The social brain in middle childhood: a neurobiological perspective on individual differences in social competence

Meulen, M. van der

APPENDICES

References

A

Achterberg, M., Bakermans-Kranenburg, M. J., van Ijzendoorn, M. H., van der Meulen, M., Tottenham, N., & Crone, E. A. (2018). Distinctive heritability patterns of subcortical-prefrontal cortex resting state connectivity in childhood: A twin study. *Neuroimage, 175*, 138-149. doi: 10.1016/j.neuroimage.2018.03.076

Achterberg, M., van Duijvenvoorde, A. C. K., Bakermans-Kranenburg, M. J., & Crone, E. A. (2016). Control your anger! The neural basis of aggression regulation in response to negative social feedback. *Social Cognitive and Affective Neuroscience, 11*(5), 712-720. doi: 10.1093/scan/nsv154

Achterberg, M., van Duijvenvoorde, A. C. K., van der Meulen, M., Bakermans-Kranenburg, M. J., & Crone, E. A. (2018). Heritability of aggression following social evaluation in middle childhood: An fMRI study. *Human Brain Mapping, 0*(0). doi: 10.1002/hbm.24043

Akaike, H. (1974). A new look at the statistical model identification. *IEEE Transactions on Automatic Control, AC-19*, 716-723.

B

Bakermans-Kranenburg, M. J., van Uzendoorn, M. H., Bokhorst, C. L., & Schuengel, C. (2004). The Importance of Shared Environment in Infant-Father Attachment: A Behavioral Genetic Study of the Attachment Q-Sort. *Journal of Family Psychology, 18*(3), 545-549. doi: 10.1037/0893-3200.18.3.545

Bartz, J. A., Zaki, J., Bolger, N., Hollander, E., Ludwig, N. N., Kolevzon, A., & Ochsner, K. N. (2010). Oxytocin Selectively Improves Empathic Accuracy. *Psychological Science, 21*(10), 1426-1428. doi: 10.1177/0956797610383439

Batouli, S. A. H., Trollor, J. N., Wen, W., & Sachdev, P. S. (2014). The heritability of volumes of brain structures and its relationship to age: A review of twin and family studies. *Ageing Research Reviews, 13*, 1-9. doi: 10.1016/j.arr.2013.10.003

Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin, 117*(3), 497-529. doi: 10.1037/0033-2909.117.3.497

Beauchamp, M. H., Dooley, J. J., & Anderson, V. (2013). A preliminary investigation of moral reasoning and empathy after traumatic brain injury in adolescents. *Brain Injury, 27*(7-8), 896-902. doi: 10.3109/02699052.2013.775486

Belsky, J., & de Haan, M. (2011). Annual Research Review: Parenting and children's brain development: the end of the beginning. *Journal of Child Psychology and Psychiatry, 52*(4), 409-428. doi: 10.1111/j.1469-7610.2010.02281.x

Berndt, T. J. (2002). Friendship Quality and Social Development. *Current Directions in Psychological Science, 11*(1), 7-10. doi: 10.1111/1467-8721.00157

Bhanji, J. P., & Delgado, M. R. (2014). The social brain and reward: social information processing in the human striatum. *Wiley Interdisciplinary Reviews-Cognitive Science, 5*(1), 61-73. doi: 10.1002/wcs.1266

Blakemore, S. J. (2008). The social brain in adolescence. *Nature Reviews Neuroscience, 9*(4), 267-277. doi: 10.1038/nrn2353

Blakemore, S. J. (2012). Development of the social brain in adolescence. *Journal of the Royal Society of Medicine, 105*(3), 111-116. doi: 10.1258/jrsm.2011.110221

Blakemore, S. J., & Mills, K. L. (2014). Is Adolescence a Sensitive Period for Sociocultural Processing? *Annual Review of Psychology, 65*(1), 187-207. doi: 10.1146/annurev-psych-010213-115202

Boivin, M., Hymel, S., & Bukowski, W. M. (1995). The roles of social withdrawal, peer rejection, and victimization by peers in predicting loneliness and depressed mood in childhood. *Development and Psychopathology, 7*(4), 765-785. doi: 10.1017/S0954579400006830

Borenstein, M., Rothstein, D., & Cohen, J. (2005). *Comprehensive meta-analysis: A computer program for research synthesis*. NJ: Biostat.

Bos, M. G. N., Wierenga, L. M., Blankenstein, N. E., Schreuders, E., Tamnes, C. K., & Crone, E. A. (2018). Longitudinal structural brain development and externalizing behavior in adolescence. *Journal of Child Psychology and Psychiatry, 59*(10), 1061-1072. doi: 10.1111/jcpp.12972

Braams, B. R., Güroğlu, B., de Water, E., Meuwese, R., Koolschijn, P. C., Peper, J. S., & Crone, E. A. (2013). Reward-related neural responses are dependent on the beneficiary. *Social Cognitive and Affective Neuroscience, 9*(7), 1030-1037. doi: 10.1093/scan/nst077

Brans, R. G. H., Kahn, R. S., Schnack, H. G., van Baal, G. C. M., Posthuma, D., van Haren, N. E. M., . . . Hulshoff Pol, H. E. (2010). Brain Plasticity and Intellectual Ability Are Influenced by Shared Genes. *The Journal of Neuroscience, 30*(16), 5519. doi: 10.1523/JNEUROSCI.5841-09.2010

Brett, M., Anton, J. L., Valabregue, R., & Poline, J. B. (2002). Region of interest analysis using an SPM toolbox. *Neuroimage, 16*(2), 497.

Buhrmester, D. (1990). INTIMACY OF FRIENDSHIP, INTERPERSONAL COMPETENCE, AND ADJUSTMENT DURING PREADOLESCENCE AND ADOLESCENCE. *Child Development, 61*(4), 1101-1111. doi: 10.1111/j.1467-8624.1990.tb02844.x

Burnett, S., Bird, G., Moll, J., Frith, C. D., & Blakemore, S. J. (2008). Development during Adolescence of the Neural Processing of Social Emotion. *Journal of Cognitive Neuroscience, 21*(9), 1736-1750. doi: 10.1162/jocn.2009.21121

Burnett, S., & Blakemore, S. J. (2009). Functional connectivity during a social emotion task in adolescents and in adults. *European Journal of Neuroscience, 29*(6), 1294-1301. doi: 10.1111/j.1460-9568.2009.06674.x

C

Cacioppo, S., Frum, C., Asp, E., Weiss, R. M., Lewis, J. W., & Cacioppo, J. T. (2013). A Quantitative Meta-Analysis of Functional Imaging Studies of Social Rejection. *Scientific Reports, 3*, 3. doi: 10.1038/srep02027

Campbell, B. C. (2011). Adrenarche and Middle Childhood. *Human Nature, 22*(3), 327. doi: 10.1007/s12110-011-9120-x

Caprara, G. V., Barbaranelli, C., Pastorelli, C., Bandura, A., & Zimbardo, P. G. (2000). Prosocial Foundations of Children's Academic Achievement. *Psychological Science, 11*(4), 302-306. doi: 10.1111/1467-9280.00260

Carlo, G., & Randall, B. A. (2002). The Development of a Measure of Prosocial Behaviors for Late Adolescents. *Journal of Youth and Adolescence, 31*(1), 31-44. doi: 10.1023/A:1014033032440

Carrington, S. J., & Bailey, A. J. (2009). Are there theory of mind regions in the brain? A review of the neuroimaging literature. *Human Brain Mapping, 30*(8), 2313-2335. doi: 10.1002/hbm.20671

Carter, R. M., & Huettel, S. A. (2013). A nexus model of the temporal-parietal junction. *Trends in Cognitive Sciences, 17*(7), 328-336. doi: 10.1016/j.tics.2013.05.007

Cassidy, J., & Asher, S. R. (1992). Loneliness and Peer Relations in Young Children. *Child Development, 63*(2), 350-365. doi: 10.2307/1131484

Cavanna, A. E., & Trimble, M. R. (2006). The precuneus: a review of its functional anatomy and behavioural correlates. *Brain, 129*, 564-583. doi: 10.1093/brain/awl004

Clarkson, M. J., Cardoso, M. J., Ridgway, G. R., Modat, M., Leung, K. K., Rohrer, J. D., . . . Ourselin, S. (2011). A comparison of voxel and surface based cortical thickness estimation methods. *Neuroimage, 57*(3), 856-865. doi: 10.1016/j.neuroimage.2011.05.053

Cocosco, S., Kollokian, V., Kwan, R. K. S., & Evans, A. C. (1997). Brain web: online interface to a 3D MRI simulated brain database. *Neuroimage, 5*, S452.

Crone, E. A. (2013). Considerations of Fairness in the Adolescent Brain. *Child Development Perspectives, 7*(2), 97-103.

Crone, E. A., & Dahl, R. E. (2012). Understanding adolescence as a period of social–affective engagement and goal flexibility. *Nature Reviews Neuroscience, 13*, 636. doi: 10.1038/nrn3313

D

Dale, A. M., Fischl, B., & Sereno, M. I. (1999). Cortical surface-based analysis. I. Segmentation and surface reconstruction. *Neuroimage, 9*(2), 179-194. doi: http://dx.doi.org/10.1006/nimg.1998.0395

Dalgleish, T., Walsh, N. D., Mobbs, D., Schweizer, S., van Harmelen, A. L., Dunn, B., . . . Stretton, J. (2017). Social pain and social gain in the adolescent brain: A common neural circuitry underlying both positive and negative social evaluation. *Scientific Reports, 7*, 8. doi: 10.1038/srep42010

Davey, C. G., Allen, N. B., Harrison, B., Dwyer, D. B., & Yucel, M. (2010). Being Liked Activates Primary Reward and Midline Self-Related Brain Regions. *Human Brain Mapping, 31*(4), 660-668. doi: 10.1002/hbm.20895

Davis, M. H. (1983). Measuring individual differences in empathy: Evidence for a multidimensional approach. *Journal of Personality and Social Psychology, 44*(1), 113-126. doi: 10.1037//0022-3514.44.1.113

Davis, O. S. P., Haworth, C. M. A., & Plomin, R. (2009). Dramatic increase in heritability of cognitive development from early to middle childhood: an 8-year longitudinal study of 8,700 pairs of twins. *Psychological Science, 20*(10), 1301-1308. doi: 10.1111/j.1467-9280.2009.02433.x

De Corte, K., Buysse, A., Verhofstadt, L. L., Roeyers, H., Ponnet, K., & Davis, M. H. (2007). Measuring empathic tendencies: Reliability and validity of the Dutch version of the Interpersonal Reactivity Index. *Psychologica Belgica, 47*(4), 235-260.

Decety, J., & Jackson, P. L. (2004). The Functional Architecture of Human Empathy. *Behavioral and Cognitive Neuroscience Reviews, 3*(2), 71-100. doi: 10.1177/1534582304267187

Del Giudice, M. (2014). Middle Childhood: An Evolutionary-Developmental Synthesis. *Child Development Perspectives, 8*(4), 193-200. doi: 10.1111/cdep.12084

Del Giudice, M., Angeleri, R., & Manera, V. (2009). The juvenile transition: A developmental switch point in human life history. *Developmental Review, 29*(1), 1-31. doi: 10.1016/j.dr.2008.09.001

Delgado, M. R. (2007). Reward-related responses in the human striatum. In B. W. Balleine, K. Doya, J. Odoherty, & M. Sakagami (Eds.), *Reward and Decision Making in Corticobasal Ganglia Networks* (Vol. 1104, pp. 70-88). Oxford: Blackwell Publishing.

DeRosier, M. E., & Lloyd, S. W. (2010). The Impact of Children's Social Adjustment on Academic Outcomes. *Reading & Writing Quarterly, 27*(1-2), 25-47. doi: 10.1080/10573569.2011.532710

Desikan, R. S., Segonne, F., Fischl, B., Quinn, B. T., Dickerson, B. C., Blacker, D., . . . Killiany, R. J. (2006). An automated labeling system for subdividing the human cerebral cortex on MRI scans into gyral based regions of interest. *Neuroimage, 31*(3), 968-980. doi: 10.1016/j.neuroimage.2006.01.021

Do, K. T., McCormick, E. M., & Telzer, E. H. (2019). The neural development of prosocial behavior from childhood to adolescence. *Social Cognitive and Affective Neuroscience, 14*(2), 129-139. doi: 10.1093/scan/nsy117

Dorn, L. D., & Biro, F. M. (2011). Puberty and Its Measurement: A Decade in Review. *Journal of Research on Adolescence, 21*(1), 180-195. doi: 10.1111/j.1532-7795.2010.00722.x

Dunbar, R. I. M., & Shultz, S. (2007). Evolution in the Social Brain. *Science, 317*(5843), 1344. doi: 10.1126/science.1145463

Dunfield, K., Kuhlmeier, V. A., O'Connell, L., & Kelley, E. (2011). Examining the Diversity of Prosocial Behavior: Helping, Sharing, and Comforting in Infancy. *Infancy, 16*(3), 227-247. doi: 10.1111/j.1532-7078.2010.00041.x

Dunfield, K. A., & Kuhlmeier, V. A. (2013). Classifying Prosocial Behavior: Children's Responses to Instrumental Need, Emotional Distress, and Material Desire. *Child Development, 84*(5), 1766-1776. doi: 10.1111/cdev.12075

E

Ebstein, R. P., Israel, S., Chew, S. H., Zhong, S., & Knafo, A. (2010). Genetics of Human Social Behavior. *Neuron, 65*(6), 831-844. doi: 10.1016/j.neuron.2010.02.020

Eisenberg, N., Fabes, R. A., & Spinrad, T. L. (2006). Prosocial development. In W. Damon (Ed.), *Handbook of child psychology: Social, emotional and personality development* (pp. 646-718). New York, NY: Wiley.

Eisenberg, N., Hofer, C., Sulik, M. J., & Liew, J. (2014). The Development of Prosocial Moral Reasoning and a Prosocial Orientation in Young Adulthood: Concurrent and Longitudinal Correlates. *Developmental Psychology, 50*(1), 58-70. doi: 10.1037/a0032990

Eisenberg, N., & Spinrad, T. L. (2014). Multidimensionality of prosocial behavior. In L. M. Padilla-Walker & G. Carlo (Eds.), *The complexities of raising prosocial children: an examination of the multidimensionality of prosocial behaviors* (pp. 17-39). Oxford: Oxford University Press.

Eisenberg, N., Spinrad, T. L., & Knafo-Noam, A. (2015). Prosocial development *Handbook of child psychology and developmental science: Socioemotional processes, Vol. 3, 7th ed.* (pp. 610-656). Hoboken, NJ, US: John Wiley & Sons Inc.

Eisenberger, N. I., Gable, S. L., & Lieberman, M. D. (2007). Functional magnetic resonance imaging responses relate to differences in real-world social experience. *Emotion, 7*(4), 745-754. doi: 10.1037/1528-3542.7.4.745

Eisenberger, N. I., Lieberman, M. D., & Williams, K. D. (2003). Does rejection hurt? An fMRI study of social exclusion. *Science, 302*(5643), 290-292. doi: 10.1126/science.1089134

Eklund, A., Nichols, T. E., & Knutsson, H. (2016). Cluster failure: Why fMRI inferences for spatial extent have inflated false-positive rates. *Proceedings of the National Academy of Sciences of the United States of America, 113*(28), 7900-7905. doi: 10.1073/pnas.1602413113

El Mallah, S. (2019). Conceptualization and Measurement of Adolescent Prosocial Behavior: Looking Back and Moving Forward. *Journal of Research on Adolescence, 0*(0). doi: 10.1111/jora.12476

Erikson, E. H. (1994). *Identity: Youth and crisis*: WW Norton & Company.

Ervin, L. H., & Long, J. S. (2000). Using Heteroscedasticity Consistent Standard Errors in the Linear Regression Model *The American Statistician, 54*(3), 217-224. doi: 10.1080/00031305.2000.10474549

Euser, S., Bakermans-Kranenburg, M. J., van den Bulk, B. G., Linting, M., Damsteegt, R. C., Vrijhof, C. I., . . . van IJzendoorn, M. H. (2016). Efficacy of the Video-feedback Intervention to promote Positive Parenting and Sensitive Discipline in Twin Families (VIPP-Twins): Study protocol for a randomized controlled trial. *BMC Psychology, 4*(1), 33. doi: 10.1186/s40359-016-0139-y

F

Falconer, D. S., & Mackay, T. F. C. (1996). *Quantitative Genetics*: Burnt Mill, England.

Fehr, E., Bernhard, H., & Rockenbach, B. (2008). Egalitarianism in young children. *Nature, 454*, 1079. doi: 10.1038/nature07155

FeldmanHall, O., Dalgleish, T., Thompson, R., Evans, D., Schweizer, S., & Mobbs, D. (2012). Differential neural circuitry and self-interest in real vs hypothetical moral decisions. *Social Cognitive and Affective Neuroscience, 7*(7), 743-751. doi: 10.1093/scan/nss069

Fischl, B., Liu, A., & Dale, A. M. (2001). Automated manifold surgery: constructing geometrically accurate and topologically correct models of the human cerebral cortex. *IEEE Transactions on Medical Imaging, 20*(1), 70-80. doi: 10.1109/42.906426

Fischl, B., Salat, D. H., Busa, E., Albert, M., Dieterich, M., Haselgrove, C., . . . Dale, A. M. (2002). Whole Brain Segmentation: Automated Labeling of Neuroanatomical Structures in the Human Brain. *Neuron, 33*(3), 341-355. doi: 10.1016/S0896-6273(02)00569-X

Fischl, B., Salat, D. H., van der Kouwe, A. J. W., Makris, N., Ségonne, F., Quinn, B. T., & Dale, A. M. (2004). Sequence-independent segmentation of magnetic resonance images. *Neuroimage, 23*, S69-S84. doi: 10.1016/j.neuroimage.2004.07.016

Fischl, B., Sereno, M. I., & Dale, A. M. (1999). Cortical surface-based analysis: II: Inflation, flattening, and a surface-based coordinate system. *Neuroimage, 9*(2), 195-207. doi: https://doi.org/10.1006/nimg.1998.0396

Fischl, B., van der Kouwe, A., Destrieux, C., Halgren, E., Ségonne, F., Salat, D. H., . . . Dale, A. M. (2004). Automatically Parcellating the Human Cerebral Cortex. *Cerebral Cortex, 14*(1), 11-22. doi: 10.1093/cercor/bhg087

Foulkes, L., Leung, J. T., Fuhrmann, D., Knoll, L. J., & Blakemore, S. J. (2018). Age differences in the prosocial influence effect. *Developmental Science, 21*(6), 9. doi: 10.1111/desc.12666

Frith, C. D., & Frith, U. (2007). Social cognition in humans. *Current Biology, 17*(16), R724-R732. doi: 10.1016/j.cub.2007.05.068

Frith, U., & Frith, C. D. (2003). Development and neurophysiology of mentalizing. *Philosophical transactions of the Royal Society of London. Series B, Biological sciences, 358*(1431), 459-473. doi: 10.1098/rstb.2002.1218

G

Ge, T., Holmes, A. J., Buckner, R. L., Smoller, J. W., & Sabuncu, M. R. (2017). Heritability analysis with repeat measurements and its application to resting-state functional connectivity. *Proceedings of the National Academy of Sciences, 114*(21), 5521-5526. doi: 10.1073/pnas.1700765114

Gifford-Smith, M. E., & Brownell, C. A. (2003). Childhood peer relationships: social acceptance, friendships, and peer networks. *Journal of School Psychology, 41*(4), 235-284. doi: 10.1016/S0022-4405(03)00048-7

Gilmore, J. H., Knickmeyer, R. C., & Gao, W. (2018). Imaging structural and functional brain development in early childhood. *Nature Reviews Neuroscience, 19*(3), 123-137. doi: 10.1038/nrn.2018.1

Gogtay, N., Giedd, J. N., Lusk, L., Hayashi, K. M., Greenstein, D., Vaituzis, A. C., . . . Thompson, P. M. (2004). Dynamic mapping of human cortical development during childhood through early adulthood. *Proceedings of the National Academy of Sciences of the United States of America, 101*(21), 8174. doi: 10.1073/pnas.0402680101

Goodman, R. (1997). The strengths and difficulties questionnaire: A research note. *J Child Psychol Psyc, 38*. doi: 10.1111/j.1469-7610.1997.tb01545.x

Goswami, H. (2012). Social Relationships and Children's Subjective Well-Being. *Social Indicators Research, 107*(3), 575-588. doi: 10.1007/s11205-011-9864-z

Greene, D. J., Koller, J. M., Hampton, J. M., Wesevich, V., Van, A. N., Nguyen, A. L., . . . Dosenbach, N. U. F. (2018). Behavioral interventions for reducing head motion during MRI scans in children. *Neuroimage, 171*, 234-245. doi: 10.1016/j.neuroimage.2018.01.023

Gregory, A. M., Light-Hausermann, J. H., Rijsdijk, F., & Eley, T. C. (2009). Behavioral genetic analyses of prosocial behavior in adolescents. *Developmental Science, 12*(1), 165-174. doi: 10.1111/j.1467-7687.2008.00739.x

Gunnar, M. R., Sebanc, A. M., Tout, K., Donzella, B., & van Dulmen, M. M. H. (2003). Peer rejection, temperament, and cortisol activity in preschoolers. *Developmental Psychobiology, 43*(4), 346-358. doi: 10.1002/dev.10144

Gunther Moor, B., Crone, E. A., & van der Molen, M. W. (2010). The heartbreake of social rejection: heart rate deceleration in response to unexpected peer rejection. *Psychological Science, 21*(9), 1326-1333.

Gunther Moor, B., Güroğlu, B., Op de Macks, Z. A., Rombouts, S. A. R. B., Van der Molen, M. W., & Crone, E. A. (2012). Social exclusion and punishment of excluders: Neural correlates and developmental trajectories. *Neuroimage, 59*(1), 708-717. doi: 10.1016/j.neuroimage.2011.07.028

Gunther Moor, B., van Leijenhorst, L., Rombouts, S. A. R. B., Crone, E. A., & Van der Molen, M. W. (2010). Do you like me? Neural correlates of social evaluation and developmental trajectories. *Social Neuroscience, 5*(5-6), 461-482. doi: 10.1080/17470910903526155

Güroğlu, B., van den Bos, W., & Crone, E. A. (2009). Fairness considerations: Increasing understanding of intentionality during adolescence. *Journal of Experimental Child Psychology, 104*(4), 398-409. doi: 10.1016/j.jecp.2009.07.002

Güroğlu, B., van den Bos, W., & Crone, E. A. (2014). Sharing and giving across adolescence: an experimental study examining the development of prosocial behavior. *Frontiers in Psychology, 5*, 13. doi: 10.3389/fpsyg.2014.00291

Güroğlu, B., van den Bos, W., van Dijk, E., Rombouts, S., & Crone, E. A. (2011). Dissociable brain networks involved in development of fairness considerations: Understanding intentionality behind unfairness. *Neuroimage, 57*(2), 634-641. doi: 10.1016/j.neuroimage.2011.04.032

Guroglu, B., Will, G. J., & Crone, E. A. (2014). Neural Correlates of Advantageous and Disadvantageous Inequity in Sharing Decisions. *PLOS ONE, 9*(9), 9. doi: 10.1371/journal.pone.0107996

H

Harbaugh, W. T., Mayr, U., & Burghart, D. R. (2007). Neural responses to taxation and voluntary giving reveal motives for charitable donations. *Science, 316*(5831), 1622-1625. doi: 10.1126/science.1140738

Hardy, C. L., Bukowski, W. M., & Sippola, L. K. (2002). Stability and change in peer relationships during the transition to middle-level school. *The Journal of Early Adolescence, 22*(2), 117-142. doi: 10.1177/0272431602022002001

Hartgerink, C. H. J., van Beest, I., Wicherts, J. M., & Williams, K. D. (2015). The Ordinal Effects of Ostracism: A Meta-Analysis of 120 Cyberball Studies. *PLOS ONE, 10*(5), e0127002. doi: 10.1371/journal.pone.0127002

Hayes, A. F., & Cai, L. (2007). Using heteroskedasticity-consistent standard error estimators in OLS regression: An introduction and software implementation. *Behavior Research Methods, 39*(4), 709-722. doi: 10.3758/BF03192961

Heckendorf, E., Bakermans-Kranenburg, M. J., van Ijzendoorn, M. H., & Huffmeijer, R. (2019). Neural responses to children's faces: Test–retest reliability of structural and functional MRI. *Brain and Behavior, 9*(3), e01192. doi: 10.1002/brb3.1192

Herting, M. M., Gautam, P., Chen, Z., Mezher, A., & Vetter, N. C. (2018). Test-retest reliability of longitudinal task-based fMRI: Implications for developmental studies. *Developmental Cognitive Neuroscience, 33*, 17-26. doi: https://doi.org/10.1016/j.dcn.2017.07.001

Hoffman, M. L. (1987). The contribution of empathy to justice and moral judgment *Empathy and its development.* (pp. 47-80). New York, NY, US: Cambridge University Press.

Hofstee, W. K. B. (1994). Who should own the definition of personality. *European Journal of Personality, 8*(3), 149-162. doi: 10.1002/per.2410080302

Holt-Lunstad, J., Smith, T. B., & Layton, J. B. (2010). Social Relationships and Mortality Risk: A Meta-analytic Review. *PLOS Medicine, 7*(7), e1000316. doi: 10.1371/journal.pmed.1000316

Hughes, B. L., & Beer, J. S. (2012). Orbitofrontal Cortex and Anterior Cingulate Cortex Are Modulated by Motivated Social Cognition. *Cerebral Cortex, 22*(6), 1372-1381. doi: 10.1093/cercor/bhr213

Hutton, C., Draganski, B., Ashburner, J., & Weiskopf, N. (2009). A comparison between voxel-based cortical thickness and voxel-based morphometry in normal aging. *Neuroimage, 48*(2), 371-380. doi: 10.1016/j.neuroimage.2009.06.043

Hyatt, C. J., Calhoun, V. D., Pearlson, G. D., & Assaf, M. (2015). Specific default mode subnetworks support mentalizing as revealed through opposing network recruitment by social and semantic FMRI tasks. *Human Brain Mapping, 36*(8), 3047-3063. doi: 10.1002/hbm.22827

J

Jambon, M., & Smetana, J. G. (2014). Moral complexity in middle childhood: Children's evaluations of necessary harm. *Developmental Psychology, 50*(1), 22-33. doi: 10.1037/a0032992

Jansen, A. G., Mous, S. E., White, T., Posthuma, D., & Polderman, T. J. C. (2015). What twin studies tell us about the heritability of brain development, morphology, and function: a review. *Neuropsychology Review, 25*, 27-46. doi: 10.1007/s11065-015-9278-9

K

Klapwijk, E. T., van de Kamp, F., van der Meulen, M., Peters, S., & Wierenga, L. M. (2019). Qoala-T: A supervised-learning tool for quality control of FreeSurfer segmented MRI data. *Neuroimage, 189*, 116-129. doi: 10.1016/j.neuroimage.2019.01.014

Knafo-Noam, A., Uzefovsky, F., Israel, S., Davidov, M., & Zahn-Waxler, C. (2015). The prosocial personality and its facets: genetic and environmental architecture of mother-reported behavior of 7-year-old twins. *Frontiers in Psychology, 6*, 9. doi: 10.3389/fpsyg.2015.00112

Knafo-Noam, A., Vertsberger, D., & Israel, S. (2018). Genetic and environmental contributions to children's prosocial behavior: brief review and new evidence from a reanalysis of experimental twin data. *Current Opinion in Psychology, 20*, 60-65. doi: 10.1016/j.copsyc.2017.08.013

Knafo, A., & Plomin, R. (2006). Prosocial behavior from early to middle childhood: Genetic and environmental influences on stability and change. *Developmental Psychology, 42*(5), 771-786. doi: 10.1073/0012-1649.42.5.771

Knafo, A., Zahn-Waxler, C., Davidov, M., Van Hulle, C., Robinson, J. L., & Rhee, S. H. (2009). Empathy in Early Childhood Genetic, Environmental, and Affective Contributions. In S. Atran, A. Navarro, K. Ochsner, A. Tobena, & O. Vilarroya (Eds.), *Values, Empathy, and Fairness across Social Barriers* (Vol. 1167, pp. 103-114). Oxford: Blackwell Publishing.

Knafo, A., Zahn-Waxler, C., Van Hulle, C., Robinson, J. L., & Rhee, S. H. (2008). The Developmental Origins of a Disposition Toward Empathy: Genetic and Environmental Contributions. *Emotion, 8*(6), 737-752. doi: 10.1037/a0014179

Kochanska, G., DeVet, K., Goldman, M., Murray, K., & Putnam, S. P. (1994). Maternal Reports of Conscience Development and Temperament in Young Children. *Child Development, 65*(3), 852-868. doi: 10.2307/1131423

Konijn, E. A., Bijvank, M. N., & Bushman, B. J. (2007). I wish I were a warrior: The role of wishful identification in the effects of violent video games on aggression in adolescent boys. *Developmental Psychology, 43*(4), 1038-1044. doi: 10.1037/0012-1649.43.4.1038

Krause, A. J., Simon, E. B., Mander, B. A., Greer, S. M., Saletin, J. M., Goldstein-Piekarski, A. N., & Walker, M. P. (2017). The sleep-deprived human brain. *Nature reviews. Neuroscience, 18*(7), 404-418. doi: 10.1038/nrn.2017.55

L

Ladd, G. W. (2006). Peer Rejection, Aggressive or Withdrawn Behavior, and Psychological Maladjustment from Ages 5 to 12: An Examination of Four Predictive Models. *Child Development, 77*(4), 822-846. doi: 10.1111/j.1467-8624.2006.00905.x

Ladd, G. W., & Troop-Gordon, W. (2003). The Role of Chronic Peer Difficulties in the Development of Children's Psychological Adjustment Problems. *Child Development, 74*(5), 1344-1367. doi: 10.1111/1467-8624.00611

Lenroot, R. K., & Giedd, J. N. (2008). The changing impact of genes and environment on brain development during childhood and adolescence: Initial findings from a neuroimaging study of pediatric twins. *Development and Psychopathology, 20*(4), 1161-1175. doi: 10.1017/s0954579408000552

Lenroot, R. K., Schmitt, J. E., Ordaz, S. J., Wallace, G. L., Neale, M. C., Lerch, J. P., . . . Giedd, J. N. (2009). Differences in Genetic and Environmental Influences on the Human Cerebral Cortex Associated With Development During Childhood and Adolescence. *Human Brain Mapping, 30*(1), 163-174. doi: 10.1002/hbm.20494

Lieberman, M. D., & Cunningham, W. A. (2009). Type I and Type II error concerns in fMRI research: re-balancing the scale. *Social Cognitive and Affective Neuroscience, 4*(4), 423-428. doi: 10.1093/scan/nsp052

Lieberman, M. D., & Eisenberger, N. I. (2009). Pains and Pleasures of Social Life. *Science, 323*(5916), 890-891. doi: 10.1126/science.1170008

Lieberman, M. D., & Eisenberger, N. I. (2015). The dorsal anterior cingulate cortex is selective for pain: Results from large-scale reverse inference. *Proceedings of the National Academy of Sciences of the United States of America, 112*(49), 15250-15255. doi: 10.1073/pnas.1515083112

Lumian, D. S., & McRae, K. (2017). Preregistered Replication of "Affective Flexibility: Evaluative Processing Goals Shape Amygdala Activity". *Psychological Science, 0*(0), 0956797617719730. doi: doi:10.1177/0956797617719730

M

Ma, X. S., Eyler, L. T., Hu, X. M., Hou, X., Deng, W., Zhang, X. W., . . . Li, T. (2016). Regional Cortical Surface Area in Adolescents: A Preliminary MRI Twin Study of Genetic and Environmental Contributions. *Behavior Genetics, 46*(2), 205-216. doi: 10.1007/s10519-015-9755-1

Madan, C. R., & Kensinger, E. A. (2017). Test-retest reliability of brain morphology estimates. *Brain informatics, 4*(2), 107-121. doi: 10.1007/s40708-016-0060-4

Mah, V. K., & Ford-Jones, E. L. (2012). Spotlight on middle childhood: Rejuvenating the 'forgotten years'. *Paediatrics & child health, 17*(2), 81-83.

Masten, C. L., Eisenberger, N. I., Borofsky, L. A., Pfeifer, J. H., McNealy, K., Mazziotta, J. C., & Dapretto, M. (2009). Neural correlates of social exclusion during adolescence: understanding the distress of peer rejection. *Social Cognitive and Affective Neuroscience, 4*(2), 143-157. doi: 10.1093/scan/nsp007

Masten, C. L., Eisenberger, N. I., Pfeifer, J. H., Colich, N. L., & Dapretto, M. (2013). Associations among pubertal development, empathic ability, and neural responses while witnessing peer rejection in adolescence. *Child Development, 84*(4), 1338-1354. doi: 10.1111/cdev.12056

Masten, C. L., Eisenberger, N. I., Pfeifer, J. H., & Dapretto, M. (2010). Witnessing peer rejection during early adolescence: Neural correlates of empathy for experiences of social exclusion. *Social Neuroscience, 5*(5-6), 496-507. doi: 10.1080/17470919.2010.490673

Masten, C. L., Morelli, S. A., & Eisenberger, N. I. (2011). An fMRI investigation of empathy for 'social pain' and subsequent prosocial behavior. *Neuroimage, 55*(1), 381-388. doi: 10.1016/j.neuroimage.2010.11.060

Masten, C. L., Telzer, E. H., Fuligni, A. J., Lieberman, M. D., & Eisenberger, N. I. (2012). Time spent with friends in adolescence relates to less neural sensitivity to later peer rejection. *Social Cognitive and Affective Neuroscience, 7*(1), 106-114. doi: 10.1093/scan/nsq098

Mazaika, P. K., Hoeft, F., Glover, G. H., & Reiss, A. L. (2009). *Methods and Software for fMRI analyses for Clinical Subjects*. Poster presented at the Human Brain Mapping Conference, San Francisco, CA.

McAuliffe, K., Blake, P. R., Steinbeis, N., & Warneken, F. (2017). The developmental foundations of human fairness. *Nature Human Behaviour, 1*, 0042. doi: 10.1038/s41562-016-0042

McLoughlin, G., Ronald, A., Kuntsi, J., Asherson, P., & Plomin, R. (2007). Genetic support for the dual nature of attention deficit hyperactivity disorder: Substantial genetic overlap between the inattentive and hyperactive-impulsive components. *Journal of Abnormal Child Psychology, 35*(6), 999-1008. doi: 10.1007/s10802-007-9149-9

Melchers, M., Montag, C., Reuter, M., Spinath, F. M., & Hahn, E. (2016). How heritable is empathy? Differential effects of measurement and subcomponents. *Motivation and Emotion, 40*(5), 720-730. doi: 10.1007/s11031-016-9573-7

Menon, V., & Uddin, L. Q. (2010). Saliency, switching, attention and control: a network model of insula function. *Brain Structure and Function, 214*(5), 655-667. doi: 10.1007/s00429-010-0262-0

Menting, A. T. A., de Castro, B. O., & Matthys, W. (2013). Effectiveness of the Incredible Years parent training to modify disruptive and prosocial child behavior: A meta-analytic review. *Clinical Psychology Review, 33*(8), 901-913. doi: 10.1016/j.cpr.2013.07.006

Meyer, M. L., Masten, C. L., Ma, Y. N., Wang, C. B., Shi, Z. H., Eisenberger, N. I., & Han, S. H. (2013). Empathy for the social suffering of friends and strangers recruits distinct patterns of brain activation. *Social Cognitive and Affective Neuroscience, 8*(4), 446-454. doi: 10.1093/scan/nss019

Mills, K. L., Goddings, A. L., Herting, M. M., Meuwese, R., Blakemore, S. J., Crone, E. A., . . . Tamnes, C. K. (2016). Structural brain development between childhood and adulthood: Convergence across four longitudinal samples. *Neuroimage, 141*, 273-281. doi: 10.1016/j.neuroimage.2016.07.044

Mills, K. L., Lalonde, F., Clasen, L. S., Giedd, J. N., & Blakemore, S. J. (2014). Developmental changes in the structure of the social brain in late childhood and adolescence. *Social Cognitive and Affective Neuroscience, 9*(1), 123-131. doi: 10.1093/scan/nss113

Mobbs, D., Yu, R., Meyer, M., Passamonti, L., Seymour, B., Calder, A. J., . . . Dalgleish, T. (2009). A key role for similarity in vicarious reward. *Science (New York, N.Y.), 324*(5929), 900-900. doi: 10.1126/science.1170539

Moor, B. G., Guroglu, B., Op de Macks, Z. A., Rombouts, S., Van der Molen, M. W., & Crone, E. A. (2012). Social exclusion and punishment of excluders: Neural correlates and developmental trajectories. *Neuroimage, 59*(1), 708-717. doi: 10.1016/j.neuroimage.2011.07.028

Morishima, Y., Schunk, D., Bruhin, A., Ruff, Christian C., & Fehr, E. (2012). Linking Brain Structure and Activation in Temporoparietal Junction to Explain the Neurobiology of Human Altruism. *Neuron, 75*(1), 73-79. doi: 10.1016/j.neuron.2012.05.021

N

Neale, M. C., & Cardon, L. R. (1992). Methodology for Genetic Studies of Twins and Families.

Neale, M. C., Hunter, M. D., Pritikin, J. N., Zahery, M., Brick, T. R., Kirkpatrick, R. M., . . . Boker, S. M. (2016). OpenMx 2.0: Extended Structural Equation and Statistical Modeling. *Psychometrika, 81*, 535-549.

Nelson, E. E., Jarcho, J. M., & Guyer, A. E. (2016). Social re-orientation and brain development: An expanded and updated view. *Developmental Cognitive Neuroscience, 17*, 118-127. doi: 10.1016/j.dcn.2015.12.008

Newton, E. K., Laible, D., Carlo, G., Steele, J. S., & McGinley, M. (2014). Do sensitive parents foster kind children, or vice versa? Bidirectional influences between children's prosocial behavior and parental sensitivity. *Dev Psychol, 50*. doi: 10.1037/a0036495

Noble, K. G., Houston, S. M., Brito, N. H., Bartsch, H., Kan, E., Kuperman, J. M., . . . Sowell, E. R. (2015). Family income, parental education and brain structure in children and adolescents. *Nature Neuroscience, 18*, 773. doi: 10.1038/nn.3983

Novembre, G., Zanon, M., & Silani, G. (2015). Empathy for social exclusion involves the sensory-discriminative component of pain: a within-subject fMRI study. *Social Cognitive and Affective Neuroscience, 10*(2), 153-164. doi: 10.1093/scan/nsu038

O

Ochsner, K. N., Beer, J. S., Robertson, E. R., Cooper, J. C., Gabrieli, J. D. E., Kihsltrom, J. F., & D'Esposito, M. (2005). The neural correlates of direct and reflected self-knowledge. *Neuroimage, 28*(4), 797-814. doi: 10.1016/j.neuroimage.2005.06.069

Onoda, K., Okamoto, Y., Nakashima, K. i., Nittono, H., Ura, M., & Yamawaki, S. (2009). Decreased ventral anterior cingulate cortex activity is associated with reduced social pain during emotional support. *Social Neuroscience, 4*(5), 443-454. doi: 10.1080/17470910902955884

Open Science, C. (2015). Estimating the reproducibility of psychological science. *Science, 349*(6251), 8. doi: 10.1126/science.aac4716

Over, H. (2016). The origins of belonging: social motivation in infants and young children. *Philosophical Transactions of the Royal Society B: Biological Sciences, 371*(1686), 20150072. doi: 10.1098/rstb.2015.0072

Over, H., & Carpenter, M. (2009). Priming third-party ostracism increases affiliative imitation in children. *Developmental Science, 12*(3), F1-F8. doi: 10.1111/j.1467-7687.2008.00820.x

P

Padilla-Walker, L. M., & Carlo, G. (2014). The study of prosocial behavior: past, present, and future. In L. M. Padilla-Walker & G. Carlo (Eds.), *Prosocial Development: A ultidimensional pproach*. United Kingdom: Oxford University Press.

Padilla-Walker, L. M., Carlo, G., & Nielson, M. G. (2015). Does Helping Keep Teens Protected? Longitudinal Bidirectional Relations Between Prosocial Behavior and Problem Behavior. *Child Development, 86*(6), 1759-1772. doi: 10.1111/cdev.12411

Panizzon, M. S., Fennema-Notestine, C., Eyler, L. T., Jernigan, T. L., Prom-Wormley, E., Neale, M. C., . . . Kremen, W. S. (2009). Distinct Genetic Influences on Cortical Surface Area and Cortical Thickness. *Cerebral Cortex, 19*(11), 2728-2735. doi: 10.1093/cercor/bhp026

Penner, L. A., & Finkelstein, M. A. (1998). Dispositional and structural determinants of volunteerism. *Journal of Personality and Social Psychology, 74*(2), 525-537. doi: 10.1037/0022-3514.74.2.525

Peper, J. S., Brouwer, R. M., Boomsma, D. I., Kahn, R. S., & Hulshoff Pol, H. E. (2007). Genetic influences on human brain structure: A review of brain imaging studies in twins. *Human Brain Mapping, 28*(6), 464-473. doi: 10.1002/hbm.20398

Peper, J. S., Schnack, H. G., Brouwer, R. M., Van Baal, G. C. M., Pjetri, E., Szekely, E., . . . Pol, H. E. H. (2009). Heritability of Regional and Global Brain Structure at the Onset of Puberty: A

Magnetic Resonance Imaging Study in 9-Year-Old Twin Pairs. *Human Brain Mapping, 30*(7), 2184-2196. doi: 10.1002/hbm.20660

Pfeifer, J. H., Lieberman, M. D., & Dapretto, M. (2007). "I know you are but what am I?!": Neural bases of self- and social knowledge retrieval in children and adults. *Journal of Cognitive Neuroscience, 19*(8), 1323-1337. doi: 10.1162/jocn.2007.19.8.1323

Pfeifer, J. H., & Peake, S. J. (2012). Self-development: Integrating cognitive, socioemotional, and neuroimaging perspectives. *Developmental Cognitive Neuroscience, 2*(1), 55-69. doi: 10.1016/j.dcn.2011.07.012

Piaget, J. (1932). *The moral judgment of the child*. Oxford, England: Harcourt, Brace.

Piccolo, L. R., Merz, E. C., He, X., Sowell, E. R., Noble, K. G., & Pediatric Imaging, N. G. S. (2016). Age-Related Differences in Cortical Thickness Vary by Socioeconomic Status. *PLOS ONE, 11*(9), e0162511. doi: 10.1371/journal.pone.0162511

Plomin, R. (2011). Commentary: Why are children in the same family so different? Non-shared environment three decades later. *International Journal of Epidemiology, 40*(3), 582-592. doi: 10.1093/ije/dyq144

Plomin, R., DeFries, J. C., McClearn, G. E., & McGuffin, P. (2001). *Behavioral Genetics*. New York: Worth Publishers.

Polderman, T. J. C., Benyamin, B., de Leeuw, C. A., Sullivan, P. F., van Bochoven, A., Visscher, P. M., & Posthuma, D. (2015). Meta-analysis of the heritability of human traits based on fifty years of twin studies. *Nature Genetics, 47*, 702. doi: 10.1038/ng.3285

Polk, T. A., Park, J., Smith, M. R., & Park, D. C. (2007). Nature versus Nurture in Ventral Visual Cortex: A Functional Magnetic Resonance Imaging Study of Twins. *The Journal of Neuroscience, 27*(51), 13921.

R

Rakic, P. (1995). A small step for the cell, a giant leap for mankind: a hypothesis of neocortical expansion during evolution. *Trends in Neurosciences, 18*(9), 383-388. doi: 10.1016/0166-2236(95)93934-P

Rameson, L. T., Morelli, S. A., & Lieberman, M. D. (2011). The Neural Correlates of Empathy: Experience, Automaticity, and Prosocial Behavior. *Journal of Cognitive Neuroscience, 24*(1), 235-245. doi: 10.1162/jocn_a_00130

Raznahan, A., Shaw, P., Lalonde, F., Stockman, M., Wallace, G. L., Greenstein, D., . . . Giedd, J. N. (2011). How does your cortex grow? *The Journal of neuroscience : the official journal of the Society for Neuroscience, 31*(19), 7174-7177. doi: 10.1523/JNEUROSCI.0054-11.2011

Reblin, M., & Uchino, B. N. (2008). Social and emotional support and its implication for health. *Current opinion in psychiatry, 21*(2), 201.

Reschke, P. J., Walle, E. A., & Dukes, D. (2017). Interpersonal Development in Infancy: The Interconnectedness of Emotion Understanding and Social Cognition. *Child Development Perspectives, 11*(3), 178-183. doi: 10.1111/cdep.12230

Richaud, M. C., Lemos, V. N., Mesurado, B., & Oros, L. (2017). Construct Validity and Reliability of a New Spanish Empathy Questionnaire for Children and Early Adolescents. *Frontiers in Psychology, 8*, 979-979. doi: 10.3389/fpsyg.2017.00979

Richmond, S., Johnson, K. A., Seal, M. L., Allen, N. B., & Whittle, S. (2016). Development of brain networks and relevance of environmental and genetic factors: A systematic review. *Neuroscience and Biobehavioral Reviews, 71*, 215-239. doi: 10.1016/j.neubiorev.2016.08.024

Riem, M. M. E., Bakermans-Kranenburg, M. J., Huffmeijer, R., & IJzendoorn, M. H. (2013). Does intranasal oxytocin promote prosocial behavior to an excluded fellow player? A randomized-controlled trial with Cyberball. *Psychoneuroendocrino, 38*. doi: 10.1016/j.psyneuen.2012.12.023

Riem, M. M. E., Bakermans-Kranenburg, M. J., Huffmeijer, R., & van IJzendoorn, M. H. (2013). Does intranasal oxytocin promote prosocial behavior to an excluded fellow player? A randomized-controlled trial with Cyberball. *Psychoneuroendocrinology, 38*(8), 1418-1425. doi: 10.1016/j.psyneuen.2012.12.023

Rietveld, M. J., van der Valk, J. C., Bongers, I. L., Stroet, T. M., Slagboom, P. E., & Boomsma, D. I. (2000). Zygosity diagnosis in young twins by parental report. *Twin Research*(3), 134-141.

Rotge, J. Y., Lemogne, C., Hinfray, S., Huguet, P., Grynszpan, O., Tartour, E., . . . Fossati, P. (2015). A meta-analysis of the anterior cingulate contribution to social pain. *Social Cognitive and Affective Neuroscience, 10*(1), 19-27. doi: 10.1093/scan/nsu110

Roth-Hanania, R., Davidoy, M., & Zahn-Waxler, C. (2011). Empathy development from 8 to 16 months: Early signs of concern for others. *Infant Behavior & Development, 34*(3), 447-458. doi: 10.1016/j.infbeh.2011.04.007

Rubin, K. H., Bukowski, W., & Parker, J. G. (2006). Peer interactions, relationships, and groups. In W. Damon & R. M. Lerner (Eds.), *Handbook of child psychology: Vol. 3. Social, emotional, and personality development*. Hoboken, NJ: John Wiley & Sons.

Rubin, K. H., & Rose-Krasnor, L. (1992). Interpersonal problem solving and social competence in children *Handbook of social development* (pp. 283-323): Springer.

S

Salat, D. H., Buckner, R. L., Snyder, A. Z., Greve, D. N., Desikan, R. S. R., Busa, E., . . . Fischl, B. (2004). Thinning of the Cerebral Cortex in Aging. *Cerebral Cortex, 14*(7), 721-730. doi: 10.1093/cercor/bhh032

Sauder, C. L., Hajcak, G., Angstadt, M., & Phan, K. L. (2013). Test-Retest Reliability of Amygdala Response to Emotional Faces. *Psychophysiology, 50*(11), 10.1111/psyp.12129. doi: 10.1111/psyp.12129

Saylor, C. F., Williams, K. D., Nida, S. A., McKenna, M. E., Twomey, K. E., & Macias, M. M. (2013). Ostracism in Pediatric Populations: Review of Theory and Research. *Journal of Developmental and Behavioral Pediatrics, 34*(4), 279-287. doi: 10.1097/DBP.0b013e3182874127

Schreuders, E., Braams, B. R., Blankenstein, N. E., Peper, J. S., Güroğlu, B., & Crone, E. A. (2018). Contributions of Reward Sensitivity to Ventral Striatum Activity Across Adolescence and Early Adulthood. *Child Development, 89*(3), 797-810. doi: 10.1111/cdev.13056

Schreuders, E., Klapwijk, E. T., Will, G.-J., & Güroğlu, B. (2018). Friend versus foe: Neural correlates of prosocial decisions for liked and disliked peers. *Cognitive, Affective, & Behavioral Neuroscience, 18*(1), 127-142. doi: 10.3758/s13415-017-0557-1

Sebastian, C. L., Tan, G. C. Y., Roiser, J. P., Viding, E., Dumontheil, I., & Blakemore, S. J. (2011). Developmental influences on the neural bases of responses to social rejection: Implications of social neuroscience for education. *Neuroimage, 57*(3), 686-694. doi: 10.1016/j.neuroimage.2010.09.063

Seeley, W. W., Menon, V., Schatzberg, A. F., Keller, J., Glover, G. H., Kenna, H., . . . Greicius, M. D. (2007). Dissociable intrinsic connectivity networks for salience processing and executive control. *Journal of Neuroscience, 27*(9), 2349-2356. doi: 10.1523/jneurosci.5587-06.2007

Ségonne, F., Dale, A. M., Busa, E., Glessner, M., Salat, D., Hahn, H. K., & Fischl, B. (2004). A hybrid approach to the skull stripping problem in MRI. *Neuroimage, 22*(3), 1060-1075. doi: 10.1016/j.neuroimage.2004.03.032

Segonne, F., Pacheco, J., & Fischl, B. (2007). Geometrically Accurate Topology-Correction of Cortical Surfaces Using Nonseparating Loops. *IEEE Transactions on Medical Imaging, 26*(4), 518-529. doi: 10.1109/TMI.2006.887364

Shaw, P., Greenstein, D., Lerch, J., Clasen, L., Lenroot, R., Gogtay, N., . . . Giedd, J. (2006). Intellectual ability and cortical development in children and adolescents. *Nature, 440*(7084), 676-679. doi: 10.1038/nature04513

Shenhav, A., Cohen, J. D., & Botvinick, M. M. (2016). Dorsal anterior cingulate cortex and the value of control. *Nature Neuroscience, 19*(10), 1286-1291.

Siegler, R., Deloache, J., & Eisenberg, N. (2006). *How Children Develop, 2nd edition*. New York, NY: Worth Publishers.

Silk, J. S., Siegle, G. J., Lee, K. H., Nelson, E. E., Stroud, L. R., & Dahl, R. E. (2014). Increased neural response to peer rejection associated with adolescent depression and pubertal development. *Social Cognitive and Affective Neuroscience, 9*(11), 1798-1807. doi: 10.1093/scan/nst175

Singer, T., Seymour, B., O'Doherty, J. P., Stephan, K. E., Dolan, R. J., & Frith, C. D. (2006). Empathic neural responses are modulated by the perceived fairness of others. *Nature, 439*(7075), 466-469. doi: 10.1038/nature04271

Sled, J. G., Zijdenbos, A. P., & Evans, A. C. (1998). A nonparametric method for automatic correction of intensity nonuniformity in MRI data. *IEEE Transactions on Medical Imaging, 17*(1), 87-97. doi: 10.1109/42.668698

Smith, C. E., Blake, P. R., & Harris, P. L. (2013). I Should but I Won't: Why Young Children Endorse Norms of Fair Sharing but Do Not Follow Them. *PLOS ONE, 8*(3), 11. doi: 10.1371/journal.pone.0059510

Smith, C. E., Blake, P. R., & Harris, P. L. (2013). I Should but I Won't: Why Young Children Endorse Norms of Fair Sharing but Do Not Follow Them. *PLOS ONE, 8*(3), e59510. doi: 10.1371/journal.pone.0059510

Smith, K. P., & Christakis, N. A. (2008). Social networks and health. *Annu. Rev. Sociol, 34*, 405-429.

Somerville, L. H., Heatherton, T. F., & Kelley, W. M. (2006). Anterior cingulate cortex responds differentially to expectancy violation and social rejection. *Nat Neurosci, 9*(8), 1007-1008. doi: 10.1038/nn1728

Stalnaker, T. A., Cooch, N. K., & Schoenbaum, G. (2015). What the orbitofrontal cortex does not do. *Nature Neuroscience, 18*(5), 620-627. doi: 10.1038/nn.3982

Steinbeis, N. (2018). Taxing behavioral control diminishes sharing and costly punishment in childhood. *Developmental Science, 21*(1), e12492. doi: 10.1111/desc.12492

Steinbeis, N., Bernhardt, Boris C., & Singer, T. (2012). Impulse Control and Underlying Functions of the Left DLPFC Mediate Age-Related and Age-Independent Individual Differences in Strategic Social Behavior. *Neuron, 73*(5), 1040-1051. doi: 10.1016/j.neuron.2011.12.027

Steinbeis, N., & Crone, E. A. (2016). The link between cognitive control and decision-making across child and adolescent development. *Current Opinion in Behavioral Sciences, 10*, 28-32. doi: 10.1016/j.cobeha.2016.04.009

Steinbeis, N., & Over, H. (2017). Enhancing behavioral control increases sharing in children. *Journal of Experimental Child Psychology, 159*, 310-318. doi: 10.1016/j.jecp.2017.02.001

Steinbeis, N., Singer, T., Fehr, E., & Haushofer, J. (2014). Development of Behavioral Control and Associated vmPFC–DLPFC Connectivity Explains Children's Increased Resistance to Temptation in Intertemporal Choice. *Cerebral Cortex, 26*(1), 32-42. doi: 10.1093/cercor/bhu167

T

Tabachnick, B., & Fidell, S. (2013). *Using Multivariate Statistics, 6th Edition*. Boston: Pearson.

Tamnes, C. K., Herting, M. M., Goddings, A. L., Meuwese, R., Blakemore, S. J., Dahl, R. E., . . . Mills, X. L. (2017). Development of the Cerebral Cortex across Adolescence: A Multisample Study of Inter-Related Longitudinal Changes in Cortical Volume, Surface Area, and Thickness. *Journal of Neuroscience, 37*(12), 3402-3412. doi: 10.1523/jneurosci.3302-16.2017

Team, R. C. (2015). *R: A language and environment for statistical computing*. Vienna, Austria: R Foundation for Statistical Computing.

Teeuw, J., Brouwer, R. M., Koenis, M. M. G., Swagerman, S. C., Boomsma, D. I., & Hulshoff Pol, H. E. (2018). Genetic Influences on the Development of Cerebral Cortical Thickness During Childhood and Adolescence in a Dutch Longitudinal Twin Sample: The Brainscale Study. *Cerebral Cortex*. doi: 10.1093/cercor/bhy005

Telzer, E. H. (2016). Dopaminergic reward sensitivity can promote adolescent health: A new perspective on the mechanism of ventral striatum activation. *Developmental Cognitive Neuroscience, 17*, 57-67. doi: 10.1016/j.dcn.2015.10.010

Thijssen, S., Wildeboer, A., Muetzel, R. L., Bakermans-Kranenburg, M. J., El Marroun, H., Hofman, A., . . . White, T. (2015). Cortical thickness and prosocial behavior in school-age children: A population-based MRI study. *Social Neuroscience, 10*(6), 571-582. doi: 10.1080/17470919.2015.1014063

Tousignant, B., Eugène, F., Sirois, K., & Jackson, P. L. (2017). Difference in neural response to social exclusion observation and subsequent altruism between adolescents and adults. *Neuropsychologia, Epub ahead of print*.

Treur, J. L., Boomsma, D. I., Ligthart, L., Willemsen, G., & Vink, J. M. (2016). Heritability of high sugar consumption through drinks and the genetic correlation with substance use. *American Journal of Clinical Nutrition, 104*(4), 1144-1150. doi: doi:10.3945/ajcn.115.127324

Tzourio-Mazoyer, N., Landeau, B., Papathanassiou, D., Crivello, F., Etard, O., Delcroix, N., . . . Joliot, M. (2002). Automated anatomical labeling of activations in SPM using a macroscopic anatomical parcellation of the MNI MRI single-subject brain. *Neuroimage, 15*(1), 273-289. doi: 10.1006/nimg.2001.0978

V

van de Groep, S., Meuwese, R., Zanolie, K., Güroğlu, B., & Crone, E. A. (2018). Developmental Changes and Individual Differences in Trust and Reciprocity in Adolescence. *Journal of Research on Adolescence, 0*(0). doi: 10.1111/jora.12459

van den Bos, W., van Dijk, E., Westenberg, M., Rombouts, S. A. R. B., & Crone, E. A. (2011). Changing Brains, Changing Perspectives:The Neurocognitive Development of Reciprocity. *Psychological Science, 22*(1), 60-70. doi: 10.1177/0956797610391102

van den Bulk, B. G., Koolschijn, P. C., Meens, P. H., van Lang, N. D., van der Wee, N. J., Rombouts, S. A., . . . Crone, E. A. (2013). How stable is activation in the amygdala and prefrontal cortex in adolescence? A study of emotional face processing across three measurements. *Dev Cogn Neurosci, 4*, 65-76. doi: 10.1016/j.dcn.2012.09.005

van den Heuvel, M. P., van Soelen, I. L. C., Stam, C. J., Kahn, R. S., Boomsma, D. I., & Hulshoff Pol, H. E. (2013). Genetic control of functional brain network efficiency in children. *European Neuropsychopharmacology, 23*(1), 19-23. doi: https://doi.org/10.1016/j.euroneuro.2012.06.007

van der Meulen, M., Steinbeis, N., Achterberg, A., Bilo, E., van den Bulk, B. G., van IJzendoorn, M. H., & Crone, E. A. (2017). The neural correlates of dealing with social exclusion in childhood. *Neuropsychologia, 103*, 29-37. doi: 10.1016/j.neuropsychologia.2017.07.008

van der Meulen, M., Steinbeis, N., Achterberg, M., van Ijzendoorn, M. H., & Crone, E. A. (2018). Heritability of neural reactions to social exclusion and prosocial compensation in middle childhood. *Developmental Cognitive Neuroscience, 34*, 42-52. doi: 10.1016/j.dcn.2018.05.010

van der Meulen, M., van IJzendoorn, M. H., & Crone, E. A. (2016). Neural Correlates of Prosocial Behavior: Compensating Social Exclusion in a Four-Player Cyberball Game. *PLOS ONE, 11*(7), e0159045. doi: doi:10.1371/journal.pone.0159045

van Harmelen, A.-L., Hauber, K., Gunther Moor, B., Spinhoven, P., Boon, A. E., Crone, E. A., & Elzinga, B. M. (2014). Childhood Emotional Maltreatment Severity Is Associated with Dorsal Medial Prefrontal Cortex Responsivity to Social Exclusion in Young Adults. *PLOS ONE, 9*(1), e85107. doi: 10.1371/journal.pone.0085107

van Hoorn, J., Fuligni, A. J., Crone, E. A., & Galvan, A. (2016). Peer influence effects on risk-taking and prosocial decision-making in adolescence: insights from neuroimaging studies. *Current Opinion in Behavioral Sciences, 10*, 59-64. doi: 10.1016/j.cobeha.2016.05.007

van Hoorn, J., McCormick, E. M., Rogers, C. R., Ivory, S. L., & Telzer, E. H. (2018). Differential effects of parent and peer presence on neural correlates of risk taking in adolescence. *Social Cognitive and Affective Neuroscience, 13*(9), 945-955. doi: 10.1093/scan/nsy071

Van Hoorn, J., Van Dijk, E., Guroglu, B., & Crone, E. A. (2016). Neural correlates of prosocial peer influence on public goods game donations during adolescence. *Social Cognitive and Affective Neuroscience, 11*(6), 923-933. doi: 10.1093/scan/nsw013

van Hoorn, J., van Dijk, E., Meuwese, R., Rieffe, C., & Crone, E. A. (2016). Peer Influence on Prosocial Behavior in Adolescence. *Journal of Research on Adolescence, 26*(1), 90-100. doi: 10.1111/jora.12173

van Ijzendoorn, M. H., Bakermans-Kranenburg, M. J., Pannebakker, F., & Out, D. (2010). In defence of situational morality: genetic, dispositional and situational determinants of children's donating to charity. *Journal of Moral Education, 39*(1), 1-20. doi: 10.1080/03057240903528535

Van Overwalle, F., & Baetens, K. (2009). Understanding others' actions and goals by mirror and mentalizing systems: A meta-analysis. *Neuroimage, 48*(3), 564-584. doi: 10.1016/j.neuroimage.2009.06.009

van Schie, C. C., van Harmelen, A.-L., Hauber, K., Boon, A., Crone, E. A., & Elzinga, B. M. (2017). The neural correlates of childhood maltreatment and the ability to understand mental states of others. *European Journal of Psychotraumatology, 8*(1), 1272788. doi: 10.1080/20008198.2016.1272788

van Soelen, I. L. C., Brouwer, R. M., van Baal, G. C. M., Schnack, H. G., Peper, J. S., Collins, D. L., . . . Pol, H. E. H. (2012). Genetic influences on thinning of the cerebral cortex during development. *Neuroimage, 59*(4), 3871-3880. doi: 10.1016/j.neuroimage.2011.11.044

Véronneau, M.-H., Vitaro, F., Brendgen, M., Dishion, T. J., & Tremblay, R. E. (2010). Transactional analysis of the reciprocal links between peer experiences and academic achievement from middle childhood to early adolescence. *Developmental Psychology, 46*(4), 773-790. doi: 10.1037/a0019816

Verweij, K. J., Mosing, M. A., Zietsch, B. P., & Medland, S. E. (2012). Estimating heritability from twin studies. *Methods in Molecular Biology, 850*, 151-170. doi: doi:10.1007/978-1-61779-555-8_9

Vijayakumar, N., Allen, N. B., Youssef, G., Dennison, M., Yucel, M., Simmons, J. G., & Whittle, S. (2016). Brain Development During Adolescence: A Mixed-Longitudinal Investigation of Cortical Thickness, Surface Area, and Volume. *Human Brain Mapping, 37*(6), 2027-2038. doi: 10.1002/hbm.23154

Vijayakumar, N., Cheng, T. W., & Pfeifer, J. H. (2017). Neural correlates of social exclusion across ages: A coordinate-based meta-analysis of functional MRI studies. *Neuroimage, 153*, 359-368. doi: 10.1016/j.neuroimage.2017.02.050

Vrijhof, C. I., van den Bulk, B. G., Overgaauw, S., Lelieveld, G.-J., Engels, R. C. M. E., & Van IJzendoorn, M. H. (2016). The Prosocial Cyberball Game: Compensating for social exclusion and its associations with empathic concern and bullying in adolescents. *Journal of Adolescence, 52*, 27-36. doi: 10.1016/j.adolescence.2016.07.005

W

Warneken, F., & Tomasello, M. (2006). Altruistic helping in human infants and young chimpanzees. *Science, 311*(5765), 1301-1303. doi: 10.1126/science.1121448

Waytz, A., Zaki, J., & Mitchell, J. P. (2012). Response of Dorsomedial Prefrontal Cortex Predicts Altruistic Behavior. *Journal of Neuroscience, 32*(22), 7646-7650. doi: 10.1523/jneurosci.6193-11.2012

Wechsler, D. (1991). *The Wechsler intelligence scale for children - third edition*. San Antonio, TX: The Psychological Corporation.

Wentzel, K. R. (1993). Does being good make the grade? Social behavior and academic competence in middle school. *Journal of Educational Psychology, 85*(2), 357-364. doi: 10.1037/0022-0663.85.2.357

Wesselmann, E. D., Bagg, D., & Williams, K. D. (2009). "I Feel Your Pain": The effects of observing ostracism on the ostracism detection system. *Journal of Experimental Social Psychology, 45*(6), 1308-1311. doi: 10.1016/j.jesp.2009.08.003

Wierenga, L. M., Langen, M., Oranje, B., & Durston, S. (2014). Unique developmental trajectories of cortical thickness and surface area. *Neuroimage, 87*, 120-126. doi: 10.1016/j.neuroimage.2013.11.010

Wildeboer, A., Thijssen, S., Muetzel, R. L., Bakermans-Kranenburg, M. J., Tiemeier, H., White, T., & van Ijzendoorn, M. H. (2018). Neuroanatomical correlates of donating behavior in middle childhood. *Social Neuroscience, 13*(5), 541-552. doi: 10.1080/17470919.2017.1361864

Will, G.-J., Crone, E. A., van Lier, P. A. C., & Güroğlu, B. (2016). Neural correlates of retaliatory and prosocial reactions to social exclusion: Associations with chronic peer rejection. *Developmental Cognitive Neuroscience, 19*, 288-297. doi: http://dx.doi.org/10.1016/j.dcn.2016.05.004

Will, G.-J., & Güroğlu, B. (2016). A neurocognitive perspective on the development of social decision-making *Neuroeconomics.* (pp. 293-309). New York, NY, US: Springer-Verlag Publishing.

Will, G. J., Crone, E. A., & Guroglu, B. (2015). Acting on social exclusion: neural correlates of punishment and forgiveness of excluders. *Social Cognitive and Affective Neuroscience, 10*(2), 209-218. doi: 10.1093/scan/nsu045

Will, G. J., Crone, E. A., van Lier, P. A. C., & Güroğlu, B. (2016). Neural correlates of retaliatory and prosocial reactions to social exclusion: Associations with chronic peer rejection. *Developmental Cognitive Neuroscience, 19*, 288-297. doi: 10.1016/j.dcn.2016.05.004

Will, G. J., van den Bos, W., Crone, E. A., & Guroglu, B. (2013). Acting on observed social exclusion: Developmental perspectives on punishment of excluders and compensation of victims. *Developmental Psychology, 49*(12), 2236-2244. doi: 10.1037/a0032299

Will, G. J., van den Bos, W., Crone, E. A., & Güroğlu, B. (2013). Acting on observed social exclusion: Developmental perspectives on punishment of excluders and compensation of victims. *Developmental Psychology, 49*(12), 2236-2244. doi: 10.1037/a0032299

Will, G. J., van Lier, P. A. C., Crone, E. A., & Güroğlu, B. (2016). Chronic childhood peer rejection is associated with heightened neural responses to social exclusion during adolescence. *Journal of Abnormal Child Psychology, 44*, 43-55.

Williams, K. D., Cheung, C. K. T., & Choi, W. (2000). Cyberostracism: Effects of being ignored over the Internet. *Journal of Personality and Social Psychology, 79*(5), 748-762. doi: 10.1037/0022-3514.79.5.748

Winkler, A. M., Kochunov, P., Blangero, J., Almasy, L., Zilles, K., Fox, P. T., . . . Glahn, D. C. (2010). Cortical thickness or grey matter volume? The importance of selecting the phenotype for imaging genetics studies. *Neuroimage, 53*(3), 1135-1146. doi: 10.1016/j.neuroimage.2009.12.028

Woo, C. W., Krishnan, A., & Wager, T. D. (2014). Cluster-extent based thresholding in fMRI analyses: Pitfalls and recommendations. *Neuroimage, 91*, 412-419. doi: 10.1016/j.neuroimage.2013.12.058

Z

Zadro, L., Williams, K. D., & Richardson, R. (2004). How low can you go? Ostracism by a computer is sufficient to lower self-reported levels of belonging, control, self-esteem, and meaningful existence. *Journal of Experimental Social Psychology, 40*(4), 560-567. doi: 10.1016/j.jesp.2003.11.006

APPENDICES

List of Publications

Crone, E.A., Achterberg, A., Dobbelaar, S., Euser, S., van den Bulk, B.G., **van der Meulen, M.**, van Drunen, L., Wierenga, L.M., Bakermans-Kranenburg, M.J., & van IJzendoorn, M.H. Neural and behavioral signatures of social evaluation development in childhood and adolescence: The Leiden Consortium on Individual Development (L-CID). (*Manuscript in preparation, 2019).*

van der Meulen, M., Wierenga, L.M., Achterberg, M., Drenth, N., van IJzendoorn, M.H., & Crone, E.A. Genetic and environmental influences on structure of the social brain in childhood. (*Manuscript under revision, 2019).*

Achterberg, M. & **van der Meulen, M.** Genetic and environmental influences on MRI scan quantity and quality. (2019). *Developmental Cognitive Neuroscience, 38,* 100667.

Klapwijk, E. T., van de Kamp, F., **van der Meulen, M.**, Peters, S., & Wierenga, L. M. (2019). Qoala-T: A supervised-learning tool for quality control of FreeSurfer segmented MRI data. *Neuroimage, 189*, 116-129.

van der Meulen, M., Steinbeis, N., Achterberg, M., van IJzendoorn, M. H., & Crone, E. A. (2018). Heritability of neural reactions to social exclusion and prosocial compensation in middle childhood. *Developmental Cognitive Neuroscience, 34*, 42-52.

Achterberg, M., Bakermans-Kranenburg, M. J., Van IJzendoorn, M.H., **van der Meulen, M.**, Tottenham, N., & Crone, E. A. (2018). Distinctive heritability patterns of subcortical-prefrontal cortex resting state connectivity in childhood: A twin study. *Neuroimage, 175,* 138-149.

Achterberg, M., van Duijvenvoorde, A. C. K., **van der Meulen, M.,** Bakermans-Kranenburg,

M. J., & Crone, E. A. (2018). Heritability of aggression following social evaluation in middle childhood: an fMRI study. *Human Brain Mapping, 00*, 1-14.

van der Meulen, M., Steinbeis, N., Achterberg, M., Bilo, E., van den Bulk, B. G., van IJzendoorn, M. H., & Crone, E. A. (2017). The neural correlates of dealing with social exclusion in childhood. *Neuropsychologia, 103*, 27-39.

van der Meulen, M., Veldhuis, J., Braams, B. R., Peters, S., Konijn, E. A., & Crone, E. A. (2017). Brain activation upon ideal-body media exposure and peer feedback in late adolescent girls. *Cognitive, Affective, & Behavioral Neuroscience, 17*(4), 712-723.

Achterberg, M., van Duijvenvoorde, A.C.K., **van der Meulen, M.**, Euser, S., Bakermans-Kranenburg, M.J., & Crone, E.A. (2017). The neural and behavioral correlates of social evaluation in childhood. *Developmental Cognitive Neuroscience, 24,* 107-117.

Peters, S., **van der Meulen, M.**, Zanolie, K., & Crone, E. A. (2017). Predicting reading and mathematics from neural activity for feedback learning. *Developmental Psychology, 53*(1), 149-159.

van der Meulen, M., van IJzendoorn, M. H., & Crone, E. A. (2016). Neural correlates of prosocial behavior: compensating social exclusion in a four-player cyberball game. *PLOS ONE, 11*(7), e0159045.

APPENDICES

Curriculum Vitae

Mara van der Meulen was born on March 22nd in Zoetermeer, the Netherlands. After her graduation from high school (Erasmus College, Zoetermeer) in 2009, Mara obtained her Bachelor's degree in Psychology in 2012 and her Research Master's degree in Developmental Psychology in 2014 from Leiden University. After completing her studies, Mara worked as a research assistant in the Brain and Development Research Center to examine the effect of media-by-peer interactions on body image in young women. In January 2015 Mara started her PhD project in the Brain and Development Research Center at Leiden University, as a part of the Leiden Consortium on Individual Development. Under supervision of Prof. Dr. Eveline Crone she investigated neural processes associated with prosocial behavior and social exclusion in middle childhood. In January 2020 Mara will start working as a post-doctoral researcher at the Leiden Consortium on Individual Development, to investigate longitudinal trajectories of prosocial behavior from childhood into adolescence.