expression recognition recruits brain regions outside the face perception network. *Social Cognitive and Affective Neuroscience*, 14(1), 81–95. <https://doi.org/10.1093/scan/nsy102>
- Behrens, F., Snijedewint, J. A., Moulder, R. G., Prochazkova, E., Sjak-Shie, E. E., Boker, S. M., & Kret, M. E. (2020). Physiological synchrony is associated with cooperative success in real-life interactions. *Scientific Reports*, 10(1), 1–9. <https://doi.org/10.1038/s41598-020-76539-8>
- Bejerot, S., Eriksson, J. M., & Mörtberg, E. (2014). Social anxiety in adult autism spectrum disorder. *Psychiatry Research*, 220(1–2), 705–707. <https://doi.org/10.1016/j.psychres.2014.08.030>
- Biopac Systems Inc. (2009). *AcqKnowledge 4.0 software guide*. Retrieved April 20, 2023 from <https://www.biopac.com/Wp-Content/Uploads/Acqknowledge-4-Software-Guide.Pdf>
- Bird, G., & Cook, R. (2013). Mixed emotions: The contribution of alexithymia to the emotional symptoms of autism. In *Translational Psychiatry* (Vol. 3). <https://doi.org/10.1038/tp.2013.61>

- Blairy, S., Herrera, P., & Hess, U. (1999). Mimicry and the judgment of emotional facial expressions. *Journal of Nonverbal Behavior*, 23(1), 5–41. <https://doi.org/10.1023/A:1021370825283>
- Bogart, K. R., & Matsumoto, D. (2010). Facial mimicry is not necessary to recognize emotion: Facial expression recognition by people with Moebius syndrome. *Social Neuroscience*, 5(2), 241–251. <https://doi.org/10.1080/17470910903395692>
- Bolis, D., Balsters, J., Wenderoth, N., Becchio, C., & Schilbach, L. (2018). Beyond Autism: Introducing the Dialectical Misattunement Hypothesis and a Bayesian Account of Intersubjectivity. *Psychopathology*, 50(6), 355–372. <https://doi.org/10.1159/000484353>
- Bolis, D., Lahnakoski, J. M., Seidel, D., Tamm, J., & Schilbach, L. (2021). Interpersonal similarity of autistic traits predicts friendship quality. *Social Cognitive and Affective Neuroscience*, 16(1–2), 222–231. <https://doi.org/10.1093/scan/nsaa147>
- Bonaz, B., Lane, R. D., Oshinsky, M. L., Kenny, P. J., Sinha, R., Mayer, E. A., & Critchley, H. D. (2021). Diseases, Disorders, and Comorbidities of Interoception. In *Trends in Neurosciences* (Vol. 44, Issue 1, pp. 39–51). Elsevier Ltd. <https://doi.org/10.1016/j.tins.2020.09.009>
- Boraston, Z., Blakemore, S. J., Chilvers, R., & Skuse, D. (2007). Impaired sadness recognition is linked to social interaction deficit in autism. *Neuropsychologia*, 45(7), 1501–1510. <https://doi.org/10.1016/j.neuropsychologia.2006.11.010>
- Bornemann, B., Winkelman, P., & Van der Meer, E. (2012). Can you feel what you do not see? Using internal feedback to detect briefly presented emotional stimuli. *International Journal of Psychophysiology*, 85(1), 116–124. <https://doi.org/10.1016/j.ijpsycho.2011.04.007>
- Botha, M., Hanlon, J., & Williams, G. L. (2023). Does Language Matter? Identity-First Versus Person-First Language Use in Autism Research: A Response to Vivanti. *Journal of Autism and Developmental Disorders*, 53(2), 870–878. <https://doi.org/10.1007/s10803-020-04858-w>
- Bottini, S. (2018). Social reward processing in individuals with autism spectrum disorder: A systematic review of the social motivation hypothesis. *Research in Autism Spectrum Disorders*, 45, 9–26. <https://doi.org/10.1016/j.rasd.2017.10.001>
- Boucher, E. M., Jacobson, J. A., & Cummings, J. A. (2015). Exploring the effects of social anxiety similarity in newly developed same-sex friendships. *Personal Relationships*, 22(1), 65–78. <https://doi.org/10.1111/pere.12064>
- Bourgeois, P., & Hess, U. (2008). The impact of social context on mimicry. *Biological Psychology*, 77(3), 343–352. <https://doi.org/10.1016/j.biopsycho.2007.11.008>
- Bowsheer-Murray, C., Gerson, S., von dem Hagen, E., & Jones, C. R. G. (2022). The Components of Interpersonal Synchrony in the Typical Population and in Autism: A Conceptual Analysis. *Frontiers in Psychology*, 13. <https://doi.org/10.3389/fpsyg.2022.897015>
- Bradley, B. P., Mogg, K., Millar, N., Bonham-Carter, C., Fergusson, E., Jenkins, J., & Parr, M. (1997). Attentional Biases for Emotional Faces. *Cognition and Emotion*, 11(1), 25–42. <https://doi.org/10.1080/026993997380014>
- Bradley, M. M., Miccoli, L., Escrig, M. A., & Lang, P. J. (2008). The pupil as a measure of emotional arousal and automatic activation. *Psychophysiology*, 45(4), 602–607. <https://doi.org/10.1111/j.1469-8986.2008.00654.x>
- Bradley, M. M., Sapigao, R. G., & Lang, P. J. (2017). Sympathetic ANS modulation of pupil diameter in emotional scene perception: Effects of hedonic content, brightness, and contrast. *Psychophysiology*, 54(10), 1419–1435. <https://doi.org/10.1111/psyp.12890>
- Bralten, J., Van Hulzen, K. J., Martens, M. B., Galesloot, T. E., Arias Vasquez, A., Kiemeneij, L. A., Buitelaar, J. K., Muntjewerff, J. W., Franke, B., & Poelmans, G. (2018). Autism spectrum disorders and autistic traits share genetics and biology. *Molecular Psychiatry*, 23(5), 1205–1212. <https://doi.org/10.1038/mp.2017.98>
- Brand, S., Meis, A. C., Tünte, M. R., Murphy, J., Woller, J. P., Jungmann, S. M., Witthöft, M., Hoehl, S., Weymar, M., Hermann, C., & Ventura-Bort, C. (2023). A multi-site German validation of the Interoceptive Accuracy Scale and its relation to psychopathological symptom burden. *Communications Psychology*, 1(1), 14. <https://doi.org/10.1038/s44271-023-00016-x>
- Brewer, R., Cook, R., & Bird, G. (2016). Alexithymia: A general deficit of interoception. *Royal Society Open Science*, 3(10). <https://doi.org/10.1098/rsos.150664>
- Brown, L. H., Silvia, P. J., Myin-Germeys, I., & Kwapil, T. R. (2007). When the Need to Belong Goes Wrong The Expression of Social Anhedonia and Social Anxiety in Daily Life. *Psychological Science*, 18(9), 778–782.
- Brown, S. L., & Schwartz, G. E. (1980). Relationships between facial electromyography and subjective experience during affective imagery. *Biological Psychology*, 11(1), 49–62. [https://doi.org/10.1016/0301-0511\(80\)90026-5](https://doi.org/10.1016/0301-0511(80)90026-5)

- Buck, R. (1980). Nonverbal behavior and the theory of emotion: The facial feedback hypothesis. *Journal of Personality and Social Psychology*, 38(5), 811–824. <https://doi.org/10.1037/0022-3514.38.5.811>
- Buhlmann, U., Wacker, R., & Dziobek, I. (2015). Inferring other people's states of mind: Comparison across social anxiety, body dysmorphic, and obsessive-compulsive disorders. *Journal of Anxiety Disorders*, 34, 107–113. <https://doi.org/10.1016/j.janxdis.2015.06.003>
- Bui, E., Anderson, E., Goetter, E. M., Campbell, A. A., Fischer, L. E., Barrett, L. F., & Simon, N. M. (2017). Heightened sensitivity to emotional expressions in generalised anxiety disorder, compared to social anxiety disorder, and controls. *Cognition and Emotion*, 31(1), 119–126. <https://doi.org/10.1080/02699931.2015.1087973>
- Bürkner, P.-C. (2017). brms: An R Package for Bayesian Multilevel Models Using Stan. *Journal of Statistical Software*, 80(1), 1–28. <https://doi.org/10.18637/jss.v080.i01>
- Bürkner, P.-C. (2018). Advanced Bayesian Multilevel Modeling with the R Package brms. *The R Journal*, 10(1), 395–411. <https://doi.org/10.32614/RJ-2018-017>
- Burley, D. T., Gray, N. S., & Snowden, R. J. (2017). As far as the eye can see: Relationship between psychopathic traits and pupil response to affective stimuli. *PLoS ONE*, 12(1), 1–22. <https://doi.org/10.1371/journal.pone.0167436>
- Butera, C. D., Harrison, L., Kilroy, E., Jayashankar, A., Shipkova, M., Pruyser, A., & Aziz-Zadeh, L. (2023). Relationships between alexithymia, interoception, and emotional empathy in autism spectrum disorder. *Autism*, 27(3), 690–703. <https://doi.org/10.1177/13623613221111310>
- Bylsma, L. M., Gračanin, A., & Vingerhoets, A. J. J. M. (2019). The neurobiology of human crying. *Clinical Autonomic Research*, 29(1), 63–73. <https://doi.org/10.1007/s10286-018-0526-y>
- Caballo, V. E., Salazar, I. C., Irturtia, M. J., Arias, B., Hofmann, S. G., Barinaga, E., Bustamante, G., Correche, M., del Valle, G., Gómez, L., Grichener, A., Lipovetzky, M., Mariñelarena, L., Rivarola, M., Robles, P., Savoini, S., Tapia, M., Pinelo, D., Donato, B., ... Vivas, E. (2014). Differences in social anxiety between men and women across 18 countries. *Personality and Individual Differences*, 64, 35–40. <https://doi.org/10.1016/j.paid.2014.02.013>
- Cacioppo, J. T., Martzke, J. S., Petty, R. E., & Tassinary, L. G. (1988). Specific Forms of Facial EMG Response Index Emotions During an Interview: From Darwin to the Continuous Flow Hypothesis of Affect-Laden Information Processing. *Journal of Personality and Social Psychology*, 54(4), 592–604. <https://doi.org/10.1037/0022-3514.54.4.592>
- Calvo, M. G., Gutiérrez-García, A., Fernández-Martín, A., & Nummenmaa, L. (2014). Recognition of Facial Expressions of Emotion is Related to their Frequency in Everyday Life. *Journal of Nonverbal Behavior*, 38(4), 549–567. <https://doi.org/10.1007/s10919-014-0191-3>
- Cañigueral, R., & Hamilton, A. F. de C. (2019). Being watched: Effects of an audience on eye gaze and prosocial behaviour. *Acta Psychologica*, 195, 50–63. <https://doi.org/10.1016/j.actpsy.2019.02.002>
- Cannon, W. B. (1914). The emergency function of the adrenal medulla in pain and the major emotions. *American Journal of Physiology*, 33(2), 356–372. <https://journals.physiology.org/doi/pdf/10.1152/ajplegacy.1914.33.2.356>
- Carlson, J. M., & Mujica-Parodi, L. R. (2015). Facilitated Attentional Orienting and Delayed Disengagement to Conscious and Nonconscious Fearful Faces. *Journal of Nonverbal Behavior*, 39(1), 69–77. <https://doi.org/10.1007/s10919-014-0185-1>
- Carretié, L. (2014). Exogenous (automatic) attention to emotional stimuli: a review. In *Cognitive, Affective and Behavioral Neuroscience* (Vol. 14, Issue 4). <https://doi.org/10.3758/s13415-014-0270-2>
- Chan, D. V., Doran, J. D., & Galobardi, O. D. (2023). Beyond Friendship: The Spectrum of Social Participation of Autistic Adults. *Journal of Autism and Developmental Disorders*, 53(1), 424–437. <https://doi.org/10.1007/s10803-022-05441-1>
- Chen, J., Short, M., & Kemps, E. (2020). Interpretation bias in social anxiety: A systematic review and meta-analysis. *Journal of Affective Disorders*, 276, 1119–1130. <https://doi.org/10.1016/j.jad.2020.07.121>
- Chen, W. G., Schloesser, D., Arensdorf, A. M., Simmons, J. M., Cui, C., Valentino, R., Gnadt, J. W., Nielsen, L., Hillaire-Clarke, C. S., Spruance, V., Horowitz, T. S., Vallejo, Y. F., & Langevin, H. M. (2021). The Emerging Science of Interoception: Sensing, Integrating, Interpreting, and Regulating Signals within the Self. *Trends in Neurosciences*, 44(1), 3–16. <https://doi.org/10.1016/j.tins.2020.10.007>
- Chênes, C., Chanel, G., Soleymani, M., & Pun, T. (2013). Highlight Detection in Movie Scenes Through Inter-users, Physiological Linkage. In N. Ramzan, R. Van Zwol, J. S. Lee, K. Clüver, & X.-S. Hua (Eds.), *Social media retrieval* (pp. 217–237). Springer. https://doi.org/10.1007/978-1-4471-4555-4_10
- Chevallier, C., Kohls, G., Troiani, V., Brodtkin, E. S., & Schultz, R. T. (2012). The social motivation theory of autism. *Trends in Cognitive Sciences*, 16(4), 231–239. <https://doi.org/10.1016/j.tics.2012.02.007>

- Chita-Tegmark, M. (2016). Attention Allocation in ASD: a Review and Meta-analysis of Eye-Tracking Studies. *Review Journal of Autism and Developmental Disorders*, 3(3), 209–223. <https://doi.org/10.1007/s40489-016-0077-x>
- Christensen, P. N., Stein, M. B., & Means-Christensen, A. (2003). Social anxiety and interpersonal perception: A social relations model analysis. *Behaviour Research and Therapy*, 41(11), 1355–1371. [https://doi.org/10.1016/S0005-7967\(03\)00064-0](https://doi.org/10.1016/S0005-7967(03)00064-0)
- Christiansen, M. (2018). *Adobe After Effects CC Visual Effects and Compositing Studio Techniques*. Adobe Press.
- Cisler, J. M., & Koster, E. H. W. (2010). Mechanisms of attentional biases towards threat in anxiety disorders: An integrative review. *Clinical Psychology Review*, 30(2), 203–216. <https://doi.org/10.1016/j.cpr.2009.11.003>
- Clark, D. M., & Wells, A. (1995). A cognitive model of social phobia. In *Social phobia: Diagnosis, assessment, and treatment*. (pp. 69–93). The Guilford Press.
- Clauss, K., Gorday, J. Y., & Bardeen, J. R. (2022). Eye tracking evidence of threat-related attentional bias in anxiety- and fear-related disorders: A systematic review and meta-analysis. *Clinical Psychology Review*, 93. <https://doi.org/10.1016/j.cpr.2022.102142>
- Clay-Warner, J., & Robinson, D. T. (2015). Infrared thermography as a measure of emotion response. *Emotion Review*, 7(2), 157–162. <https://doi.org/10.1177/1754073914554783>
- Coles, N. A., Larsen, J. T., & Lench, H. C. (2019). A meta-analysis of the facial feedback literature: Effects of facial feedback on emotional experience are small and variable. *Psychological Bulletin*, 145(6), 610–651. <https://doi.org/10.1037/bul0000194>
- Constantino, J. N., & Todd, R. D. (2003). Autistic Traits in the General Population A Twin Study. *Arch Gen Psychiatry*, 60(5), 524–530.
- Cook, R., Brewer, R., Shah, P., & Bird, G. (2013). Alexithymia, Not Autism, Predicts Poor Recognition of Emotional Facial Expressions. *Psychological Science*, 24(5), 723–732. <https://doi.org/10.1177/0956797612463582>
- Cooper, R. M., & Langton, S. R. H. (2006). Attentional bias to angry faces using the dot-probe task? It depends when you look for it. *Behaviour Research and Therapy*, 44(9), 1321–1329. <https://doi.org/10.1016/j.brat.2005.10.004>
- Corbett, B. A., Carmean, V., Ravizza, S., Wendelken, C., Henry, M. L., Carter, C., & Rivera, S. M. (2009). A functional and structural study of emotion and face processing in children with autism. *Psychiatry Research - Neuroimaging*, 173(3), 196–205. <https://doi.org/10.1016/j.psychres.2008.08.005>
- Coutinho, J. F., Silva, P. O., & Decety, J. (2014). Neurosciences, empathy, and healthy interpersonal relationships: Recent findings and implications for counseling psychology. *Journal of Counseling Psychology*, 61(4), 541–548. <https://doi.org/10.1037/cou0000021>
- Cowen, A. S., & Keltner, D. (2019). What the Face Displays: Mapping 28 Emotions Conveyed by Naturalistic Expression. *American Psychologist*, 75(3), 349–364. <https://doi.org/10.1037/amp0000488>
- Cowen, A., Sauter, D., Tracy, J. L., & Keltner, D. (2019). Mapping the Passions: Toward a High-Dimensional Taxonomy of Emotional Experience and Expression. *Psychological Science in the Public Interest*, 20(1), 69–90. <https://doi.org/10.1177/1529100619850176>
- Craig, A. D. (2002). How do you feel? Interoception: the sense of the physiological condition of the body. *Nature Reviews Neuroscience*, 3, 655–666.
- Critchley, H. D. (2009). Psychophysiology of neural, cognitive and affective integration: fMRI and autonomic indicants. *International Journal of Psychophysiology*, 73(2), 88–94. <https://doi.org/10.1016/j.ijpsycho.2009.01.012>
- Critchley, H. D., & Garfinkel, S. N. (2017). Interoception and emotion. *Current Opinion in Psychology*, 17, 7–14. <https://doi.org/10.1016/j.copsyc.2017.04.020>
- Critchley, H. D., & Harrison, N. A. (2013). Visceral Influences on Brain and Behavior. In *Neuron* (Vol. 77, Issue 4, pp. 624–638). <https://doi.org/10.1016/j.neuron.2013.02.008>
- Critchley, H. D., Rotshtein, P., Nagai, Y., O'Doherty, J., Mathias, C. J., & Dolan, R. J. (2005). Activity in the human brain predicting differential heart rate responses to emotional facial expressions. *NeuroImage*, 24(3), 751–762. <https://doi.org/10.1016/j.neuroimage.2004.10.013>
- Crivelli, C., & Fridlund, A. J. (2018). Facial Displays Are Tools for Social Influence. *Trends in Cognitive Sciences*, 22(5), 388–399. <https://doi.org/10.1016/j.tics.2018.02.006>
- Crivelli, C., Russell, J. A., Jarillo, S., & Fernández-Dols, J. M. (2016). The fear gasping face as a threat display in a Melanesian society. *Proceedings of the National Academy of Sciences of the United States of America*, 113(44), 12403–12407. <https://doi.org/10.1073/pnas.1611622113>

- Crompton, C. J., Sharp, M., Axbey, H., Fletcher-Watson, S., Flynn, E. G., Ropar, D., & Bottema-Beutel, K. M. (2020). *Neurotype-Matching, but Not Being Autistic, Influences Self and Observer Ratings of Interpersonal Rapport*. 11(October), 1–12. <https://doi.org/10.3389/fpsyg.2020.586171>
- Curtis, V., Barra, M. De, & Anger, R. (2011). Disgust as an adaptive system for disease avoidance behaviour. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 366(1563), 389–401. <https://doi.org/10.1098/rstb.2010.0117>
- Cuve, H. C., Gao, Y., & Fuse, A. (2018). Is it avoidance or hypoarousal? A systematic review of emotion recognition, eye-tracking, and psychophysiological studies in young adults with autism spectrum conditions. *Research in Autism Spectrum Disorders*, 55, 1–13. <https://doi.org/10.1016/j.rasd.2018.07.002>
- Dael, N., Goudbeek, M., & Scherer, K. R. (2013). Perceived gesture dynamics in nonverbal expression of emotion. *Perception*, 42(6), 642–657. <https://doi.org/10.1068/p7364>
- Dael, N., Mortillaro, M., & Scherer, K. R. (2012). Emotion expression in body action and posture. *Emotion*, 12(5), 1085–1101. <https://doi.org/10.1037/a0025737>
- Damasio, A. (1996). The somatic marker hypothesis and the possible functions of the prefrontal cortex. *Philosophical Transactions of the Royal Society of London. Series B*, 351, 1413–1420.
- Dannahy, L., & Stopa, L. (2007). Post-event processing in social anxiety. *Behaviour Research and Therapy*, 45(6), 1207–1219. <https://doi.org/10.1016/j.brat.2006.08.017>
- Darrow, C. W. (1936). The galvanic skin reflex (sweating) and blood-pressure as preparatory and facilitative functions. *Psychological Bulletin*, 33(2), 73–94. <https://doi.org/10.1037/h0051940>
- D'Avanzato, C., & Dalrymple, K. L. (2016). Recent insight into the subtypes of social anxiety disorder. *Current Psychiatry Reports*, 18(5). <https://doi.org/10.1007/s11920-016-0688-z>
- Davies, H., Wolz, I., Leppanen, J., Fernandez-Aranda, F., Schmidt, U., & Tchanturia, K. (2016). Facial expression to emotional stimuli in non-psychotic disorders: A systematic review and meta-analysis. *Neuroscience and Biobehavioral Reviews*, 64, 252–271. <https://doi.org/10.1016/j.neubiorev.2016.02.015>
- Dawson, G., Webb, S. J., & McPartland, J. (2005). Understanding the nature of face processing impairment in autism: Insights from behavioral and electrophysiological studies. In *Developmental Neuropsychology* (Vol. 27, Issue 3, pp. 403–424). https://doi.org/10.1207/s15326942dn2703_6
- Dawson, M. E., Schell, A. M., & Filion, D. L. (2016). The electrodermal system. *Handbook of Psychophysiology, Fourth Edition*, 217–243. <https://doi.org/10.1017/9781107415782.010>
- de Cesarei, A., & Codispoti, M. (2013). Spatial frequencies and emotional perception. *Reviews in the Neurosciences*, 24(1), 89–104. <https://doi.org/10.1515/revneuro-2012-0053>
- de Gelder, B. (2006). Towards the neurobiology of emotional body language. *Nature Reviews Neuroscience*, 7(3), 242–249. <https://doi.org/10.1038/nrn1872>
- de Gelder, B. (2009). Why bodies? Twelve reasons for including bodily expressions in affective neuroscience. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 364(1535), 3475–3484. <https://doi.org/10.1098/rstb.2009.0190>
- de Gelder, B., & Van den Stock, J. (2011). The bodily expressive action stimulus test (BEAST). Construction and validation of a stimulus basis for measuring perception of whole body expression of emotions. *Frontiers in Psychology*, 2, 1–6. <https://doi.org/10.3389/fpsyg.2011.00181>
- DeBrabander, K. M., Pinkham, A. E., Ackerman, R. A., Jones, D. R., & Sasson, N. J. (2020). Cognitive and Social Cognitive Self - assessment in Autistic Adults. *Journal of Autism and Developmental Disorders*, 51(7), 2354–2368. <https://doi.org/10.1007/s10803-020-04722-x>
- Dentakos, S., Saoud, W., Ackerman, R., & Toplak, M. E. (2019). Does domain matter? Monitoring accuracy across domains. *Metacognition and Learning*, 14(3), 413–436. <https://doi.org/10.1007/s11409-019-09198-4>
- Depaoli, S., & Van de Schoot, R. (2017). Improving Transparency and Replication in Bayesian Statistics: The WAMBS-Checklist. *Psychological Methods*, 22(2), 240–261. <https://doi.org/10.1037/met0000065.supp>
- Desai, A., Foss-Feig, J. H., Naples, A. J., Coffman, M., Trevisan, D. A., & McPartland, J. C. (2019). Autistic and alexithymic traits modulate distinct aspects of face perception. *Brain and Cognition*, 137(November), 103616. <https://doi.org/10.1016/j.bandc.2019.103616>
- Desdentado, L., Miragall, M., Llorens, R., & Baños, R. M. (2022). Disentangling the role of interoceptive sensibility in alexithymia, emotion dysregulation, and depression in healthy individuals. *Current Psychology*. <https://doi.org/10.1007/s12144-022-03153-4>
- Desmedt, O., Luminet, O., Maurage, P., & Corneille, O. (2023). Discrepancies in the Definition and Measurement of Human Interoception: A Comprehensive Discussion and Suggested Ways Forward. *Perspectives on Psychological Science*. <https://doi.org/10.1177/17456916231191537>

- Diener, E., Oishi, S., & Tay, L. (2018). Advances in subjective well-being research. *Nature Human Behaviour*, 2(4), 253–260. <https://doi.org/10.1038/s41562-018-0307-6>
- Dignath, D., Berger, A., Spruit, I. M., & van Steenbergen, H. (2019). Temporal dynamics of error-related corrugator supercilii and zygomaticus major activity: Evidence for implicit emotion regulation following errors. *International Journal of Psychophysiology*, 146(August), 208–216. <https://doi.org/10.1016/j.ijpsycho.2019.10.003>
- Dijk, C., Fischer, A. H., Morina, N., Eeuwijk, C. Van, & Kleef, G. A. Van. (2018). Effects of Social Anxiety on Emotional Mimicry and Contagion : Feeling Negative , but Smiling Politely. *Journal of Nonverbal Behavior*, 42(1), 81–99. <https://doi.org/10.1007/s10919-017-0266-z>
- Dijk, C., van Emmerik, A. A. P., & Grasman, R. P. P. (2018). Social anxiety is related to dominance but not to affiliation as perceived by self and others: A real-life investigation into the psychobiological perspective on social anxiety. *Personality and Individual Differences*, 124, 66–70. <https://doi.org/10.1016/j.paid.2017.11.050>
- Dijk, C., Voncken, M. J., & de Jong, P. J. (2009). I blush, therefore I will be judged negatively: influence of false blush feedback on anticipated others' judgments and facial coloration in high and low blushing-fearfuls. *Behaviour Research and Therapy*, 47(7), 541–547. <https://doi.org/10.1016/j.brat.2009.03.005>
- Dijkhuis, R., Gurbuz, E., Ziermans, T., Staal, W., & Swaab, H. (2019). Social attention and emotional responsiveness in young adults with Autism. *Frontiers in Psychiatry*, 10. <https://doi.org/10.3389/fpsy.2019.00426>
- Dimberg, U. (1982). Facial Reactions to Facial Expressions. *Psychophysiology*, 19(6), 643–647. <https://doi.org/10.1111/j.1469-8986.1982.tb02516.x>
- Dimberg, U. (1997). Social fear and expressive reactions to social stimuli. *Scandinavian Journal of Psychology*, 38(3), 171–174. <https://doi.org/10.1111/1467-9450.00024>
- Dimberg, U., & Lundquist, L. O. (1990). Gender differences in facial reactions to facial expressions. *Biological Psychology*, 30(2), 151–159. [https://doi.org/10.1016/0301-0511\(90\)90024-Q](https://doi.org/10.1016/0301-0511(90)90024-Q)
- Dimberg, U., & Thunberg, M. (2007). Speech anxiety and rapid emotional reactions to angry and happy facial expressions: Personality and Social Sciences. *Scandinavian Journal of Psychology*, 48(4), 321–328. <https://doi.org/10.1111/j.1467-9450.2007.00586.x>
- Dirupo, G., Corradi-Dell'Acqua, C., Kashef, M., Debbané, M., & Badoud, D. (2020). The role of interoception in understanding others' affect: Dissociation between superficial and detailed appraisal of facial expressions. *Cortex*, 130, 16–31. <https://doi.org/10.1016/j.cortex.2020.05.010>
- Dobs, K., Bülthoff, I., & Schultz, J. (2018). Use and usefulness of dynamic face stimuli for face perception studies—a review of behavioral findings and methodology. *Frontiers in Psychology*, 9(AUG), 1–7. <https://doi.org/10.3389/fpsyg.2018.01355>
- Domschke, K., Stevens, S., Pfleiderer, B., & Gerlach, A. L. (2010). Interoceptive sensitivity in anxiety and anxiety disorders: An overview and integration of neurobiological findings. *Clinical Psychology Review*, 30(1), 1–11. <https://doi.org/10.1016/j.cpr.2009.08.008>
- Drimalla, H., Baskow, I., Behnia, B., Roepke, S., & Dziobek, I. (2021). Imitation and recognition of facial emotions in autism: a computer vision approach. *Molecular Autism*, 12(1). <https://doi.org/10.1186/s13229-021-00430-0>
- Drimalla, H., Landwehr, N., Hess, U., & Dziobek, I. (2019). From face to face: the contribution of facial mimicry to cognitive and emotional empathy. *Cognition and Emotion*, 33(8), 1672–1686. <https://doi.org/10.1080/02699931.2019.1596068>
- Dubey, I., Ropar, D., & de C Hamilton, A. F. (2015). Measuring the value of social engagement in adults with and without autism. *Molecular Autism*, 6(1). <https://doi.org/10.1186/s13229-015-0031-2>
- DuBois, D., Ameis, S. H., Lai, M. C., Casanova, M. F., & Desarkar, P. (2016). Interoception in Autism Spectrum Disorder: A review. *International Journal of Developmental Neuroscience*, 52, 104–111. <https://doi.org/10.1016/j.ijdevneu.2016.05.001>
- Dunn, B. D., Galton, H. C., Morgan, R., Evans, D., Oliver, C., Meyer, M., Cusack, R., Lawrence, A. D., & Dalgleish, T. (2010). Listening to your heart: How interoception shapes emotion experience and intuitive decision making. *Psychological Science*, 21(12), 1835–1844. <https://doi.org/10.1177/0956797610389191>
- Eack, S. M., Mazefsky, C. A., & Minschew, N. J. (2015). Misinterpretation of facial expressions of emotion in verbal adults with autism spectrum disorder. *Autism*, 19(3), 308–315. <https://doi.org/10.1177/1362361314520755>
- Edelmann, R. J., & Baker, S. R. (2002). Self-reported and actual physiological responses in social phobia. *British Journal of Clinical Psychology*, 41(1), 1–14. <https://doi.org/10.1348/014466502163732>

- Efthimiou, T. N., Hernandez, M. P., Elsenaar, A., Mehu, M., & Korb, S. (2023). Application of facial neuromuscular electrical stimulation (fNMES) in psychophysiological research: Practical recommendations based on a systematic review of the literature. *Behavior Research Methods*. <https://doi.org/10.3758/s13428-023-02262-7>
- Ekman, P. (1992). An Argument for Basic Emotions. *Cognition and Emotion*, 6(3–4), 169–200. <https://doi.org/10.1080/02699939208411068>
- Ekman, P. (1993). Facial expression and emotion. *American Psychologist*, 48(4), 384–392. <https://doi.org/10.1037/0003-066X.48.4.384>
- Ekman, P., Friesen, W., & Ancoli, S. (1980). Facial signs of Emotional Experience. *Journal of Personality and Social Psychology*, 39(6), 1123–1134.
- Ekman, P., & Rosenberg, E. (2005). What the Face Reveals: Basic and Applied Studies of Spontaneous Expression Using the Facial Action Coding System (FACS). In *What the Face Reveals*. Oxford University Press.
- Engelen, T., Buot, A., Grèzes, J., & Tallon-Baudry, C. (2023). Whose emotion is it? Perspective matters to understand brain-body interactions in emotions. *NeuroImage*, 268. <https://doi.org/10.1016/j.neuroimage.2023.119867>
- Enticott, P. G., Kennedy, H. A., Johnston, P. J., Rinehart, N. J., Tonge, B. J., Taffe, J. R., & Fitzgerald, P. B. (2014). Emotion recognition of static and dynamic faces in autism spectrum disorder. *Cognition and Emotion*, 28(6), 1110–1118. <https://doi.org/10.1080/02699931.2013.867832>
- Evans, T. C., & Britton, J. C. (2018). Improving the psychometric properties of dot-probe attention measures using response-based computation. *Journal of Behavior Therapy and Experimental Psychiatry*, 60(January), 95–103. <https://doi.org/10.1016/j.jbtep.2018.01.009>
- Ewing, L., Caulfield, F., Read, A., & Rhodes, G. (2015). Appearance-based trust behaviour is reduced in children with autism spectrum disorder. *Autism*, 19(8), 1002–1009. <https://doi.org/10.1177/1362361314559431>
- Failla, M. D., Bryant, L. K., Heflin, B. H., Mash, L. E., Schauder, K., Davis, S., Gerdes, M. B., Weitlauf, A., Rogers, B. P., & Cascio, C. J. (2020). Neural Correlates of Cardiac Interoceptive Focus Across Development: Implications for Social Symptoms in Autism Spectrum Disorder. *Autism Research*, 13(6), 908–920. <https://doi.org/10.1002/aur.2289>
- Fan, X. Z., Duan, Y. W., Yi, L. X., & He, H. Z. (2020). Attentional bias toward threatening emotional faces in individuals with autism spectrum disorder: A meta-analysis on reaction time tasks. *Research in Autism Spectrum Disorders*, 78(September), 101646. <https://doi.org/10.1016/j.rasd.2020.101646>
- Fawcett, C., Nordenswan, E., Yrttiäho, S., Häikiö, T., Korja, R., Karlsson, L., Karlsson, H., & Kataja, E. L. (2022). Individual differences in pupil dilation to others' emotional and neutral eyes with varying pupil sizes. *Cognition and Emotion*, 36(5), 928–942. <https://doi.org/10.1080/02699931.2022.2073973>
- Feldman, M. J., Bliss-Moreau, E., & Lindquist, K. A. (2024). The neurobiology of interoception and affect. In *Trends in Cognitive Sciences*. Elsevier Ltd. <https://doi.org/10.1016/j.tics.2024.01.009>
- Feldmann-Wüstefeld, T., Schmidt-Daffy, M., & Schubö, A. (2011). Neural evidence for the threat detection advantage: Differential attention allocation to angry and happy faces. *Psychophysiology*, 48(5), 697–707. <https://doi.org/10.1111/j.1469-8986.2010.01130.x>
- Fiene, L., Ireland, M. J., & Brownlow, C. (2018). The Interoception Sensory Questionnaire (ISQ): A Scale to Measure Interoceptive Challenges in Adults. *Journal of Autism and Developmental Disorders*, 48(10), 3354–3366. <https://doi.org/10.1007/s10803-018-3600-3>
- Fischer, A. H., & Manstead, A. S. R. (2016). Social Functions of Emotion and Emotion Regulation. In M. Lewis, J. Haviland-Jones, & L. F. Barrett (Eds.), *Handbook of Emotions* (4th ed., pp. 424–439). New York: The Guilford Press.
- Fischer, A., & Hess, U. (2017). Mimicking emotions. *Current Opinion in Psychology*, 17, 151–155. <https://doi.org/10.1016/j.copsyc.2017.07.008>
- Fittipaldi, S., Abrevaya, S., Fuente, A. de la, Pascariello, G. O., Hesse, E., Birba, A., Salamone, P., Hildebrandt, M., Marti, S. A., Pautassi, R. M., Huepe, D., Martorell, M. M., Yoris, A., Roca, M., García, A. M., Sedeño, L., & Ibáñez, A. (2020). A multidimensional and multi-feature framework for cardiac interoception. *NeuroImage*, 212(February). <https://doi.org/10.1016/j.neuroimage.2020.116677>
- Fleming, S. M., & Lau, H. C. (2014). How to measure metacognition. *Frontiers in Human Neuroscience*, 8(July), 1–9. <https://doi.org/10.3389/fnhum.2014.00443>
- Folz, J., Akdağ, R., Nikolić, M., van Steenbergen, H., & Kret, M. E. (2023). Facial mimicry and metacognitive judgments in emotion recognition are distinctly modulated by social anxiety and autistic traits. *Scientific Reports*, 13(1), 9730. <https://doi.org/10.1038/s41598-023-35773-6>

- Folz, J., Diana, F., Sjak-Shie, E., Nikolić, M., & Kret, M. E. (2024). *Missing the tune (to trust)? Modulations in Physiological Alignment and Trust Formation by Social Anxiety and Autistic Traits*.
- Folz, J., Fiacchino, D., Nikolić, M., Van Steenbergen, H., & Kret, M. E. (2022). Reading Your Emotions in My Physiology? Reliable Emotion Interpretations in Absence of a Robust Physiological Resonance. *Affective Science*, 3, 480–497. <https://doi.org/10.1007/s42761-021-00083-5>/Published
- Forkmann, T., Scherer, A., Meessen, J., Michal, M., Schächinger, H., Vögele, C., & Schulz, A. (2016). Making sense of what you sense: Disentangling interoceptive awareness, sensibility and accuracy. *International Journal of Psychophysiology*, 109, 71–80. <https://doi.org/10.1016/j.ijpsycho.2016.09.019>
- Fox, N. A., Buzzell, G. A., Morales, S., Valadez, E. A., Wilson, M., & Henderson, H. A. (2021). Understanding the Emergence of Social Anxiety in Children With Behavioral Inhibition. In *Biological Psychiatry* (Vol. 89, Issue 7, pp. 681–689). Elsevier Inc. <https://doi.org/10.1016/j.biopsych.2020.10.004>
- Frank, R., Schulze, L., Hellweg, R., Koehne, S., & Roepke, S. (2018). Impaired detection and differentiation of briefly presented facial emotions in adults with high-functioning autism and asperger syndrome. *Behaviour Research and Therapy*, 104(June 2017), 7–13. <https://doi.org/10.1016/j.brat.2018.02.005>
- Fresco, D. M., Coles, M. E., Heimberg, R. G., Liebowitz, M. R., Hami, S., Stein, M. B., & Goetz, D. (2001). The Liebowitz Social Anxiety Scale: A comparison of the psychometric properties of self-report and clinician-administered formats. *Psychological Medicine*, 31(6), 1025–1035. <https://doi.org/10.1017/S0033291701004056>
- Fridlund, A. J. (1991). Sociality of solitary smiling: Potentiation by an implicit audience. *Journal of Personality and Social Psychology*, 60(2), 229–240. <https://doi.org/10.1037//0022-3514.60.2.229>
- Fridlund, A. J., & Cacioppo, J. T. (1986). Guidelines for Human Electromyographic Research. *Psychophysiology*, 23(5), 567–589. <https://doi.org/10.1111/j.1469-8986.1986.tb00676.x>
- Friedman, B. H. (2010). Feelings and the body: The Jamesian perspective on autonomic specificity of emotion. *Biological Psychology*, 84(3), 383–393. <https://doi.org/10.1016/j.biopsycho.2009.10.006>
- Friesen, W. V., & Ekman, P. (1983). *EMFACS-7: Emotional Facial Action Coding System*.
- Frith, C. (2009). Role of facial expressions in social interactions. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 364(1535), 3453–3458. <https://doi.org/10.1098/rstb.2009.0142>
- Frith, C. (2012). The role of metacognition in human social interactions. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 367(1599), 2213–2223. <https://doi.org/10.1098/rstb.2012.0123>
- Gabriele, E., Spooner, R., Brewer, R., & Murphy, J. (2022). Dissociations between self-reported interoceptive accuracy and attention: Evidence from the Interoceptive Attention Scale. *Biological Psychology*, 168, 108243. <https://doi.org/https://doi.org/10.1016/j.biopsycho.2021.108243>
- Gaebler, M., Daniels, J. K., Lamke, J. P., Fydrich, T., & Walter, H. (2013). Heart rate variability and its neural correlates during emotional face processing in social anxiety disorder. *Biological Psychology*, 94(2), 319–330. <https://doi.org/10.1016/j.biopsycho.2013.06.009>
- Gaigg, S. B. (2012). The interplay between emotion and cognition in Autism Spectrum Disorder: Implications for developmental theory. *Frontiers in Integrative Neuroscience*, 6(NOV), 1–35. <https://doi.org/10.3389/frint.2012.00113>
- Gaigg, S. B., Cornell, A. S. F., & Bird, G. (2018). The psychophysiological mechanisms of alexithymia in autism spectrum disorder. *Autism*, 22(2), 227–231. <https://doi.org/10.1177/1362361316667062>
- Gaigg, S. B., Flaxman, P. E., McLaven, G., Shah, R., Bowler, D. M., Meyer, B., Roestorf, A., Haenschel, C., Rodgers, J., & South, M. (2020). Self-guided mindfulness and cognitive behavioural practices reduce anxiety in autistic adults: A pilot 8-month waitlist-controlled trial of widely available online tools. *Autism*, 24(4), 867–883. <https://doi.org/10.1177/1362361320909184>
- Gao, Q., Ping, X., & Chen, W. (2019). Body influences on social cognition through interoception. *Frontiers in Psychology*, 10(SEP), 1–5. <https://doi.org/10.3389/fpsyg.2019.02066>
- García-Blanco, A., López-Soler, C., Vento, M., García-Blanco, M. C., Gago, B., & Perea, M. (2017). Communication deficits and avoidance of angry faces in children with autism spectrum disorder. *Research in Developmental Disabilities*, 62, 218–226. <https://doi.org/10.1016/j.ridd.2017.02.002>
- Garfinkel, S. N., & Critchley, H. D. (2013). Interoception, emotion and brain: new insights link internal physiology to social behaviour. Commentary on: “Anterior insular cortex mediates bodily sensibility and social anxiety” by Terasawa et al. (2012). *Social Cognitive and Affective Neuroscience*, 8(3), 231–234. <https://doi.org/10.1093/scan/nss140>
- Garfinkel, S. N., Seth, A. K., Barrett, A. B., Suzuki, K., & Critchley, H. D. (2015). Knowing your own heart: Distinguishing interoceptive accuracy from interoceptive awareness. *Biological Psychology*, 104, 65–74. <https://doi.org/10.1016/j.biopsycho.2014.11.004>

- Garfinkel, S. N., Tiley, C., O'Keeffe, S., Harrison, N. A., Seth, A. K., & Critchley, H. D. (2016). Discrepancies between dimensions of interoception in autism: Implications for emotion and anxiety. *Biological Psychology*, 114, 117–126. <https://doi.org/10.1016/j.biopsycho.2015.12.003>
- Georgescu, A. L., Koehler, J. C., Weiske, J., Vogeley, K., Koutsouleris, N., & Falter-Wagner, C. (2019). Machine Learning to Study Social Interaction Difficulties in ASD. *Frontiers in Robotics and AI*, 6(November), 1–7. <https://doi.org/10.3389/frobt.2019.00132>
- Gerrans, P., & Murray, R. J. (2020). Interoceptive active inference and self-representation in social anxiety disorder (SAD): exploring the neurocognitive traits of the SAD self. *Neuroscience of Consciousness*, 2020(1). <https://doi.org/10.1093/nc/niaa026>
- Gilboa-Schechtman, E. (2020). A Dual-System Model of Social Anxiety Disorder: The Interplay of the Social-Rank and Affiliation Biopsychosocial Systems. *Clinical Psychology and Special Education*, 9(3), 15–33. <https://doi.org/10.17759/cpse.2020090302>
- Gilboa-Schechtman, E., & Shachar-Lavie, I. (2013). More than a face: a unified theoretical perspective on nonverbal social cue processing in social anxiety. *Frontiers in Human Neuroscience*, 7:904, 1–14. <https://doi.org/10.3389/fnhum.2013.00904>
- Gika, S., Wittkowski, A., & Wells, A. (2018). Social cognition and metacognition in social anxiety: A systematic review. *Clinical Psychology and Psychotherapy*, 25(1), 10–30. <https://doi.org/10.1002/cpp.2127>
- Gobel, M. S., Kim, H. S., & Richardson, D. C. (2015). The dual function of social gaze. *Cognition*, 136, 359–364. <https://doi.org/10.1016/j.cognition.2014.11.040>
- Goerg, G. M. (2022). *LambertW: Probabilistic Models to Analyze and Gaussianize Heavy-Tailed, Skewed Data*. <https://CRAN.R-project.org/package=LambertW>
- Grabauskaitė, A., Baranauskas, M., & Griškova-Bulanova, I. (2017). Interoception and gender: What aspects should we pay attention to? *Consciousness and Cognition*, 48, 129–137. <https://doi.org/10.1016/j.concog.2016.11.002>
- Gračanin, A., Bylsma, L. M., & Vingerhoets, A. J. J. M. (2018). Why Only Humans Shed Emotional Tears: Evolutionary and Cultural Perspectives. *Human Nature*, 29(2), 104–133. <https://doi.org/10.1007/s12110-018-9312-8>
- Green, C., & Guo, K. (2018). Factors contributing to individual differences in facial expression categorisation. *Cognition and Emotion*, 32(1), 37–48. <https://doi.org/10.1080/02699931.2016.1273200>
- Green, P., & MacLeod, C. J. (2016). SIMR: An R package for power analysis of generalized linear mixed models by simulation. *Methods in Ecology and Evolution*, 7(4), 493–498. <https://doi.org/10.1111/2041-210X.12504>
- Gutiérrez-García, A., & Calvo, M. G. (2017a). Social anxiety and threat-related interpretation of dynamic facial expressions: Sensitivity and response bias. *Personality and Individual Differences*, 107, 10–16. <https://doi.org/10.1016/j.paid.2016.11.025>
- Gutiérrez-García, A., & Calvo, M. G. (2017b). Social anxiety and threat-related interpretation of dynamic facial expressions: Sensitivity and response bias. *Personality and Individual Differences*, 107, 10–16. <https://doi.org/10.1016/j.paid.2016.11.025>
- Hansen, C. H., & Hansen, R. D. (1988). Finding the Face in the Crowd: An Anger Superiority Effect. *Journal of Personality and Social Psychology*, 54(6), 917–924. <https://doi.org/10.1037/0022-3514.54.6.917>
- Happé, F., & Frith, U. (2006). The Weak Coherence Account: Detail-focused Cognitive Style in Autism Spectrum Disorders. *Journal of Autism and Developmental Disorders*, 36(1), 5–25. <https://doi.org/10.1007/s10803-005-0039-0>
- Harms, M. B., Martin, A., & Wallace, G. L. (2010). Facial Emotion Recognition in Autism Spectrum Disorders : A Review of Behavioral and Neuroimaging Studies. *Neuropsychological Review*, 20, 290–322. <https://doi.org/10.1007/s11065-010-9138-6>
- Hartman, L. M. (1983). A metacognitive model of social anxiety: Implications for treatment. *Clinical Psychology Review*, 3(4), 435–456. [https://doi.org/10.1016/0272-7358\(83\)90023-5](https://doi.org/10.1016/0272-7358(83)90023-5)
- Hatfield, E., Cacioppo, J. T., & Rapson, R. L. (1993). Emotional contagion. *Current Directions in Psychological Science*, 2(3), 96–99. <https://doi.org/10.1111/1467-8721.ep10770953>
- Hatfield, T. R., Brown, R. F., Giummarra, M. J., & Lenggenhager, B. (2019). Autism spectrum disorder and interoception: Abnormalities in global integration? *Autism*, 23(1), 212–222. <https://doi.org/10.1177/1362361317738392>
- Heerey, E. A., & Kring, A. M. (2007). Interpersonal consequences of social anxiety. *Journal of Abnormal Psychology*, 116(1), 125–134. <https://doi.org/10.1037/0021-843X.116.1.125>

- Heim, N., Bobou, M., Tanzer, M., Jenkinson, P. M., Steinert, C., & Fotopoulou, A. (2023). Psychological interventions for interoception in mental health disorders: A systematic review of randomized-controlled trials. *Psychiatry and Clinical Neurosciences*, 77(10), 530–540. <https://doi.org/10.1111/pcn.13576>
- Heimberg, R. G., Brozovich, F. A., & Rapee, R. M. (2010). A Cognitive Behavioral Model of Social Anxiety Disorder: Update and Extension. In S. G. Hofmann & P. M. DiBartolo (Eds.), *Social Anxiety (Second Edition)* (Second Edition, pp. 395–422). Academic Press. <https://doi.org/https://doi.org/10.1016/B978-0-12-375096-9.00015-8>
- Heimberg, R. G., Brozovich, F. A., & Rapee, R. M. (2014). A Cognitive-Behavioral Model of Social Anxiety Disorder. In *Social Anxiety: Clinical, Developmental, and Social Perspectives* (pp. 705–728). Elsevier. <https://doi.org/10.1016/B978-0-12-394427-6.00024-8>
- Helbig-Lang, S., von Auer, M., Neubauer, K., Murray, E., & Gerlach, A. L. (2016). Post-event processing in social anxiety disorder after real-life social situations – An ambulatory assessment study. *Behaviour Research and Therapy*, 84, 27–34. <https://doi.org/10.1016/j.brat.2016.07.003>
- Hermans, E. J., van Wingen, G., Bos, P. A., Putman, P., & van Honk, J. (2009). Reduced spontaneous facial mimicry in women with autistic traits. *Biological Psychology*, 80(3), 348–353. <https://doi.org/10.1016/j.biopsycho.2008.12.002>
- Hess, U., & Blairy, S. (2001). Facial mimicry and emotional contagion to dynamic emotional facial expressions and their influence on decoding accuracy. *International Journal of Psychophysiology*, 40(2), 129–141. [https://doi.org/10.1016/S0167-8760\(00\)00161-6](https://doi.org/10.1016/S0167-8760(00)00161-6)
- Hess, U., Blairy, S., & Kleck, R. E. (1997). The intensity of emotional facial expressions and decoding accuracy. *Journal of Nonverbal Behavior*, 21(4), 241–257. <https://doi.org/10.1023/A:1024952730333>
- Hess, U., & Bourgeois, P. (2010). You smile-I smile: Emotion expression in social interaction. *Biological Psychology*, 84(3), 514–520. <https://doi.org/10.1016/j.biopsycho.2009.11.001>
- Hess, U., & Fischer, A. (2013). Emotional Mimicry as Social Regulation. *Personality and Social Psychology Review*, 17(2), 142–157. <https://doi.org/10.1177/1088868312472607>
- Hickman, L., Seyedsalehi, A., Cook, J. L., Bird, G., & Murphy, J. (2020). The relationship between heartbeat counting and heartbeat discrimination: A meta-analysis. *Biological Psychology*, 156. <https://doi.org/10.1016/j.biopsycho.2020.107949>
- Hirsch, C. R., & Clark, D. M. (2004). Information-processing bias in social phobia. *Clinical Psychology Review*, 24(7), 799–825. <https://doi.org/10.1016/j.cpr.2004.07.005>
- Hofmann, S. G. (2007). Cognitive Factors that Maintain Social Anxiety Disorder: a Comprehensive Model and its Treatment Implications. *Cognitive Behaviour Therapy*, 36(4), 193–209. <https://doi.org/10.1080/16506070701421313>
- Holland, A. C., O'Connell, G., & Dziobek, I. (2020). Facial mimicry, empathy, and emotion recognition: a meta-analysis of correlations. *Cognition and Emotion*, 1–19. <https://doi.org/10.1080/02699931.2020.1815655>
- Hollocks, M. J., Ozsivadjian, A., Matthews, C. E., Howlin, P., & Simonoff, E. (2013). The relationship between attentional bias and anxiety in children and adolescents with autism spectrum disorders. *Autism Research*, 6(4), 237–247. <https://doi.org/10.1002/aur.1285>
- Hollocks, M. J., Pickles, A., Howlin, P., & Simonoff, E. (2016). Dual Cognitive and Biological Correlates of Anxiety in Autism Spectrum Disorders. *Journal of Autism and Developmental Disorders*, 46(10), 3295–3307. <https://doi.org/10.1007/s10803-016-2878-2>
- Hooper, J. J., Sutherland, C. A. M., Ewing, L., Langdon, R., Caruana, N., Connaughton, E., Williams, N., Greenwell-Barnden, J., & Rhodes, G. (2019). Should I trust you? Autistic traits predict reduced appearance-based trust decisions. *British Journal of Psychology*, 110(4), 617–634. <https://doi.org/10.1111/bjop.12357>
- Hothorn, T., Bretz, F., & Westfall, P. (2008). Simultaneous Inference in General Parametric Models. *Biometrical Journal*, 50(3), 346–363.
- Howell, A. N., Zibulsky, D. A., Srivastav, A., & Weeks, J. W. (2016). Relations among Social Anxiety, Eye Contact Avoidance, State Anxiety, and Perception of Interaction Performance during a Live Conversation. *Cognitive Behaviour Therapy*, 45(2), 111–122. <https://doi.org/10.1080/16506073.2015.1111932>
- Hubert, B. E., Wicker, B., Monfardini, E., & Deruelle, C. (2009). Electrodermal reactivity to emotion processing in adults with autistic spectrum disorders. *Autism*, 13(1), 9–19. <https://doi.org/10.1177/1362361308091649>
- Hübner, A. M., Trempler, I., Gietmann, C., & Schubotz, R. I. (2021). Interoceptive sensibility predicts the ability to infer others' emotional states. *PLoS ONE*, 16(10 October). <https://doi.org/10.1371/journal.pone.0258089>
- Hübner, A. M., Trempler, I., & Schubotz, R. I. (2022). Interindividual differences in interoception modulate behavior and brain responses in emotional inference. *NeuroImage*, 261. <https://doi.org/10.1016/j.neuroimage.2022.119524>

- Hunter, L. R., Buckner, J. D., & Schimdt, N. B. (2009). Interpreting facial expressions: The influence of social anxiety, emotional valence, and race. *Journal of Anxiety Disorders*, 23(1), 1–7. <https://doi.org/10.1016/j.janxdis.2008.10.004>. Interpreting
- Huron, D. (2018). On the Functions of Sadness and Grief. In H. C. Lench (Ed.), *The Function of Emotions: When and Why Emotions Help Us* (pp. 59–91). Springer International Publishing. https://doi.org/10.1007/978-3-319-77619-4_5
- Ioannou, S., Gallese, V., & Merla, A. (2014). Thermal infrared imaging in psychophysiology : Potentialities and limits. *Psychophysiology*, 51, 951–963. <https://doi.org/10.1111/psyp.12243>
- Israelashvili, J., Aviezer, H., & Hassin, R. (2019). When Emotions Run High: A Critical Role for Context in the Unfolding of Dynamic, Real-Life Facial Affect. *Emotion*, 19(3), 558–562. <https://doi.org/10.1037/emo0000441>
- Izuma, K., Matsumoto, K., Camerer, C. F., & Adolphs, R. (2011). Insensitivity to social reputation in autism. *Proceedings of the National Academy of Sciences of the United States of America*, 108(42), 17302–17307. <https://doi.org/10.1073/pnas.1107038108>
- James, W. (1884). What is an Emotion? *Mind*, 9, 188–205. <http://mind.oxfordjournals.org/content/os-IX/34/188>
- Jessen, S., Altvater-Mackensen, N., & Grossmann, T. (2016). Pupillary responses reveal infants' discrimination of facial emotions independent of conscious perception. *Cognition*, 150, 163–169. <https://doi.org/10.1016/j.cognition.2016.02.010>
- Jongen, S., Axmacher, N., Kremers, N. A. W., Hoffmann, H., Limbrecht-Ecklundt, K., Traue, H. C., & Kessler, H. (2014). An investigation of facial emotion recognition impairments in alexithymia and its neural correlates. *Behavioural Brain Research*, 271, 129–139. <https://doi.org/10.1016/j.bbr.2014.05.069>
- Joormann, J., & Gotlib, I. H. (2006). Is this happiness i see? Biases in the identification of emotional facial expressions in depression and social phobia. *Journal of Abnormal Psychology*, 115(4), 705–714. <https://doi.org/10.1037/0021-843X.115.4.705>
- Kanbara, K., & Fukunaga, M. (2016). Links among emotional awareness, somatic awareness and autonomic homeostatic processing. *BioPsychoSocial Medicine*, 10(1), 1–11. <https://doi.org/10.1186/S13030-016-0059-3>
- Kashdan, T. B., & Savostyanova, A. A. (2011). Capturing the Biases of Socially Anxious People by Addressing Partner Effects and Situational Parameters. *Behavior Therapy*, 42(2), 211–233. <https://doi.org/10.1016/j.earlhumdev.2006.05.022>
- Kashdan, T. B., & Wenzel, A. (2005). A transactional approach to social anxiety and the genesis of interpersonal closeness: Self, partner, and social context. *Behavior Therapy*, 36(4), 335–346. [https://doi.org/10.1016/S0005-7894\(05\)80115-7](https://doi.org/10.1016/S0005-7894(05)80115-7)
- Kastendieck, T., Mauersberger, H., Blaison, C., Ghalib, J., & Hess, U. (2021). Laughing at funerals and frowning at weddings: Top-down influences of context-driven social judgments on emotional mimicry. *Acta Psychologica*, 212. <https://doi.org/10.1016/j.actpsy.2020.103195>
- Keating, C. T., & Cook, J. (2022). *The Inside Out Model of Emotion Recognition: How the Shape of One's Internal Emotional Landscape Influences the Recognition of Others' Emotions*. PsyArXiv. <https://doi.org/10.31234/osf.io/476dk>
- Keating, C. T., & Cook, J. L. (2020). Facial Expression Production and Recognition in Autism Spectrum Disorders: A Shifting Landscape. In *Child and Adolescent Psychiatric Clinics of North America* (Vol. 29, Issue 3, pp. 557–571). W.B. Saunders. <https://doi.org/10.1016/j.chc.2020.02.006>
- Keating, C. T., & Cook, J. L. (2023). The inside out model of emotion recognition: how the shape of one's internal emotional landscape influences the recognition of others' emotions. *Scientific Reports*, 13(1). <https://doi.org/10.1038/s41598-023-48469-8>
- Keating, C. T., Fraser, D. S., Sowden, S., & Cook, J. L. (2021). Differences Between Autistic and Non-Autistic Adults in the Recognition of Anger from Facial Motion Remain after Controlling for Alexithymia. *Journal of Autism and Developmental Disorders*, 0123456789. <https://doi.org/10.1007/s10803-021-05083-9>
- Keating, C. T., Ichijo, E., & Cook, J. L. (2023). Autistic adults exhibit highly precise representations of others' emotions but a reduced influence of emotion representations on emotion recognition accuracy. *Scientific Reports*, 13(1), 11875. <https://doi.org/10.1038/s41598-023-39070-0>
- Keil, V., Hepach, R., Vierrath, S., Caffier, D., Tuschen-Caffier, B., Klein, C., & Schmitz, J. (2018). Children with social anxiety disorder show blunted pupillary reactivity and altered eye contact processing in response to emotional faces: Insights from pupillometry and eye movements. *Journal of Anxiety Disorders*, 58(June), 61–69. <https://doi.org/10.1016/j.janxdis.2018.07.001>

- Kelly, K. J., & Metcalfe, J. (2011). Metacognition of Emotional Face Recognition. *Emotion*, 11(4), 896–906. <https://doi.org/10.1037/a0023746>
- Keltner, D. (1995). Signs of Appeasement: Evidence for the Distinct Displays of Embarrassment, Amusement, and Shame. *Journal of Personality and Social Psychology*, 68(3), 441–454. <https://doi.org/10.1093/acprof:oso/9780195179644.003.0007>
- Keltner, D., & Haidt, J. (1999). Social functions of emotions at four levels of analysis. *Cognition and Emotion*, 13(5), 505–521. <https://doi.org/10.1080/026999399379168>
- Keltner, D., & Kring, A. M. (1998). Emotion, social function, and psychopathology. *Review of General Psychology*, 2(3), 320–342. <https://doi.org/10.1037/1089-2680.2.3.320>
- Ketelaars, M. P., In'T Velt, A., Mol, A., Swaab, H., & Van Rijn, S. (2016). Emotion recognition and alexithymia in high functioning females with autism spectrum disorder. *Research in Autism Spectrum Disorders*, 21, 51–60. <https://doi.org/10.1016/j.rasd.2015.09.006>
- Khalsa, S. S., Adolphs, R., Cameron, O. G., Critchley, H. D., Davenport, P. W., Feinstein, J. S., Feusner, J. D., Garfinkel, S. N., Lane, R. D., Mehling, W. E., Meuret, A. E., Nemeroff, C. B., Oppenheimer, S., Petzschner, F. H., Pollatos, O., Rhudy, J. L., Schramm, L. P., Simmons, W. K., Stein, M. B., ... Zucker, N. (2018). Interoception and Mental Health: A Roadmap. *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging*, 3(6), 501–513. <https://doi.org/10.1016/j.bpsc.2017.12.004>
- Kim, S. Y., & Bottema-Beutel, K. (2019). A meta regression analysis of quality of life correlates in adults with ASD. *Research in Autism Spectrum Disorders*, 63, 23–33. <https://doi.org/10.1016/j.rasd.2018.11.004>
- Kim, Y., & Kret, M. (2022). The emotional expressions and emotion perception in nonhuman primates. In *The Oxford handbook of emotional development*. (pp. 129–145). Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780198855903.001.0001>
- Kimbrel, N. A., Nelson-Gray, R. O., & Mitchell, J. T. (2012). BIS, BAS, and bias: The role of personality and cognitive bias in social anxiety. *Personality and Individual Differences*, 52(3), 395–400. <https://doi.org/10.1016/j.paid.2011.10.041>
- Kinnaird, E., Stewart, C., & Tchanturia, K. (2019). Investigating alexithymia in autism: A systematic review and meta-analysis. *European Psychiatry*, 55, 80–89. <https://doi.org/10.1016/j.eurpsy.2018.09.004>
- Kivity, Y., & Huppert, J. D. (2016). Emotional Reactions to Facial Expressions in Social Anxiety: A Meta-Analysis of Self-Reports. *Emotion Review*, 8(4), 367–375. <https://doi.org/10.1177/1754073915594436>
- Kleckner, I. R., Wormwood, J. B., Simmons, W. K., Barrett, L. F., & Quigley, K. S. (2015). Methodological recommendations for a heartbeat detection-based measure of interoceptive sensitivity. *Psychophysiology*, 52(11), 1432–1440. <https://doi.org/10.1111/psyp.12503>
- Kleinbub, J. R. (2017). State of the art of interpersonal physiology in psychotherapy: A systematic review. *Frontiers in Psychology*, 8(2053). <https://doi.org/10.3389/fpsyg.2017.02053>
- Kliemann, D., Dziobek, I., Hatri, A., Steimke, R., & Heekeren, H. R. (2010). Atypical reflexive gaze patterns on emotional faces in autism spectrum disorders. *Journal of Neuroscience*, 30(37), 12281–12287. <https://doi.org/10.1523/JNEUROSCI.0688-10.2010>
- Klumpp, H., & Amir, N. (2009). Examination of vigilance and disengagement of threat in social anxiety with a probe detection task. *Anxiety, Stress and Coping*, 22(3), 283–296. <https://doi.org/10.1080/10615800802449602>
- Koban, L., Andrews-Hanna, J. R., Ives, L., Wager, T. D., & Arch, J. J. (2023). Brain mediators of biased social learning of self-perception in social anxiety disorder. *Translational Psychiatry*, 13(1). <https://doi.org/10.1038/s41398-023-02587-z>
- Koehler, J. C., Georgescu, A. L., Weiske, J., Spangemacher, M., Burghof, L., Falkai, P., Koutsouleris, N., Tschacher, W., Vogeley, K., & Falter-Wagner, C. M. (2022). Brief Report: Specificity of Interpersonal Synchrony Deficits to Autism Spectrum Disorder and Its Potential for Digitally Assisted Diagnostics. *Journal of Autism and Developmental Disorders*, 52(8), 3718–3726. <https://doi.org/10.1007/s10803-021-05194-3>
- Konovalova, I., Antolin, J. V., Bolderston, H., & Gregory, N. J. (2021). Adults with higher social anxiety show avoidant gaze behaviour in a real-world social setting: A mobile eye tracking study. *PLoS ONE*, 16(10 October). <https://doi.org/10.1371/journal.pone.0259007>
- Kosonogov, V., De Zorzi, L., Honoré, J., Martínez-Velázquez, E. S., Nandirino, J. L., Martínez-Selva, J. M., & Sequeira, H. (2017). Facial thermal variations: A new marker of emotional arousal. *PLoS ONE*, 12(9), 1–16. <https://doi.org/10.1371/journal.pone.0183592>
- Kragel, P. A., & LaBar, K. S. (2013). Multivariate pattern classification reveals autonomic and experiential representations of discrete emotions. *Emotion*, 13(4), 681–690. <https://doi.org/10.1037/a0031820>

- Kreibig, S. D. (2010). Autonomic nervous system activity in emotion: A review. *Biological Psychology*, 84(3), 394–421. <https://doi.org/10.1016/j.biopsycho.2010.03.010>
- Kreibig, S. D., Wilhelm, F. H., Roth, W. T., & Gross, J. J. (2007). Cardiovascular, electrodermal, and respiratory response patterns to fear- and sadness-inducing films. *Psychophysiology*, 44(5), 787–806. <https://doi.org/10.1111/j.1469-8986.2007.00550.x>
- Kret, M. E. (2015). Emotional expressions beyond facial muscle actions . A call for studying autonomic signals and their impact on social perception. *Frontiers in Psychology*, 6, 1–10. <https://doi.org/10.3389/fpsyg.2015.00711>
- Kret, M. E., Jaasma, L., Bionda, T., & Wijnen, J. G. (2016). Bonobos (Pan paniscus) show an attentional bias toward conspecifics' emotions. *Proceedings of the National Academy of Sciences of the United States of America*, 113(14), 3761–3766. <https://doi.org/10.1073/pnas.1522060113>
- Kret, M. E., & Ploeger, A. (2015). Emotion processing deficits: A liability spectrum providing insight into comorbidity of mental disorders. *Neuroscience and Biobehavioral Reviews*, 52, 153–171. <https://doi.org/10.1016/j.neubiorev.2015.02.011>
- Kret, M. E., Prochazkova, E., Sterck, E. H. M., & Clay, Z. (2020). Emotional expressions in human and non-human great apes. *Neuroscience and Biobehavioral Reviews*, 115, 378–395. <https://doi.org/10.1016/j.neubiorev.2020.01.027>
- Kret, M. E., Roelofs, K., Stekelenburg, J. J., & de Gelder, B. (2013). Emotional signals from faces, bodies and scenes influence observers' face expressions, fixations and pupil-size. *Frontiers in Human Neuroscience*, 7, 1–9. <https://doi.org/10.3389/fnhum.2013.00810>
- Kret, M. E., & Sjak-Shie, E. E. (2019). Preprocessing pupil size data: Guidelines and code. *Behavior Research Methods*, 51(3), 1336–1342. <https://doi.org/10.3758/s13428-018-1075-y>
- Kret, M. E., Stekelenburg, J. J., de Gelder, B., & Roelofs, K. (2017). From face to hand: Attentional bias towards expressive hands in social anxiety. *Biological Psychology*, 122, 42–50. <https://doi.org/10.1016/j.biopsycho.2015.11.016>
- Kret, M. E., Stekelenburg, J. J., Roelofs, K., & de Gelder, B. (2013). Perception of Face and Body Expressions Using Electromyography, Pupillometry and Gaze Measures. *Frontiers in Psychology*, 4, 1–12. <https://doi.org/10.3389/fpsyg.2013.00028>
- Kret, M. E., & Straffon, L. M. (2018). Reply to Crivelli et al.: The different faces of fear and threat. Evolutionary and cultural insights. *Journal of Human Evolution*, 125, 193–197. <https://doi.org/10.1016/j.jhevol.2017.11.006>
- Krumhuber, E. G., Kappas, A., & Manstead, A. S. R. (2013). Effects of dynamic aspects of facial expressions: A review. *Emotion Review*, 5(1), 41–46. <https://doi.org/10.1177/1754073912451349>
- Krumhuber, E. G., Skora, L., Küster, D., & Fou, L. (2017). A Review of Dynamic Datasets for Facial Expression Research. *Emotion Review*, 9(3), 280–292. <https://doi.org/10.1177/1754073916670022>
- Künecke, J., Hildebrandt, A., Recio, G., Sommer, W., & Wilhelm, O. (2014). Facial EMG responses to emotional expressions are related to emotion perception ability. *PLoS ONE*, 9(1). <https://doi.org/10.1371/journal.pone.0084053>
- Küster, D. (2018). Social Effects of Tears and Small Pupils Are Mediated by Felt Sadness: An Evolutionary View. *Evolutionary Psychology*, 16(1), 1–9. <https://doi.org/10.1177/1474704918761104>
- Kuznetsova, A., Brockhoff, P. B., & Christensen, R. H. B. (2017). lmerTest Package: Tests in Linear Mixed Effects Models. *Journal of Statistical Software*, 82(13), 1–26. <https://doi.org/10.18637/jss.v082.i13>
- Lacombe, C., Simoneau, K., Elalouf, K., & Collin, C. (2023). The Impact of Social Anxiety Disorder on Emotional Expression Recognition: A Meta-analysis. *Cognitive Therapy and Research*, 47(5), 732–751. <https://doi.org/10.1007/s10608-023-10376-7>
- Laidlaw, K. E. W., Foulsham, T., Kuhn, G., & Kingstone, A. (2011). Potential social interactions are important to social attention. *Proceedings of the National Academy of Sciences of the United States of America*, 108(14), 5548–5553. <https://doi.org/10.1073/pnas.1017022108>
- Lamm, C., Bukowski, H., & Silani, G. (2016). From shared to distinct self-other representations in empathy: Evidence from neurotypical function and socio-cognitive disorders. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 371(1686). <https://doi.org/10.1098/rstb.2015.0083>
- Lampi, A. J., Brewer, R., Bird, G., & Jaswal, V. K. (2023). Non-autistic adults can recognize posed autistic facial expressions: Implications for internal representations of emotion. *Autism Research*, 16(7), 1321–1334. <https://doi.org/10.1002/aur.2938>
- Lane, R. D., Sechrest, L., Reidel, R., Weldon, V., Kaszniak, A., & Schwartz, G. E. (1996). Impaired verbal and nonverbal emotion recognition in alexithymia. *Psychosomatic Medicine*, 58(3), 203–210. <https://doi.org/10.1097/00006842-199605000-00002>

Appendices

- Lang, P. J., Greenwald, M. K., Bradley, M. M., & Hamm, a O. (1993). Looking at pictures: affective, facial, visceral, and behavioral reactions. *Psychophysiology*, 30(3), 261–273. <https://doi.org/10.1111/j.1469-8986.1993.tb03352.x>
- Lange, C. G. (1912). The mechanism of the emotions. In B. Rand (Ed.), *The classical psychologists* (pp. 672–684). B. Rand, Trans.
- Lange, C. G., & Kurella, H. (1887). *Ueber Gemüthsbewegungen: eine psycho-physiologische Studie*.
- Law Smith, M. J., Montagne, B., Perrett, D. I., Gill, M., & Gallagher, L. (2010). Detecting subtle facial emotion recognition deficits in high-functioning Autism using dynamic stimuli of varying intensities. *Neuropsychologia*, 48(9), 2777–2781. <https://doi.org/10.1016/j.neuropsychologia.2010.03.008>
- Lazarov, A., Basel, D., Dolan, S., Dillon, D. G., Pizzagalli, D. A., & Schneier, F. R. (2021). Increased attention allocation to socially threatening faces in social anxiety disorder: A replication study. *Journal of Affective Disorders*, 290, 169–177. <https://doi.org/10.1016/j.jad.2021.04.063>
- Lehrl, S. (2005). *Mehrfachwahl-Wortschatz-Intelligenztest* (5., unveränd. Aufl.). Spitta.
- Lenth, R. V. (2023). *emmeans: Estimated Marginal Means, aka Least-Squares Means*. <https://github.com/rvlenth/emmeans>
- Leung, F. Y. N., Stojanovik, V., Micai, M., Jiang, C., & Liu, F. (2023). Emotion recognition in autism spectrum disorder across age groups: A cross-sectional investigation of various visual and auditory communicative domains. *Autism Research*, 16(4), 783–801. <https://doi.org/10.1002/aur.2896>
- Levenson, R. W. (2003). Blood, Sweat, and Fears: The Autonomic Architecture of Emotion. *Annals of the New York Academy of Sciences*, 1000, 348–366. <https://doi.org/10.1196/annals.1280.016>
- Levenson, R. W. (2014). The autonomic nervous system and emotion. *Emotion Review*, 6(2), 100–112. <https://doi.org/10.1177/1754073913512003>
- Liebowitz, M. R. (1987). Social phobia. *Modern Problems in Pharmacopsychiatry*, 22, 141–173. <https://doi.org/10.1159/000414022>
- Lomas, J. D., Lin, A., Dikker, S., Forster, D., Lupetti, M. L., Huisman, G., Habekost, J., Beardow, C., Pandey, P., Ahmad, N., Miyapuram, K., Mullen, T., Cooper, P., van der Maden, W., & Cross, E. S. (2022). Resonance as a Design Strategy for AI and Social Robots. *Frontiers in Neurobotics*, 16. <https://doi.org/10.3389/fnbot.2022.850489>
- Lombardo, M. V., Chakrabarti, B., Bullmore, E. T., Sadek, S. A., Pasco, G., Wheelwright, S. J., Suckling, J., & Baron-Cohen, S. (2010). Atypical neural self-representation in autism. *Brain*, 133(2), 611–624. <https://doi.org/10.1093/brain/awp306>
- Lüdecke, D. (n.d.). *sjPlot: Data Visualization for Statistics in Social Science*. <https://CRAN.R-project.org/package=sjPlot>
- Lundström, S., Chang, Z., Råstam, M., Gillberg, C., Larsson, H., Anckarsäter, H., & Lichtenstein, P. (2012). Autism Spectrum Disorders and Autisticlike Traits Similar Etiology in the Extreme End and the Normal Variation. *Arch Gen Psychiatry*, 69(1), 46–52.
- Machado-de-Sousa, J. P., Arrais, K. C., Alves, N. T., Chagas, M. H. N., de Meneses-Gaya, C., Crippa, J. A. de S., & Hallak, J. E. C. (2010). Facial affect processing in social anxiety: Tasks and stimuli. *Journal of Neuroscience Methods*, 193(1), 1–6. <https://doi.org/10.1016/j.jneumeth.2010.08.013>
- MacLeod, C., Grafton, B., & Notebaert, L. (2019). Anxiety-Linked Attentional Bias: Is It Reliable? *Annu. Rev. Clin. Psychol.*, 15, 529–554. <https://doi.org/10.1146/annurev-clinpsy-050718>
- MacLeod, C., Mathews, A., & Tata, P. (1986). Attentional Bias in Emotional Disorders. *Journal of Abnormal Psychology*, 95(1), 15–20. <https://doi.org/10.1037/0021-843X.95.1.15>
- MacLeod, C., Rutherford, E., Campbell, L., Ebsworthy, G., & Holker, L. (2002). Selective attention and emotional vulnerability: Assessing the causal basis of their association through the experimental manipulation of attentional bias. *Journal of Abnormal Psychology*, 111(1), 107–123. <https://doi.org/10.1037/0021-843X.111.1.107>
- Maddox, B. B., & White, S. W. (2015). Comorbid Social Anxiety Disorder in Adults with Autism Spectrum Disorder. *Journal of Autism and Developmental Disorders*, 45(12), 3949–3960. <https://doi.org/10.1007/s10803-015-2531-5>
- Makowski, D., Ben-Shachar, M. S., & Lüdecke, D. (2019). bayestestR: Describing Effects and their Uncertainty, Existence and Significance within the Bayesian Framework. *Journal of Open Source Software*, 4(40), 1541. <https://doi.org/10.21105/joss.01541>

- Manders, E., Koch, S. C., & Fuchs, T. (2022). A Case for Playful Engagement: Synchrony and Interaction Quality During Mirroring in ASD: Conceptual Framework and Case Study. *American Journal of Dance Therapy*, 44(2), 143–167. <https://doi.org/10.1007/s10465-022-09359-0>
- Marci, C. D., & Orr, S. P. (2006). The effect of emotional distance on psychophysiological concordance and perceived empathy between patient and interviewer. *Applied Psychophysiology Biofeedback*, 31(2), 115–128. <https://doi.org/10.1007/s10484-006-9008-4>
- Marquez-Garcia, A. V., Magnuson, J., Morris, J., Iarocci, G., Doesburg, S., & Moreno, S. (2022). Music Therapy in Autism Spectrum Disorder: a Systematic Review. *Review Journal of Autism and Developmental Disorders*, 9, 91–107. <https://doi.org/10.1007/s40489-021-00246-x/Published>
- Marsh, A. A., Ambady, N., & Kleck, R. E. (2005). The effects of fear and anger facial expressions on approach- and avoidance-related behaviors. *Emotion*, 5(1), 119–124. <https://doi.org/10.1037/1528-3542.5.1.119>
- Martin, J., Rychlowska, M., Wood, A., & Niedenthal, P. (2017). Smiles as Multipurpose Social Signals. *Trends in Cognitive Sciences*, 21(11), 864–877. <https://doi.org/10.1016/j.tics.2017.08.007>
- Martinez, L., Falvello, V. B., Aviezer, H., & Todorov, A. (2016). Contributions of facial expressions and body language to the rapid perception of dynamic emotions. *Cognition and Emotion*, 30(5), 939–952. <https://doi.org/10.1080/02699931.2015.1035229>
- Mathersul, D., McDonald, S., & Rushby, J. A. (2013). Automatic facial responses to briefly presented emotional stimuli in autism spectrum disorder. *Biological Psychology*, 94(2), 397–407. <https://doi.org/10.1016/j.biopsycho.2013.08.004>
- Maurer, C., Chambon, V., Bourgeois-Gironde, S., Leboyer, M., & Zalla, T. (2018). The influence of prior reputation and reciprocity on dynamic trust-building in adults with and without autism spectrum disorder. *Cognition*, 172(November 2017), 1–10. <https://doi.org/10.1016/j.cognition.2017.11.007>
- May, T., Cornish, K., & Rinehart, N. J. (2015). Mechanisms of Anxiety Related Attentional Biases in Children with Autism Spectrum Disorder. *Journal of Autism and Developmental Disorders*, 45(10), 3339–3350. <https://doi.org/10.1007/s10803-015-2500-z>
- Mayer, J. L. (2017). The Relationship Between Autistic Traits and Atypical Sensory Functioning in Neurotypical and ASD Adults: A Spectrum Approach. *Journal of Autism and Developmental Disorders*, 47(2), 316–327. <https://doi.org/10.1007/s10803-016-2948-5>
- Mazzoni, N., Ricciardelli, P., Actis-Grosso, R., & Venuti, P. (2022). Difficulties in Recognising Dynamic but not Static Emotional Body Movements in Autism Spectrum Disorder. *Journal of Autism and Developmental Disorders*, 52(3), 1092–1105. <https://doi.org/10.1007/s10803-021-05015-7>
- McGinley, J. J., & Friedman, B. H. (2017). Autonomic specificity in emotion: The induction method matters. *International Journal of Psychophysiology*, 118(June), 48–57. <https://doi.org/10.1016/j.ijpsycho.2017.06.002>
- McIntosh, D. N., Reichmann-Decker, A., Winkelman, P., & Wilbarger, J. L. (2006). When the social mirror breaks: Deficits in automatic, but not voluntary, mimicry of emotional facial expressions in autism. *Developmental Science*, 9(3), 295–302. <https://doi.org/10.1111/j.1467-7687.2006.00492.x>
- McNaughton, K. A., & Redcay, E. (2020). Interpersonal Synchrony in Autism. *Current Psychiatry Reports*, 22(3). <https://doi.org/10.1007/s11920-020-1135-8>
- Mehling, W. E., Acree, M., Stewart, A., Silas, J., & Jones, A. (2018). The multidimensional assessment of interoceptive awareness, version 2 (MAIA-2). *PLoS ONE*, 13(12). <https://doi.org/10.1371/journal.pone.0208034>
- Mennin, D. S., Fresco, D. M., Heimberg, R. G., Schneier, F. R., Davies, S. O., & Liebowitz, M. R. (2002). Screening for social anxiety disorder in the clinical setting: Using the Liebowitz Social Anxiety Scale. *Journal of Anxiety Disorders*, 16(6), 661–673. [https://doi.org/10.1016/S0887-6185\(02\)00134-2](https://doi.org/10.1016/S0887-6185(02)00134-2)
- Merkelbach, H., van Hout, W., van den Hout, M. A., & Mersch, P. P. (1989). Psychophysiological and subjective reactions of social phobics and normals to facial stimuli. *Behaviour Research and Therapy*, 27(3), 289–294. [https://doi.org/10.1016/0005-7967\(89\)90048-X](https://doi.org/10.1016/0005-7967(89)90048-X)
- Milton, D. E. M. (2012). On the ontological status of autism: The “double empathy problem.” *Disability and Society*, 27(6), 883–887. <https://doi.org/10.1080/09687599.2012.710008>
- Mirman, D. (2014). *Growth curve analysis and visualization using R* (Issue The R series). Chapman and Hall. <https://doi.org/10.1177/0962280215570173>
- Miu, A. C., Pană, S. E., & Avram, J. (2012). Emotional face processing in neurotypicals with autistic traits: Implications for the broad autism phenotype. *Psychiatry Research*, 198(3), 489–494. <https://doi.org/10.1016/j.psychres.2012.01.024>

- Mogg, K., Bradley, B. P., Miles, F., & Dixon, R. (2004). Time course of attentional bias for threat scenes: Testing the vigilance-avoidance hypothesis. *Cognition and Emotion*, 18(5), 689–700. <https://doi.org/10.1080/02699930341000158>
- Mogg, K., Philippot, P., & Bradley, B. P. (2004). Selective Attention to Angry Faces in Clinical Social Phobia. *Journal of Abnormal Psychology*, 113(1), 160–165. <https://doi.org/10.1037/0021-843X.113.1.160>
- Mojzisch, A., Schilbach, L., Helmert, J. R., Pannasch, S., Velichkovsky, B. M., & Vogeley, K. (2006). The effects of self-involvement on attention, arousal, and facial expression during social interaction with virtual others: a psychophysiological study. *Social Neuroscience*, 1(3–4), 184–195. <https://doi.org/10.1080/17470910600985621>
- Möller, E. L., Majdandžić, M., & Bögels, S. M. (2014). Fathers' versus mothers' social referencing signals in relation to infant anxiety and avoidance: A visual cliff experiment. *Developmental Science*, 17(6), 1012–1028. <https://doi.org/10.1111/desc.12194>
- Monk, C. S., Weng, S. J., Wiggins, J. L., Kurapati, N., Louro, H. M. C., Carrasco, M., Maslowsky, J., Risi, S., & Lord, C. (2010). Neural circuitry of emotional face processing in autism spectrum disorders. *Journal of Psychiatry and Neuroscience*, 35(2), 105–114. <https://doi.org/10.1503/jpn.090085>
- Montagne, B., Schutters, S., Westenberg, H. G. M., Van Honk, J., Kessels, R. P. C., & De Haan, E. H. F. (2006). Reduced sensitivity in the recognition of anger and disgust in social anxiety disorder. *Cognitive Neuropsychiatry*, 11(4), 389–401. <https://doi.org/10.1080/13546800444000254>
- Morrison, K. E., DeBrabander, K. M., Jones, D. R., Faso, D. J., Ackerman, R. A., & Sasson, N. J. (2020). Outcomes of real-world social interaction for autistic adults paired with autistic compared to typically developing partners. *Autism*, 24(5), 1067–1080. <https://doi.org/10.1177/1362361319892701>
- Mul, C., Stagg, S. D., Herbelin, B., & Aspell, J. E. (2018). The Feeling of Me Feeling for You: Interoception, Alexithymia and Empathy in Autism. *Journal of Autism and Developmental Disorders*, 48(9), 2953–2967. <https://doi.org/10.1007/s10803-018-3564-3>
- Müller-Pinzler, L., Czekalla, N., Mayer, A. V., Stolz, D. S., Gazzola, V., Keysers, C., Paulus, F. M., & Krach, S. (2019). Negativity-bias in forming beliefs about own abilities. *Scientific Reports*, 9(1), 1–15. <https://doi.org/10.1038/s41598-019-50821-w>
- Murphy, J., Brewer, R., Catmur, C., & Bird, G. (2017). Interoception and psychopathology: A developmental neuroscience perspective. *Developmental Cognitive Neuroscience*, 23, 45–56. <https://doi.org/10.1016/j.dcn.2016.12.006>
- Murphy, J., Brewer, R., Plans, D., Khalsa, S. S., Catmur, C., & Bird, G. (2020). Testing the independence of self-reported interoceptive accuracy and attention. *Quarterly Journal of Experimental Psychology*, 73(1), 115–133. <https://doi.org/10.1177/1747021819879826>
- Murphy, J., Catmur, C., & Bird, G. (2018). Alexithymia is associated with a multidomain, multidimensional failure of interoception: Evidence from novel tests. *Journal of Experimental Psychology: General*, 147(3), 398–408. <https://doi.org/10.1037/xge0000366>
- Murphy, J., Catmur, C., & Bird, G. (2019). Classifying individual differences in interoception: Implications for the measurement of interoceptive awareness. *Psychonomic Bulletin and Review*, 26(5), 1467–1471. <https://doi.org/10.3758/s13423-019-01632-7>
- Neal, D. T., & Chartrand, T. L. (2011). Embodied emotion perception: Amplifying and dampening facial feedback modulates emotion perception accuracy. *Social Psychological and Personality Science*, 2(6), 673–678. <https://doi.org/10.1177/1948550611406138>
- Nemiah, J. C., Freyberger, H., Sifneos, P. E., & Hill, O. W. (1976). Alexithymia: a view of the psychosomatic process. In O. Hill (Ed.), *Modern trends in psychosomatic medicine* (pp. 430–439).
- Neophytou, K., & Panayiotou, G. (2022). Does attention bias modification reduce anxiety in socially anxious college students? An experimental study of potential moderators and considerations for implementation. *PLoS ONE*, 17(2 February). <https://doi.org/10.1371/journal.pone.0264256>
- Nesse, R. M. (1990). Evolutionary explanations of emotions. *Human Nature*, 1(3), 261–289. <https://doi.org/10.1007/BF02733986>
- Nicholson, T., Williams, D., Carpenter, K., & Kallitsounaki, A. (2019). Interoception is Impaired in Children, But Not Adults, with Autism Spectrum Disorder. *Journal of Autism and Developmental Disorders*, 49(9), 3625–3637. <https://doi.org/10.1007/s10803-019-04079-w>
- Niedenthal, P. M. (2007). Embodying Emotion. *Science*, 316(5827), 1002–1006. <https://doi.org/10.1126/science.1136930>

- Niedenthal, P. M., Mermillod, M., Maringer, M., & Hess, U. (2010). The Simulation of Smiles (SIMS) model: Embodied simulation and the meaning of facial expression. *Behavioral and Brain Sciences*, 33(6), 417–433. <https://doi.org/10.1017/S0140525X10000865>
- Nikolić, M., Colonnesi, C., de Vente, W., Drummond, P., & Bögels, S. M. (2015). Blushing and Social Anxiety: A Meta-Analysis. *Clinical Psychology: Science and Practice*, 22(2), 177–193. <https://doi.org/10.1111/cpsp.12102>
- Nikolić, M., de Vente, W., Colonnesi, C., & Bögels, S. M. (2016). Autonomic arousal in children of parents with and without social anxiety disorder: a high-risk study. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, 57(9), 1047–1055. <https://doi.org/10.1111/jcpp.12563>
- Nikolić, M., van der Storm, L., Colonnesi, C., Brummelman, E., Kan, K. J., & Bögels, S. (2019). Are Socially Anxious Children Poor or Advanced Mindreaders? *Child Development*, 90(4), 1424–1441. <https://doi.org/10.1111/cdev.13248>
- Noldus. (2014). *FaceReader: Tool for automatic analysis of facial expression* (7.1). Noldus Information Technology B.V.
- Noordewier, M. K., Scheepers, D. T., & Hilbert, L. P. (2020). Freezing in response to social threat: a replication. *Psychological Research*, 84(7), 1890–1896. <https://doi.org/10.1007/s00426-019-01203-4>
- Nordahl, H., Ødegaard, I. H., Hjemdal, O., & Wells, A. (2019). A test of the goodness of fit of the generic metacognitive model of psychopathology symptoms. *BMC Psychiatry*, 19(1), 1–9. <https://doi.org/10.1186/s12888-019-2266-5>
- Nordahl, H., & Wells, A. (2018). Metacognitive therapy for social anxiety disorder: An A-B replication series across social anxiety subtypes. *Frontiers in Psychology*, 9(APR), 1–7. <https://doi.org/10.3389/fpsyg.2018.00540>
- Nummenmaa, L., & Calvo, M. G. (2015). Dissociation Between Recognition and Detection Advantage for Facial Expressions: A Meta-Analysis. *Emotion*, 15(1), 1–14. <https://doi.org/10.1037/emo0000042.supp>
- Nummenmaa, L., Glerean, E., Hari, R., & Hietanen, J. K. (2014). Bodily maps of emotions. *Proceedings of the National Academy of Sciences of the United States of America*, 111(2), 646–651. <https://doi.org/10.1073/pnas.1321664111>
- Oakley, B. F. M., Tillmann, J., Ahmad, J., Crawley, D., San José Cáceres, A., Holt, R., Charman, T., Banaschewski, T., Buitelaar, J., Simonoff, E., Murphy, D., & Loth, E. (2020). How do core autism traits and associated symptoms relate to quality of life? Findings from the Longitudinal European Autism Project. *Autism*. <https://doi.org/10.1177/1362361320959959>
- Oberman, L. M., Winkelman, P., & Ramachandran, V. S. (2009). Slow echo: Facial EMG evidence for the delay of spontaneous, but not voluntary, emotional mimicry in children with autism spectrum disorders. *Developmental Science*, 12(4), 510–520. <https://doi.org/10.1111/j.1467-7687.2008.00796.x>
- Olatunji, B. O., Cisler, J. M., & Tolin, D. F. (2007). Quality of life in the anxiety disorders: A meta-analytic review. In *Clinical Psychology Review* (Vol. 27, Issue 5, pp. 572–581). <https://doi.org/10.1016/j.cpr.2007.01.015>
- Olszanowski, M., Wróbel, M., & Hess, U. (2020). Mimicking and sharing emotions: a re-examination of the link between facial mimicry and emotional contagion. *Cognition and Emotion*, 34(2), 367–376. <https://doi.org/10.1080/02699931.2019.1611543>
- Orsmond, G. I., Krauss, M. W., & Seltzer, M. M. (2004). Peer Relationships and Social and Recreational Activities Among Adolescents and Adults with Autism. *Journal of Autism and Developmental Disorders*, 34(3), 245–256.
- Pace-Schott, E. F., Amole, M. C., Aue, T., Balconi, M., Bylsma, L. M., Critchley, H., Demaree, H. A., Friedman, B. H., Gooding, A. E. K., Gosseries, O., Jovanovic, T., Kirby, L. A. J., Kozłowska, K., Laureys, S., Lowe, L., Magee, K., Marin, M. F., Merner, A. R., Robinson, J. L., ... VanElzakker, M. B. (2019). Physiological feelings. *Neuroscience and Biobehavioral Reviews*, 103, 267–304. <https://doi.org/10.1016/j.neubiorev.2019.05.002>
- Palagi, E., Celeghin, A., Tamietto, M., Winkelman, P., & Norscia, I. (2020). The neuroethology of spontaneous mimicry and emotional contagion in human and non-human animals. *Neuroscience and Biobehavioral Reviews*, 111, 149–165. <https://doi.org/10.1016/j.neubiorev.2020.01.020>
- Palmer, C. E., & Tsakiris, M. (2018). Going at the heart of social cognition: is there a role for interoception in self-other distinction? In *Current Opinion in Psychology* (Vol. 24, pp. 21–26). Elsevier B.V. <https://doi.org/10.1016/j.copsyc.2018.04.008>
- Palser, E. R., Fotopoulou, A., Pellicano, E., & Kilner, J. M. (2020). Dissociation in How Core Autism Features Relate to Interoceptive Dimensions: Evidence from Cardiac Awareness in Children. *Journal of Autism and Developmental Disorders*, 50(2), 572–582. <https://doi.org/10.1007/s10803-019-04279-4>

- Palser, E. R., Palmer, C. E., Galvez-Pol, A., Hannah, R., Fotopoulou, A., & Kilner, J. M. (2018). Alexithymia mediates the relationship between interoceptive sensibility and anxiety. *PLoS ONE*, 13(9), 1–11. <https://doi.org/10.1371/journal.pone.0203212>
- Park, A., Sharp, N., & Ickes, W. (2010). Social anxiety is contagious. In T. M. Robinson (Ed.), *Social anxiety: symptoms, causes, and techniques*. Nova Science Publishers.
- Parker, J. D. A., Taylor, G. J., & Michael Bagby, R. (1993). Alexithymia and the recognition of facial expressions of emotion. *Psychotherapy and Psychosomatics*, 59(3–4), 197–202. <https://doi.org/10.1159/000288664>
- Pearlstein, S. L., Taylor, C. T., & Stein, M. B. (2019). Facial Affect and Interpersonal Affiliation: Displays of Emotion During Relationship Formation in Social Anxiety Disorder. *Clinical Psychological Science*, 7(4), 826–839. <https://doi.org/10.1177/2167702619825857>
- Peper, C. E., van der Wal, S. J., & Begeer, S. (2016). Autism in action: Reduced bodily connectedness during social interactions? *Frontiers in Psychology*, 7(NOV), 1–6. <https://doi.org/10.3389/fpsyg.2016.01862>
- Peschard, V., & Philippot, P. (2017). Overestimation of threat from neutral faces and voices in social anxiety. *Journal of Behavior Therapy and Experimental Psychiatry*, 57, 206–211. <https://doi.org/10.1016/j.jbtep.2017.06.003>
- Peter-Ruf, C., Kirmse, U., Pfeiffer, S., Schmidt, M., Wilhelm, F. H., & In-Albon, T. (2017). Emotion Regulation in High and Low Socially Anxious Individuals: An Experimental Study Investigating Emotional Mimicry, Emotion Recognition, and Self-Reported Emotion Regulation. *Journal of Depression and Anxiety Disorders*, 1(1), 17–26.
- Pickard, H., Hirsch, C., Simonoff, E., & Happé, F. (2020). Exploring the cognitive, emotional and sensory correlates of social anxiety in autistic and neurotypical adolescents. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, 61(12), 1317–1327. <https://doi.org/10.1111/jcpp.13214>
- Pinheiro, J., Bates, D., & R Core Team. (2022). *nlme: Linear and Nonlinear Mixed Effects Models*. <https://CRAN.R-project.org/package=nlme>
- Pittelkow, M. M., aan het Rot, M., Seidel, L. J., Feyel, N., & Roest, A. M. (2021). Social Anxiety and Empathy: A Systematic Review and Meta-analysis. In *Journal of Anxiety Disorders* (Vol. 78). Elsevier Ltd. <https://doi.org/10.1016/j.janxdis.2021.102357>
- Pollatos, O., & Schandry, R. (2008). Emotional processing and emotional memory are modulated by interoceptive awareness. *Cognition and Emotion*, 22(2), 272–287. <https://doi.org/10.1080/02699930701357535>
- Pollmann, M. M. H., Finkenauer, C., & Begeer, S. (2010). Mediators of the link between autistic traits and relationship satisfaction in a non-clinical sample. *Journal of Autism and Developmental Disorders*, 40(4), 470–478. <https://doi.org/10.1007/s10803-009-0888-z>
- Pool, E., Brosch, T., Delplanque, S., & Sander, D. (2016). Attentional bias for positive emotional stimuli: A meta-analytic investigation. *Psychological Bulletin*, 142(1), 79–106. <https://doi.org/10.1037/bul0000026>
- Porges, S. W. (1993). Body Perception Questionnaire: Laboratory of development assessment. In *College Park: University of Maryland*.
- Poyo Solanas, M., Zhan, M., Vaessen, M., Hortensius, R., Engelen, T., & de Gelder, B. (2018). Looking at the face and seeing the whole body. Neural basis of combined face and body expressions. *Social Cognitive and Affective Neuroscience*, 13(1), 135–144. <https://doi.org/10.1093/scan/nsx130>
- Preston, S. D., & de Waal, F. B. M. (2002). Empathy: Its ultimate and proximate bases. *Behavioral and Brain Sciences*, 25(1), 1–20. <https://doi.org/10.1017/S0140525X02000018>
- Prochazkova, E., & Kret, M. E. (2017). Connecting minds and sharing emotions through mimicry: A neurocognitive model of emotional contagion. *Neuroscience and Biobehavioral Reviews*, 80, 99–114. <https://doi.org/10.1016/j.neubiorev.2017.05.013>
- Prochazkova, E., Sjak-Shie, E., Behrens, F., Lindh, D., & Kret, M. E. (2021). Physiological synchrony is associated with attraction in a blind date setting. *Nature Human Behaviour*. <https://doi.org/10.1038/s41562-021-01197-3>
- Proff, I., Williams, G. L., Quad, L., & Garfinkel, S. N. (2022). Sensory Processing in Autism Across Exteroceptive and Interoceptive Domains. *Psychology and Neuroscience*, 15(2), 105–130. <https://doi.org/10.1037/pne0000262>
- Psychology Software Tools. (2016). *E-Prime* (3.0). Psychology Software Tools.
- Puls, S., & Rothermund, K. (2018). Attending to emotional expressions: no evidence for automatic capture in the dot-probe task. *Cognition and Emotion*, 32(3), 450–463. <https://doi.org/10.1080/02699931.2017.1314932>

- Quadt, L., Garfinkel, S. N., Mulcahy, J. S., Larsson, D. E., Silva, M., Jones, A. M., Strauss, C., & Critchley, H. D. (2021). Interoceptive training to target anxiety in autistic adults (ADIE): A single-center, superiority randomized controlled trial. *EClinicalMedicine*, 39. <https://doi.org/10.1016/j.eclinm.2021.101042>
- Quattrocki, E., & Friston, K. (2014). Autism, oxytocin and interoception. *Neuroscience & Biobehavioral Reviews*, 47, 410–430. <https://doi.org/10.1016/j.neubiorev.2014.09.012>
- Quesque, F., Behrens, F., & Kret, M. E. (2019). Pupils say more than a thousand words: Pupil size reflects how observed actions are interpreted. *Cognition*, 190, 93–98. <https://doi.org/10.1016/j.cognition.2019.04.016>
- Quinde-Zlibut, J., Munshi, A., Biswas, G., & Cascio, C. J. (2022). Identifying and describing subtypes of spontaneous empathic facial expression production in autistic adults. *Journal of Neurodevelopmental Disorders*, 14(1). <https://doi.org/10.1186/s11689-022-09451-z>
- R Core Team. (2020). *R: A Language and Environment for Statistical Computing*. <https://www.R-project.org/>
- R Core Team. (2022). *R: A Language and Environment for Statistical Computing*. <https://www.R-project.org/>
- Ramachandran, V. S., & Oberman, L. M. (2006). Broken Mirrors: A Theory of Autism. *Scientific American*, 295, 62–69. <https://doi.org/10.2307/26069040>
- Rapee, R. M., & Heimberg, R. G. (1997). A cognitive-behavioral model of anxiety in social phobia. *Behaviour Research and Therapy*, 35(8), 741–756. [https://doi.org/10.1016/S0005-7967\(97\)00022-3](https://doi.org/10.1016/S0005-7967(97)00022-3)
- Rapee, R. M., & Spence, S. H. (2004). The etiology of social phobia: Empirical evidence and an initial model. *Clinical Psychology Review*, 24(7), 737–767. <https://doi.org/10.1016/j.cpr.2004.06.004>
- Redcay, E., & Schilbach, L. (2019). Using second-person neuroscience to elucidate the mechanisms of social interaction. *Nature Reviews Neuroscience*, 20(8), 495–505. <https://doi.org/10.1038/s41583-019-0179-4>
- Richards, A., French, C. C., Calder, A. J., Webb, B., Fox, R., & Young, A. W. (2002). Anxiety-Related Bias in the Classification of Emotionally Ambiguous Facial Expressions. *Emotion*, 2(3), 273–287. <https://doi.org/10.1037/1528-3542.2.3.273>
- Riddell, C., Nikolić, M., & Kret, M. E. (2023). *Putting the social in emotions: the effect of audience presence on pride and embarrassment across ontogeny*. PsyArXiv. <https://doi.org/10.31234/osf.io/37erp>
- Rigby, S. N., Stoesz, B. M., & Jakobson, L. S. (2018). Empathy and face processing in adults with and without autism spectrum disorder. *Autism Research*, 11(6), 942–955. <https://doi.org/10.1002/aur.1948>
- Ring, C., & Brener, J. (2018). Heartbeat counting is unrelated to heartbeat detection: A comparison of methods to quantify interoception. *Psychophysiology*, 55(9), 1–10. <https://doi.org/10.1111/psyp.13084>
- Robinson, E. B., Munir, K., Munafò, M. R., Hughes, M., McCormick, M. C., & Koenen, K. C. (2011). Stability of Autistic Traits in the General Population: Further Evidence for a Continuum of Impairment. *Journal of the American Academy of Child and Adolescent Psychiatry*, 50(4), 376–384. www.jaacap.org
- Rodebaugh, T. L., Heimberg, R. G., Taylor, K. P., & Lenze, E. J. (2016). Clarifying the behavioral economics of social anxiety disorder: Effects of interpersonal problems and symptom severity on generosity. *Clinical Psychological Science*, 4(1), 107–121. <https://doi.org/10.1177/2167702615578128>
- Rodebaugh, T. L., Tonge, N. A., Weisman, J. S., Lim, M. H., Fernandez, K. C., & Bogdan, R. (2017). The behavioral economics of social anxiety disorder reveal a robust effect for interpersonal traits. *Behaviour Research and Therapy*, 95, 139–147. <https://doi.org/10.1016/j.brat.2017.06.003>
- Roelofs, K., Hagensaars, M. A., & Stins, J. (2010). Facing freeze: Social threat induces bodily freeze in humans. *Psychological Science*, 21(11), 1575–1581. <https://doi.org/10.1177/0956797610384746>
- Rouault, M., Seow, T., Gillan, C. M., & Fleming, S. M. (2018). Psychiatric Symptom Dimensions Are Associated With Dissociable Shifts in Metacognition but Not Task Performance. *Biological Psychiatry*, 84(6), 443–451. <https://doi.org/10.1016/j.biopsych.2017.12.017>
- Rozga, A., King, T. Z., Vuduc, R. W., & Robins, D. L. (2013). Undifferentiated facial electromyography responses to dynamic, audio-visual emotion displays in individuals with autism spectrum disorders. *Developmental Science*, 16(4), 499–514. <https://doi.org/10.1111/desc.12062>
- Russell, J. A. (2003). Core Affect and the Psychological Construction of Emotion. *Psychological Review*, 110(1), 145–172. <https://doi.org/10.1037/0033-295X.110.1.145>
- Rutherford, M. D., & McIntosh, D. N. (2007). Rules versus prototype matching: Strategies of perception of emotional facial expressions in the autism spectrum. *Journal of Autism and Developmental Disorders*, 37(2), 187–196. <https://doi.org/10.1007/s10803-006-0151-9>
- Ruzich, E., Allison, C., Smith, P., Watson, P., Auyeung, B., Ring, H., & Baron-Cohen, S. (2015). Measuring autistic traits in the general population: A systematic review of the Autism-Spectrum Quotient (AQ) in a nonclinical population sample of 6,900 typical adult males and females. *Molecular Autism*, 6(1). <https://doi.org/10.1186/2040-2392-6-2>

- Rymarczyk, K., Biele, C., Grabowska, A., & Majczynski, H. (2011). EMG activity in response to static and dynamic facial expressions. *International Journal of Psychophysiology*, 79(2), 330–333. <https://doi.org/10.1016/j.ijpsycho.2010.11.001>
- Rymarczyk, K., Zurawski, Ł., Jankowiak-Siuda, K., & Szatkowska, I. (2016). Do dynamic compared to static facial expressions of happiness and anger reveal enhanced facial mimicry? *PLoS ONE*, 11(7), 1–15. <https://doi.org/10.1371/journal.pone.0158534>
- Rytwinski, N. K., Fresco, D. M., Heimberg, R. G., Coles, M. E., Liebowitz, M. R., Cissell, S., Stein, M. B., & Hofmann, S. G. (2009). Screening for social anxiety disorder with the self-report version of the liebowitz social anxiety scale. *Depression and Anxiety*, 26(1), 34–38. <https://doi.org/10.1002/da.20503>
- Salamone, P. C., Legaz, A., Sedeño, L., Moguilner, S., Fraile-Vazquez, M., Campo, C. G., Fittipaldi, S., Yoris, A., Miranda, M., Birba, A., Galiani, A., Abrevaya, S., Neely, A., Caro, M. M., Alifano, F., Villagra, R., Anunziata, F., De Oliveira, M. O., Pautassi, R. M., ... Ibañez, A. (2021). Interoception primes emotional processing: Multimodal evidence from neurodegeneration. *Journal of Neuroscience*, 41(19), 4276–4292. <https://doi.org/10.1523/JNEUROSCI.2578-20.2021>
- Salazar-López, E., Domínguez, E., Juárez Ramos, V., de la Fuente, J., Meins, A., Iborra, O., Gálvez, G., Rodríguez-Artacho, M. A., & Gómez-Milán, E. (2015). The mental and subjective skin: Emotion, empathy, feelings and thermography. *Consciousness and Cognition*, 34, 149–162. <https://doi.org/10.1016/j.concog.2015.04.003>
- Salemink, E., van den Hout, M. A., & Kindt, M. (2007). Selective attention and threat: Quick orienting versus slow disengagement and two versions of the dot probe task. *Behaviour Research and Therapy*, 45(3), 607–615. <https://doi.org/10.1016/j.brat.2006.04.004>
- Sasson, N. J., & Bottema-Beutel, K. (2022). Studies of autistic traits in the general population are not studies of autism. In *Autism* (Vol. 26, Issue 4, pp. 1007–1008). SAGE Publications Ltd. <https://doi.org/10.1177/13623613211058515>
- Sato, W., Fujimura, T., Kochiyama, T., & Suzuki, N. (2013). Relationships among Facial Mimicry, Emotional Experience, and Emotion Recognition. *PLoS ONE*, 8(3), 1–8. <https://doi.org/10.1371/journal.pone.0057889>
- Sato, W., Fujimura, T., & Suzuki, N. (2008). Enhanced facial EMG activity in response to dynamic facial expressions. *International Journal of Psychophysiology*, 70(1), 70–74. <https://doi.org/10.1016/j.ijpsycho.2008.06.001>
- Sauter, D. A., Eisner, F., Calder, A. J., & Scott, S. K. (2010). Perceptual cues in non-verbal vocal expressions of emotion. *Quarterly Journal of Experimental Psychology*, 63(11), 2251–2272. <https://doi.org/10.1080/17470211003721642> Perceptual
- Sauter, D. A., & Fischer, A. H. (2018). Can perceivers recognise emotions from spontaneous expressions? *Cognition and Emotion*, 32(3), 504–515. <https://doi.org/10.1080/02699931.2017.1320978>
- Sawyer, A. C. P., Williamson, P., & Young, R. (2014). Metacognitive processes in emotion recognition: Are they different in adults with Asperger's disorder? *Journal of Autism and Developmental Disorders*, 44(6), 1373–1382. <https://doi.org/10.1007/s10803-013-1999-0>
- Scarantino, A., & Griffiths, P. (2011). Don't give up on basic emotions. *Emotion Review*, 3(4), 444–454. <https://doi.org/10.1177/1754073911410745>
- Schauder, K. B., Mash, L. E., Bryant, L. K., & Cascio, C. J. (2015). Interoceptive ability and body awareness in autism spectrum disorder. *Journal of Experimental Child Psychology*, 131, 193–200. <https://doi.org/10.1016/j.jecp.2014.11.002>
- Schilbach, L. (2015a). The Neural Correlates of Social Cognition and Social Interaction. *Brain Mapping: An Encyclopedic Reference*, 3(November), 159–164. <https://doi.org/10.1016/B978-0-12-397025-1.00172-X>
- Schilbach, L. (2015b). Towards a second-person neuropsychiatry. *Philosophical Transactions of the Royal Society of London B: Biological Sciences*, 371(1686). <http://rsta.royalsocietypublishing.org/content/371/1686/20150081>
- Schilbach, L., Eickhoff, S. B., Mojzisch, A., & Vogeley, K. (2008). What's in a smile? Neural correlates of facial embodiment during social interaction. *Social Neuroscience*, 3(1), 37–50. <https://doi.org/10.1080/17470910701563228>
- Schilbach, L., Timmermans, B., Reddy, V., Costall, A., Bente, G., Schlicht, T., & Vogeley, K. (2013). Toward a second-person neuroscience. *Behavioral and Brain Sciences*, 36(4), 393–414. <https://doi.org/10.1017/S0140525X12000660>
- Schneider, J. N., Brick, T. R., & Dziobek, I. (2020). Distance to the Neutral Face Predicts Arousal Ratings of Dynamic Facial Expressions in Individuals With and Without Autism Spectrum Disorder. *Frontiers in Psychology*, 11. <https://doi.org/10.3389/fpsyg.2020.577494>

- Schultz, J., & Pilz, K. S. (2009). Natural facial motion enhances cortical responses to faces. *Experimental Brain Research*, 194(3), 465–475. <https://doi.org/10.1007/s00221-009-1721-9>
- Schumer, M. C., Lindsay, E. K., & David Creswell, J. (2018). Brief mindfulness training for negative affectivity: A systematic review and meta-analysis. *Journal of Consulting and Clinical Psychology*, 86(7), 569–583. <https://doi.org/10.1037/ccp0000324>
- Seidel, E. M., Habel, U., Kirschner, M., Gur, R. C., & Derntl, B. (2010). The Impact of Facial Emotional Expressions on Behavioral Tendencies in Women and Men. *Journal of Experimental Psychology: Human Perception and Performance*, 36(2), 500–507. <https://doi.org/10.1037/a0018169>
- Seth, A. K. (2013). Interoceptive inference, emotion, and the embodied self. *Trends in Cognitive Sciences*, 17(11), 565–573. <https://doi.org/10.1016/j.tics.2013.09.007>
- Shafir, T., Taylor, S. F., Atkinson, A. P., Langenecker, S. A., & Zubieta, J. K. (2013). Emotion regulation through execution, observation, and imagery of emotional movements. *Brain and Cognition*, 82(2), 219–227. <https://doi.org/10.1016/j.bandc.2013.03.001>
- Shah, P., Hall, R., Catmur, C., & Bird, G. (2016). Alexithymia, not autism, is associated with impaired interoception. *Cortex*, 81, 215–220. <https://doi.org/10.1016/j.cortex.2016.03.021>
- Shalom, J. G., Israeli, H., Markovitzky, O., & Lipsitz, J. D. (2015). Social anxiety and physiological arousal during computer mediated vs. face to face communication. *Computers in Human Behavior*, 44, 202–208. <https://doi.org/10.1016/j.chb.2014.11.056>
- Shariff, A. F., & Tracy, J. L. (2011). What are emotion expressions for? *Current Directions in Psychological Science*, 20(6), 395–399. <https://doi.org/10.1177/0963721411424739>
- Shaw, P. V., Wilson, G. A., & Antony, M. M. (2021). Examination of emotional contagion and social anxiety using novel video stimuli. *Anxiety, Stress and Coping*, 34(2), 215–227. <https://doi.org/10.1080/10615806.2020.1839729>
- Shearn, D., Bergman, E., Hill, K., Abel, A., & Hinds, L. (1990). Facial Coloration and Temperature Responses in Blushing. *Psychophysiology*, 27(6), 687–693. <https://doi.org/10.1111/j.1469-8986.1990.tb03194.x>
- Siegel, E. H., Sands, M. K., Van den Noortgate, W., Condon, P., Chang, Y., Dy, J., Quigley, K. S., & Barrett, L. F. (2018). Emotion fingerprints or emotion populations? A meta-analytic investigation of autonomic features of emotion categories. *Psychological Bulletin*, 144(4), 343–393. <https://doi.org/10.1037/bul0000128>
- Sjak-Shie, E. E. (2019). *PhysioData Toolbox (Version 0.5) [Computer software]*. Retrieved from <https://PhysioDataToolbox.leidenuniv.nl>
- Smith, R., & Lane, R. D. (2015). The neural basis of one's own conscious and unconscious emotional states. *Neuroscience and Biobehavioral Reviews*, 57, 1–29. <https://doi.org/10.1016/j.neubiorev.2015.08.003>
- Smith, R., Parr, T., & Friston, K. J. (2019). Simulating Emotions: An Active Inference Model of Emotional State Inference and Emotion Concept Learning. *Frontiers in Psychology*, 10(December), 1–24. <https://doi.org/10.3389/fpsyg.2019.02844>
- Somerville, L. H., & Whalen, P. J. (2006). Prior experience as a stimulus category confound: an example using facial expressions of emotion. *Social Cognitive and Affective Neuroscience*, 1(3), 271–274. <https://doi.org/10.1093/scan/nsl040>
- Soussignan, R. (2002). Duchenne Smile, Emotional Experience, and Autonomic Reactivity. A Test of the Facial Feedback Hypothesis. *Emotion*, 2(1), 52–74. <https://doi.org/10.1037/1528-3542.2.1.52>
- Southgate, V., & Hamilton, A. F. (2008). Unbroken mirrors: challenging a theory of Autism. *Trends in Cognitive Sciences*, 12(6), 225–229. <https://doi.org/10.1016/j.tics.2008.03.005>
- Spain, D., Sin, J., Linder, K. B., McMahon, J., & Happé, F. (2018). Social anxiety in autism spectrum disorder: A systematic review. *Research in Autism Spectrum Disorders*, 52, 51–68. <https://doi.org/10.1016/j.rasd.2018.04.007>
- Spence, S. H., & Rapee, R. M. (2016). The etiology of social anxiety disorder: An evidence-based model. In *Behaviour Research and Therapy* (Vol. 86, pp. 50–67). Elsevier Ltd. <https://doi.org/10.1016/j.brat.2016.06.007>
- Staugaard, S. R. (2010). Threatening faces and social anxiety: A literature review. *Clinical Psychology Review*, 30(6), 669–690. <https://doi.org/10.1016/j.cpr.2010.05.001>
- Stel, M., van den Heuvel, C., & Smeets, R. C. (2008). Facial Feedback Mechanisms in Autistic Spectrum Disorders. *Journal of Autism and Developmental Disorders*, 38, 1250–1258. <https://doi.org/10.1007/s10803-007-0505-y>
- Stel, M., & van Knippenberg, A. (2008). The Role of Facial Mimicry in the Recognition of Affect. *Psychological Science*, 19(10), 984–986.

- Stevens, S., Gerlach, A. L., Cludius, B., Silkens, A., Craske, M. G., & Hermann, C. (2011). Heartbeat perception in social anxiety before and during speech anticipation. *Behaviour Research and Therapy*, 49(2), 138–143. <https://doi.org/10.1016/j.brat.2010.11.009>
- Stuit, S. M., Paffen, C. L. E., & van der Stigchel, S. (2021). Introducing the Prototypical Stimulus Characteristics Toolbox: Protosc. *Behavior Research Methods*. <https://doi.org/10.3758/s13428-021-01737-9>
- Sucksmith, E., Allison, C., Baron-Cohen, S., Chakrabarti, B., & Hoekstra, R. A. (2013). Empathy and emotion recognition in people with autism, first-degree relatives, and controls. *Neuropsychologia*, 51(1), 98–105. <https://doi.org/10.1016/j.neuropsychologia.2012.11.013>
- Suksasilp, C., & Garfinkel, S. N. (2022). Towards a comprehensive assessment of interoception in a multi-dimensional framework. *Biological Psychology*, 168. <https://doi.org/10.1016/j.biopsycho.2022.108262>
- Sun, J., Harris, K., & Vazire, S. (2020). Is Well-Being Associated With the Quantity and Quality of Social Interactions? *Journal of Personality and Social Psychology*, 119(6), 1478–1496. <https://doi.org/10.1037/pspp0000272.supp>
- Tager-Flusberg, H. (2007). Evaluating the Theory-of-Mind Hypothesis of Autism. *Current Directions in Psychological Science*, 16(6), 311–315.
- Tan, L., Ford, R., Morrison, A., & Stagg, S. (2020). *ASD Traits Predict Attenuated Social Mimicry in a Subclinical Sample*.
- Tavassoli, T., Hoekstra, R. A., & Baron-Cohen, S. (2014). The Sensory Perception Quotient (SPQ): Development and validation of a new sensory questionnaire for adults with and without autism. *Molecular Autism*, 5(1). <https://doi.org/10.1186/2040-2392-5-29>
- Terasawa, Y., Moriguchi, Y., Tochizawa, S., & Umeda, S. (2014). Interoceptive sensitivity predicts sensitivity to the emotions of others. *Cognition and Emotion*, 28(8), 1435–1448. <https://doi.org/10.1080/02699931.2014.888988>
- Tofighi, D. (2023). *RMediation: Mediation Analysis Confidence Intervals*. <https://CRAN.R-project.org/package=RMediation>
- Tooby, J., & Cosmides, L. (1990). The past explains the present. Emotional adaptations and the structure of ancestral environments. *Ethology and Sociobiology*, 11(4–5), 375–424. [https://doi.org/10.1016/0162-3095\(90\)90017-Z](https://doi.org/10.1016/0162-3095(90)90017-Z)
- Tordjman, S., Davlantis, K. S., Georgieff, N., Geoffray, M. M., Speranza, M., Anderson, G. M., Xavier, J., Botbol, M., Oriol, C., Bellissant, E., Vernay-Leconte, J., Fougerou, C., Hespel, A., Tavenard, A., Cohen, D., Kermarrec, S., Coulon, N., Bonnot, O., & Dawson, G. (2015). Autism as a disorder of biological and behavioral rhythms: Toward new therapeutic perspectives. *Frontiers in Pediatrics*, 3(FEB). <https://doi.org/10.3389/fped.2015.00001>
- Torro-Alves, N., Bezerra, I. A. de O., e Claudino, R. G., Rodrigues, M. R., Machado-de-Sousa, J. P., Osório, F. de L., & Crippa, J. A. (2016). Facial emotion recognition in social anxiety: The influence of dynamic information. *Psychology and Neuroscience*, 9(1), 1–11. <https://doi.org/10.1037/pne0000042>
- Tottenham, N., Tanaka, J. W., Leon, A. C., McCarry, T., Nurse, M., Hare, T. A., Marcus, D. J., Westerlund, A., Casey, B. J., & Nelson, C. (2009). The NimStim set of facial expressions: Judgments from untrained research participants. *Psychiatry Research*, 168(3), 242–249. <https://doi.org/10.1016/j.psychres.2008.05.006>
- Tracy, J. L., Randles, D., & Steckler, C. M. (2015). The nonverbal communication of emotions. *Current Opinion in Behavioral Sciences*, 3, 25–30. <https://doi.org/10.1016/j.cobeha.2015.01.001>
- Trevisan, D. A., & Birmingham, E. (2016). Are emotion recognition abilities related to everyday social functioning in ASD? A meta-analysis. *Research in Autism Spectrum Disorders*, 32, 24–42. <https://doi.org/10.1016/j.rasd.2016.08.004>
- Trevisan, D. A., Bowering, M., & Birmingham, E. (2016). Alexithymia, but not autism spectrum disorder, may be related to the production of emotional facial expressions. *Molecular Autism*, 7, 46. <https://doi.org/10.1186/s13229-016-0108-6>
- Trevisan, D. A., Hoskyn, M., & Birmingham, E. (2018). Facial Expression Production in Autism: A Meta-Analysis. *Autism Research*, 11(12), 1586–1601. <https://doi.org/10.1002/aur.2037>
- Trevisan, D., Altschuler, M., Bagdasarov, A., Carlos, C., Duan, S., Hamo, E., Kala, S., McNair, M., Parker, T., Stahl, D., Winkelman, T., Zhou, M., & McPartland, J. (2019). A Meta-Analysis on the Relationship Between Interoceptive Awareness and Alexithymia: Distinguishing Interoceptive Accuracy and Sensibility. *Journal of Abnormal Psychology*, 128(8), 765–776. <https://doi.org/10.1037/abn0000454.supp>
- Tseng, A., Bansal, R., Liu, J., Gerber, A. J., Goh, S., Posner, J., Colibazzi, T., Algermissen, M., Chiang, I. C., Russell, J. A., & Peterson, B. S. (2014). Using the circumplex model of affect to study valence and arousal ratings

- of emotional faces by children and adults with autism spectrum disorders. *Journal of Autism and Developmental Disorders*, 44(6), 1332–1346. <https://doi.org/10.1007/s10803-013-1993-6>
- Tsunoda, T., Yoshino, A., Furusawa, T., Miyazaki, M., Takahashi, Y., & Nomura, S. (2008). Social anxiety predicts unconsciously provoked emotional responses to facial expression. *Physiology and Behavior*, 93(1–2), 172–176. <https://doi.org/10.1016/j.physbeh.2007.08.012>
- Tünkte, M. R., Petzke, T. M., Brand, S., Murphy, J., Witthöft, M., Hoehl, S., Weymar, M., & Ventura-Bort, C. (2023). *He Who Seeks Finds (Bodily Signals): German Validation of the Interoceptive Attention Scale (IATS) and its relationship with Subclinical Psychopathology*. <https://doi.org/10.31234/osf.io/6h9p3>
- Tylka, T. L., & Wood-Barcalow, N. L. (2015). The body appreciation scale-2: Item refinement and psychometric evaluation. *Body Image*, 12(1), 53–67. <https://doi.org/10.1016/j.bodyim.2014.09.006>
- Uljarevic, M., & Hamilton, A. (2013). Recognition of emotions in autism: A formal meta-analysis. *Journal of Autism and Developmental Disorders*, 43(7), 1517–1526. <https://doi.org/10.1007/s10803-012-1695-5>
- Valk, J. M. de, Wijnen, J. G., & Kret, M. E. (2015). Anger fosters action. Fast responses in a motor task involving approach movements toward angry faces and bodies. *Frontiers in Psychology*, 6(September), 1–7. <https://doi.org/10.3389/fpsyg.2015.01240>
- van Berlo, E., Bionda, T., & Kret, M. (2020). *Attention Towards Emotions is Modulated by Familiarity with the Expressor. A Comparison Between Bonobos and Humans*. 0–2. <https://doi.org/10.1101/2020.05.11.089813>
- van Bockstaele, B., & Bögels, S. M. (2014). Mindfulness-Based Therapy for Social Anxiety Disorder. In *Social Anxiety: Clinical, Developmental, and Social Perspectives* (pp. 729–751). Elsevier. <https://doi.org/10.1016/B978-0-12-394427-6.00025-X>
- van Bockstaele, B., Salemink, E., Bögels, S. M., & Wiers, R. W. (2017). Limited generalisation of changes in attentional bias following attentional bias modification with the visual probe task. *Cognition and Emotion*, 31(2), 369–376. <https://doi.org/10.1080/02699931.2015.1092418>
- Van Boxtel, A. (2010). Facial EMG as a tool for inferring affective states. In A. J. Spink, F. Grieco, O. E. Krips, L. W. S. Loijens, L. P. J. J. Noldus, & P. H. Zimmerman (Eds.), *Proceedings of Measuring Behavior* (pp. 104–108). Noldus Information technology.
- van Buuren, S., & Groothuis-Oudshoorn, K. (2011). mice: Multivariate Imputation by Chained Equations in R. *Journal of Statistical Software*, 45(3), 1–67. <https://doi.org/10.18637/jss.v045.i03>
- van de Cruys, S., Evers, K., van der Hallen, R., van Eylen, L., Boets, B., de-Wit, L., & Wagemans, J. (2014). Precise minds in uncertain worlds: Predictive coding in autism. *Psychological Review*, 121(4), 649–675. <https://doi.org/10.1037/a0037665>
- Van de Cruys, S., Van der Hallen, R., & Wagemans, J. (2017). Disentangling signal and noise in autism spectrum disorder. *Brain and Cognition*, 112, 78–83. <https://doi.org/10.1016/j.bandc.2016.08.004>
- van Heijst, K., Kret, M. E., & Ploeger, A. (2023). Basic Emotions or Constructed Emotions: Insights From Taking an Evolutionary Perspective. *Perspectives on Psychological Science*, 1–15. <https://doi.org/10.1177/17456916231205186>
- van Kleef, G. A., & Côté, S. (2021). The Social Effects of Emotions. *Annual Review of Psychology*, 73, 629–658. <https://doi.org/10.1146/annurev-psych-020821>
- van Rooijen, R., Ploeger, A., & Kret, M. E. (2017). The dot-probe task to measure emotional attention: A suitable measure in comparative studies? *Psychonomic Bulletin and Review*, 24(6), 1686–1717. <https://doi.org/10.3758/s13423-016-1224-1>
- van Steensel, F. J. A., Bögels, S. M., & Perrin, S. (2011). Anxiety Disorders in Children and Adolescents with Autistic Spectrum Disorders: A Meta-Analysis. In *Clinical Child and Family Psychology Review* (Vol. 14, Issue 3, pp. 302–317). <https://doi.org/10.1007/s10567-011-0097-0>
- Varcin, K. J., Grainger, S. A., Richmond, J. L., Bailey, P. E., & Henry, J. D. (2019). A role for affectivity in rapid facial mimicry: An electromyographic study. *Social Neuroscience*, 14(5), 608–617. <https://doi.org/10.1080/17470919.2018.1564694>
- Varlet, M., Marin, L., Capdevielle, D., Del-Monte, J., Schmidt, R. C., Salesse, R. N., Boulenger, J. P., Bardy, B. G., & Raffard, S. (2014). Difficulty leading interpersonal coordination: Towards an embodied signature of social anxiety disorder. *Frontiers in Behavioral Neuroscience*, 8(FEB), 1–9. <https://doi.org/10.3389/fnbeh.2014.00029>
- Veid, N., Pollari, A., Hyvönen, K., & Pylvänäinen, P. (2023). Dance movement therapy group improves social functioning and increases positive embodied experiences in social situations. *Body, Movement and Dance in Psychotherapy*, 18(3), 201–217. <https://doi.org/10.1080/17432979.2022.2122563>

- Ventura-Bort, C., Wendt, J., & Weymar, M. (2021). The Role of Interoceptive Sensibility and Emotional Conceptualization for the Experience of Emotions. *Frontiers in Psychology*, 12. <https://doi.org/10.3389/fpsyg.2021.712418>
- Ventura-Bort, C., Wendt, J., & Weymar, M. (2022). New insights on the correspondence between subjective affective experience and physiological responses from representational similarity analysis. *Psychophysiology*, 59(11). <https://doi.org/10.1111/psyp.14088>
- Villanueva, J., Meyer, A. H., Mikoteit, T., Hoyer, J., Imboden, C., Bader, K., Hatzinger, M., Lieb, R., & Gloster, A. T. (2021). Having versus not having social interactions in patients diagnosed with depression or social phobia and controls. *PLoS ONE*, 16(4 April). <https://doi.org/10.1371/journal.pone.0249765>
- Voncken, M. J., & Bögels, S. M. (2008). Social performance deficits in social anxiety disorder: Reality during conversation and biased perception during speech. *Journal of Anxiety Disorders*, 22(8), 1384–1392. <https://doi.org/10.1016/j.janxdis.2008.02.001>
- Voncken, M. J., Dijk, C., Lange, W. G., Boots, L. M. M., & Roelofs, J. (2020). Behavior when socially anxious individuals expect to be (dis)liked: The role of self-disclosure and mimicry in actual likeability. *Journal of Behavior Therapy and Experimental Psychiatry*, 69. <https://doi.org/10.1016/j.jbtep.2020.101574>
- Vrana, S. R., & Gross, D. (2004). Reactions to facial expressions: Effects of social context and speech anxiety on responses to neutral, anger, and joy expressions. *Biological Psychology*, 66(1), 63–78. <https://doi.org/10.1016/j.biopsycho.2003.07.004>
- Wagenmakers, E. J., Wetzels, R., Borsboom, D., van der Maas, H. L. J., & Kievit, R. A. (2012). An Agenda for Purely Confirmatory Research. *Perspectives on Psychological Science*, 7(6), 632–638. <https://doi.org/10.1177/1745691612463078>
- Wagner, H. L. (1993). On measuring performance in category judgment studies of nonverbal behavior. *Journal of Nonverbal Behavior*, 17, 3–28.
- Wallace, G. L., Case, L. K., Harms, M. B., Silvers, J. A., Kenworthy, L., & Martin, A. (2011). Diminished sensitivity to sad facial expressions in high functioning autism spectrum disorders is associated with symptomatology and adaptive functioning. *Journal of Autism and Developmental Disorders*, 41(11), 1475–1486. <https://doi.org/10.1007/s10803-010-1170-0>
- Wallhoff, F., Schuller, B., Hawellek, M., & Rigoll, G. (2006). Efficient Recognition of Authentic Dynamic Facial Expressions on the Feedtum Database. *2006 IEEE International Conference on Multimedia and Expo*, 493–496. <https://doi.org/10.1109/ICME.2006.262433>
- Wang, H., Suveg, C., West, K. B., Han, Z. R., Zhang, X., Hu, X., & Yi, L. (2021). Synchrony of Respiratory Sinus Arrhythmia in Parents and Children with Autism Spectrum Disorder: Moderation by Interaction Quality and Child Behavior Problems. *Autism Research*, 14(3), 512–522. <https://doi.org/10.1002/aur.2401>
- Wang, S., & Adolphs, R. (2017). Reduced specificity in emotion judgment in people with autism spectrum disorder. *Neuropsychologia*, 99, 286–295. <https://doi.org/10.1016/j.neuropsychologia.2017.03.024>
- Wehebrink, K. S., Koelkebeck, K., Piest, S., de Dreu, C. K. W., & Kret, M. E. (2018). Pupil mimicry and trust – Implication for depression. *Journal of Psychiatric Research*, 97, 70–76. <https://doi.org/10.1016/j.jpsychires.2017.11.007>
- Weiss, E. M., Rominger, C., Hofer, E., Fink, A., & Papousek, I. (2019). Less differentiated facial responses to naturalistic films of another person's emotional expressions in adolescents and adults with High-Functioning Autism Spectrum Disorder. *Progress in Neuro-Psychopharmacology and Biological Psychiatry*, 89, 341–346. <https://doi.org/10.1016/j.pnpbpb.2018.10.007>
- Westfall, J. (2015). *PANGEA: Power Analysis for General Anova designs*. Unpublished manuscript. Available at <http://jakewestfall.org/publications/pangea.pdf>
- White, S. W., Bray, B. C., & Ollendick, T. H. (2012). Examining shared and unique aspects of social anxiety disorder and autism spectrum disorder using factor analysis. *Journal of Autism and Developmental Disorders*, 42(5), 874–884. <https://doi.org/10.1007/s10803-011-1325-7>
- Whitehead, W. E., Drescher, V. M., Heiman, P., & Blackwell, B. (1977). Relation of Heart Rate Control to Heartbeat Perception. *Biofeedback and Self-Regulation*, 2(4).
- Wickham, H. (2016). *ggplot2: Elegant Graphics for Data Analysis*. Springer-Verlag New York. <https://ggplot2.tidyverse.org>
- Wiens, S., Mezzacappa, E. S., & Katkin, E. S. (2000). Heartbeat detection and the experience of emotions. *Cognition and Emotion*, 14(3), 417–427. <https://doi.org/10.1080/026999300378905>
- Williams, J. H. G., Whiten, A., Suddendorf, T., & Perrett, D. I. (2001). *Imitation, mirror neurons and autism*. www.elsevier.com/locate/neubiorev

- Williams, Z. J., Suzman, E., Bordman, S. L., Markfeld, J. E., Kaiser, S. M., Dunham, K. A., Zoltowski, A. R., Failla, M. D., Cascio, C. J., & Woynaroski, T. G. (2023). Characterizing Interoceptive Differences in Autism: A Systematic Review and Meta-analysis of Case-control Studies. *Journal of Autism and Developmental Disorders*, 53(3), 947–962. <https://doi.org/10.1007/s10803-022-05656-2>
- Williamson, S., Craig, J., & Slinger, R. (2008). Exploring the relationship between measures of self-esteem and psychological adjustment among adolescents with Asperger syndrome. *Autism*, 12(4), 391–402. <https://doi.org/10.1177/1362361308091652>
- Wingenbach, T. S. H., Brosnan, M., Pfaltz, M. C., Peyk, P., & Ashwin, C. (2020). Perception of Discrete Emotions in Others: Evidence for Distinct Facial Mimicry Patterns. *Scientific Reports*, 10(1), 1–13. <https://doi.org/10.1038/s41598-020-61563-5>
- Wirth, B. E., & Wentura, D. (2020). It occurs after all: Attentional bias towards happy faces in the dot-probe task. *Attention, Perception, and Psychophysics*, 82(5), 2463–2481. <https://doi.org/10.3758/s13414-020-02017-y>
- Witkower, Z., & Tracy, J. L. (2019). Bodily Communication of Emotion: Evidence for Extrafacial Behavioral Expressions and Available Coding Systems. *Emotion Review*, 11(2), 184–193. <https://doi.org/10.1177/1754073917749880>
- Wood, A., Rychlowska, M., Korb, S., & Niedenthal, P. (2016). Fashioning the Face: Sensorimotor Simulation Contributes to Facial Expression Recognition. *Trends in Cognitive Sciences*, 20(3), 227–240. <https://doi.org/10.1016/j.tics.2015.12.010>
- Yeung, M. K. (2022). A systematic review and meta-analysis of facial emotion recognition in autism spectrum disorder: The specificity of deficits and the role of task characteristics. *Neuroscience and Biobehavioral Reviews*, 133. <https://doi.org/10.1016/j.neubiorev.2021.104518>
- Yiend, J. (2010). The effects of emotion on attention: A review of attentional processing of emotional information. *Cognition and Emotion*, 24(1), 3–47. <https://doi.org/10.1080/02699930903205698>
- Zalla, T., & Sperduti, M. (2013). The amygdala and the relevance detection theory of autism: An evolutionary perspective. *Frontiers in Human Neuroscience*, 7(DEC), 1–15. <https://doi.org/10.3389/fnhum.2013.00894>
- Zvielli, A., Bernstein, A., & Koster, E. H. W. (2015). Temporal Dynamics of Attentional Bias. *Clinical Psychological Science*, 3(5), 772–788. <https://doi.org/10.1177/2167702614551572>
- Zwack, J. C., & Wolkenstein, L. (2017). Facial emotion recognition, theory of mind and the role of facial mimicry in depression. *Journal of Affective Disorders*, 210, 90–99. <https://doi.org/10.1016/j.jad.2016.12.022>