

Curriculum Vitae
Susan Michelle Rivera

Professional Address:

University of California, Davis
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Education

Ph.D., Developmental Psychology, University of California, Berkeley, CA, December, 1998.
BA, Psychology, Indiana University, Bloomington, IN, 1991.

Positions Held

2011-present Full Professor, Department of Psychology, UC Davis
2008-2011 Associate Professor, with tenure Department of Psychology, UC Davis
2001-2008 Assistant Professor, Department of Psychology, University of California at Davis
1999-2001 Postdoctoral Research Fellow, Stanford Psychiatry Neuroimaging Lab, working with Professor Allan Reiss
1998-1999 Postdoctoral Research Fellow, Center for Developmental Cognitive Neuroscience, working with Dr. Adele Diamond

Honors, Fellowships and Awards

2015 UC Davis Diversity and Principles of Community Faculty Citation Award
2014 Marie Curie Scholar, Birkbeck, University of London
2010 Recipient of UC Davis School of Medicine Dean's Award for Excellence in Collaboration
2010-2012 M.I.N.D. Institute Pilot Research Grant Award Recipient
2005-2006 M.I.N.D. Institute Pilot Research Grant Award Recipient
2005-2006 Grant to Promote Extra-Mural Funding, U.C. Davis
2003-2004 Faculty Research Grant Recipient, U.C. Davis
2003-2004 M.I.N.D. Institute Faculty Pilot Grant Award Recipient
2001-2002 IGA Junior Faculty Research Award
2000-2001 National Institute of Health Postdoctoral Training Fellowship
1998-1999 National Institute of Health Postdoctoral Research Fellowship
1998 Outstanding Graduate Student Instructor Award, U.C. Berkeley
1997-1998 American Psychological Association Dissertation Research Award
1996-1997 Graduate Division Dissertation Award Fellowship, U.C., Berkeley
1995-1996 National Research Service Award, National Institute of Mental Health
1992-1995 National Science Foundation Graduate Research Fellowship

Professional Memberships

Cognitive Neuroscience Society	Jean Piaget Society
Cognitive Development Society	Society for Neuroscience
International Society on Infant Studies	Society for Research in Child Development

Panels and Advisory Positions

Associate Editor: Frontiers in Developmental Psychology
Editorial Board Member: Human Development

Journal of Neurodevelopmental Disorders

Ad-hoc journal reviewer (*partial list*):

Archives of General Psychiatry	Developmental & Behavioral Pediatrics
Autism Research	Development and Psychopathology
Biological Psychiatry	Developmental Science
Brain Research	Frontiers in Human Neuroscience
Child Development	Infancy
Cognitive Development	Journal of Neuroscience
Child Psychology and Psychiatry	Neuroimage
Developmental Psychology	

Board of Directors:

Jean Piaget Society (2011-2014)

Grant Panel Reviewer:

NIH Study Section Member (CP), 2013-present.

National Science Foundation, Cognitive Neuroscience program panel reviewer:
2003, 2009, 2010, 2011

Ongoing Ad-hoc grant reviewer for National Science Foundation

Ongoing Ad-hoc grant reviewer for Autism Speaks

Ongoing Ad-hoc reviewer for National Institutes of Health (NIMH, NICHD)

Publications

Greiss Hess, L., Fitzpatrick, S.E., Nguyen, D.V., Chen, Y., Gaul, K., Schneider, A., Chitwood, K.L., Eldeeb, M.A.A.A., Polussa, J., Hessel, D., **Rivera, S.M.** and Hagerman, R.J. (in press). A randomized, double-blind, placebo-controlled trial of low-dose sertraline in young children with fragile X syndrome. *Journal of Developmental and Behavioral Pediatrics*.

Gossett, A., Sansone, S., Schneider, A., Johnston, C., Hagerman, R.J., Tassone, F., **Rivera, S.M.**, Seritan, A., and Hessel, D. (in press). Psychiatric disorders among women with the fragile X premutation without children affected by fragile X syndrome. *American Journal of Medical Genetics Part B: Neuropsychiatric Genetics*.

Wang, J.Y., Ngo, M.N., Hessel, D., Hagerman, R.J., and **Rivera, S.M.** (in press). Robust machine learning-based correction on automatic segmentation of the cerebellum and brainstem. *PLOS One*.

Schneider, A., Johnston, C.K., Tassone, F., Sansone, S., Hagerman, R., **Rivera, S.M.**, Hessel, D. (2016). Broad autism spectrum and obsessive compulsive symptoms in adults with the fragile X premutation. *The Clinical Neuropsychologist*, doi: 10.1080/13854046.2016.1189536.

Manera, V., Iani, F., Bourgeois, J., Haman, M., Okruszek, L., **Rivera, S.M.**, Becchio, C. (2015). The multilingual CID-5: A new tool to study the perception of communicative interactions in different languages. *Frontiers in Psychology*, 6:1724. doi: 10.3389/fpsyg.2015.01724

Barry, R.A., Graf-Estes, K., and **Rivera, S.M.** (2015). Domain general learning: Infants use social and non-social cues when learning object statistics. *Frontiers in Psychology*, 6(551). doi: 10.3389/fpsyg.2015.00551

Pokorny, J., Hatt, N.V., Colombi, C., Vivanti, G., Rogers, S.J. and **Rivera, S.M.** (2015). The action observation system when observing hand actions in autism and typical development. *Autism Research*, 8(3). doi: 10.1002/aur.1445

Wong, L.M., Tassone, F., **Rivera, S.M.**, Simon, T.J. (2015). Temporal dynamics of attentional selection in adult male carriers of the fragile X premutation allele and adult controls. *Frontiers in Human Neuroscience*, 9(37). doi: 10.3389/fnhum.2015.00037

Wong, L.M., Goodrich-Hunsaker, N.J., McLennan, Y., Tassone, F., **Rivera, S.M.** and Simon, T.J. (2014). A cross-sectional analysis of orienting of visuospatial attention in child and adult carriers of the fragile X premutation. *Journal of Neurodevelopmental Disorders*, 6(45). doi: 10.1186/1866-1955-6-45

Gallego, P., Burris, J. and **Rivera, S.M.** (2014). Visual motion processing deficits in infants with the fragile X premutation. *Journal of Neurodevelopmental Disorders*, 6(1):29. doi: 10.1186/1866-1955-6-29

Grigsby, J., Cornish, K., Hocking, D., Kraan, C., Olichney, J.M., **Rivera, S.M.**, Schneider, A., Sherman, S., Wang, J.Y., and Yang, J.C. (2014). The cognitive neuropsychological phenotype of carriers of the FMR1 premutation. *Journal of Neurodevelopmental Disorders*, 6(1):28. doi: 10.1186/1866-1955-6-28

Wong, L., Goodrich-Hunsaker, N., McLennan, Y., Tassone, F., Zhang, M., **Rivera, S.M.** and Simon, T.J. (2014). Eye Movements Reveal Impaired Inhibitory Control in Adult Male Fragile X Premutation Carriers Asymptomatic for FXTAS. *Neuropsychology*. 28(4): 571-84. doi: 10.1037/neu0000066. PMID: 24773414.

Leow, A., Harvey, D., Goodrich-Hunsaker, N., GadElkarim, J., Kumar, A., Zhan, L., **Rivera, S.M.**, and Simon, T. (2014). Altered structural brain connectome in young adult fragile X premutation carriers. *Human Brain Mapping*. 35(9):4518-30. doi: 10.1002/hbm.22491.

Kim, S.Y., Tassone, F., Simon, T.J. and **Rivera, S.M.** (2014). Altered neural activity in the 'when' pathway during temporal processing in fragile X premutation carriers. *Behavioral Brain Research*. 261:240-8. doi: 10.1016/j.bbr.2013.12.044.

Kim, S.Y., Hashimoto, R.I., Tassone, F., Simon, T.J. and **Rivera S.M.** (2013). Altered neural activity of magnitude estimation processing in adults with the fragile X premutation. *Journal of Psychiatric Research*, 47(12) 1909-1916. doi:10.1016/j.jpsychires.2013.08.014.

Schneider, A., Seritan, A., Tassone, F. **Rivera, S.M.**, Hagerman, R. and Hessler, D. (2013). Psychiatric features in high-functioning adult brothers with fragile X spectrum disorders. *The Primary Care Companion*, 15(2); doi:10.4088/PCC.12l01492.

Wang, J.Y., Hessler, D., Schneider, A., Tassone, F., Hagerman, R.J and **Rivera, S.M.** (2013). Fragile X-associated tremor/ataxia syndrome: Influence of the FMR1 gene on motor fiber tracts in males with normal and premutation alleles. *JAMA Neurology*, 70(8), 1022-1029. doi:10.1001/jamaneurol.2013.2934.

Wang, J.Y., Hagerman, R. & **Rivera, S.M.** (2013) A multimodal imaging analysis of subcortical gray matter in fragile X premutation carriers. *Movement Disorders*, 28(9), 1278-1284. doi:10.1002/mds.25473.

Owen, E.R., Baumgartner, H.A., and **Rivera, S.M.** (2013). Using infrared eye-tracking to explore ordinal numerical processing in toddlers with fragile X syndrome. *Journal of Neurodevelopmental Disorders*, 5(1) doi:10.1186/1866-1955-5-1.

Leigh, M.J., Nguyen, D.V., Mu, Y., Winarni, T.I., Schneider, A., Chechi, T., Polussa, J., Doucet, P., Tassone, F., **Rivera, S.M.**, Hessler, D., Hagerman, R.J. (2013). A randomized double-blind, placebo-controlled trial of minocycline in children and adolescents with fragile X syndrome. *Journal of Developmental and Behavioral Pediatrics*, 34(3), 147-155. doi:10.1097/DBP.0b013e318287cd17.

Wong, L., Goodrich-Hunsaker, N., McLennan, Y., Tassone, F., Harvey, D., **Rivera, S.M.** and Simon, T.J. (2012). Young adult male carriers of the Fragile X premutation (fXPCs) exhibit genetically modulated impairments in visuospatial tasks controlled for psychomotor speed. *Journal of Neurodevelopmental Disorders*, 4(1):26, doi:10.1186/1866-1955-4-26.

Kim, S.Y., Burris, J., Bassal, F., Koldewyn, K., Chattarji, S., Tassone, F., Hessler, D. and **Rivera, S.M.** (2012). Fear-specific amygdala function in children and adolescents on the fragile X spectrum: A dosage response of the FMR1 gene. *Cerebral Cortex*, 11, doi:10.1093/cercor/bhs341.

Wang, J.M., Koldewyn, K., Hashimoto, R., Schneider, A., Le, L., Tassone, F., Cheung, K., Hagerman, P., Hessler, D. and **Rivera, S.M.** (2012). Male carriers of the FMR1 premutation show altered hippocampal-prefrontal function during memory encoding. *Frontiers in Human Neuroscience*, 6, doi:10.3389/fnhum.2012.00297.

Wang, J.Y., Hessler, D., Iwahashi, C., Cheung, K., Schneider, A., Hagerman, R.J., Hagerman, P.J. and **Rivera, S.M.** (2012). Influence of the fragile X mental retardation (FMR1) gene on the brain and working memory in men with normal FMR1 alleles. *Neuroimage*, 65, 288-298. doi:10.1016/j.neuroimage.2012.09.075.

Indah Winarni, T., Chonchaiya, W., Adams, E., Au, J., Mu, Y., **Rivera, S.M.**, Nguyen, D.V. and Hagerman, R.J. (2012). Sertraline may improve language developmental trajectory in young children with fragile X syndrome: A retrospective chart review. *Autism Research and Treatment*, 2012, 1-8. doi:10.1155/2012/104317.

Wang, J.Y., Hessler, D.H., Hagerman, R.J., Tassone, F. and **Rivera, S.M.** (2012). Age-dependent structural

connectivity effects in fragile X premutation. *Archives of Neurology*, 69(4), 482-489. doi:10.1001/archneurol.2011.2023.

Farzin, F., **Rivera, S.M.** & Whitney, D. (2011). Resolution of spatial and temporal visual attention in infants with fragile X syndrome. *Brain*, 134(11), 3355–3368. doi:10.1093/brain/awr249.

Hessl, D., Wang, J.M., Schneider, A., Koldewyn, K., Le, L. Iwahashi, C., Tassone, F., Hagerman, P.J. and **Rivera, S.M.** (2011). Decreased fragile X mental retardation protein expression underlies amygdala dysfunction in carriers of the fragile X premutation. *Biological Psychiatry*, 70(9), 859–865. doi:10.1016/j.biopsych.2011.05.033.

Selmecky, D., Koldewyn, K., Wang, J.M., Lee, A., Harvey, D., Hessl, D.R., Tassone, F., Adams, P., Hagerman, R.J., Hagerman, P.J. and **Rivera, S.M.** (2011). Investigation of amygdala volume in men with the fragile X premutation. *Brain Imaging and Behavior*, 5(4), 285-294. doi:10.1007/s11682-011-9132-5.

Goodrich-Hunsaker, N.J., Wong, L.M., McLennan, Y., Tassone, F., Harvey, D., **Rivera, S.M.** and Simon, T.J. (2011). Adult female fragile X premutation carriers exhibit age- and CGG repeat length-related impairments on an attentionally-based enumeration task. *Frontiers in Human Neuroscience*, 5, 63. doi:10.3389/fnhum.2011.00063.

Farzin, F., **Rivera, S.M.**, and Whitney, D. (2011). Time crawls: The temporal resolution of infants' visual attention. *Psychological Science*, 22(8), 1004-1010. doi:10.1177/0956797611413291.

Goodrich-Hunsaker, N.J., Wong, L.M., McLennan, Y., Tassone, F., Harvey, D., **Rivera, S.M.** and Simon, T.J. (2011). Enhanced manual and oral motor reaction time in young adult female fragile X premutation carriers. *Journal of the International Neuropsychological Society*, 21, 1-5. doi:/10.1017/S1355617711000634.

Koldewyn, K., Whitney, D., and **Rivera, S.M.** (2011). Neural correlates of coherent and biological motion perception in autism. *Developmental Science*, 14(5), 1075-1088. doi:10.1093/brain/awr249.

Goodrich-Hunsaker, N.J., Wong, L.M., McLennan, Y., Srivastava, S., Tassone, F., Harvey, D., **Rivera, S.M.**, and Simon, T.J. (2011). Young adult female fragile X premutation carriers show age- and genetically-modulated cognitive impairments. *Brain and Cognition*, 75(3), 255-260. doi:10.1016/j.bandc.2011.01.001.

Hashimoto, R., Backer, K.C., Tassone, F., Hagerman, R.J. and **Rivera, S.M.** (2011). An fMRI study of prefrontal activity during the performance of a working memory task in premutation carriers of the fragile X mental retardation 1 gene with and without fragile X-associated tremor/ataxia syndrome (FXTAS). *Journal of Psychiatric Research*, 45(1), 36-43. doi:10.1016/j.jpsychires.2010.04.030.

Hashimoto, R., Srivastava S., Tassone, F. Hagerman, R.J. and **Rivera, S.M.** (2011). Diffusion tensor imaging in male premutation carriers of the fragile X mental retardation gene. *Movement Disorders*, 26(7), 1329-1336. doi:10.1002/mds.23646.

Hashimoto, R., Javan, A.K., Tassone, F., Hagerman, R.J. and **Rivera, S.M.** (2011). A voxel-based morphometry study of grey matter loss in fragile X-associated tremor/ataxia syndrome. *Brain*, 134(3), 863-878. doi:10.1093/brain/awq368.

Farzin, F., **Rivera, S.M.**, and Whitney, D.W. (2010). Spatial resolution of conscious visual perception in infants. *Psychological Science*, 21(10), 1502-1509. doi:10.1177/0956797610382787.

Utari, A. Chonchaiya, W., **Rivera, S.M.**, Schneider, A., Hagerman, R.J., Faradz, S.M, Ethnell, I.M., and Nguyen, D.V. (2010). Side effects of minocycline treatment in patients with fragile X syndrome and exploration of outcome measures. *American Journal on Intellectual and Developmental Disabilities*, 115 (5), 433-443. doi:10.1352/1944-7558-115.5.433.

Rivera, S.M., Stebbins, G.T and Grigsby, J. (2010). Radiological findings in FXTAS. In F. Tassone and E. Berry-Kravis (Eds), *The Fragile X Tremor Ataxia Syndrome*. New York: Springer.

Farzin, F. and **Rivera, S.M.** (2010). Dynamic object representations in infants with and without fragile X syndrome. *Frontiers in Human Neuroscience*, 2, 4-12. doi:10.3389/neuro.09.012.2010.

Adams, P.E., Adams, J.S., Nguyen, D.V., Hessl, D., Brunberg, J.A., Tassone, F., Zhang, W., Koldewyn, K., **Rivera, S.M.**, Grigsby, J., Zhang, L., DeCarli, C., Hagerman, P.J., and Hagerman, R.J. (2010). Psychological symptoms correlate with reduced hippocampal volume in fragile X premutation carriers. *American Journal of Medical Genetics*, 153B(3), 775–785. doi:10.1002/ajmg.b.31046.

- Koldewyn, K., Whitney, D. and **Rivera, S.M.** (2009). The psychophysics of visual motion and global form processing in autism. *Brain*, *133*(2), 599–610. doi:10.1093/brain/awp272.
- Farzin, F., Charles, E.C., and **Rivera, S.M.** (2009). Development of multimodal processing in infancy. *Infancy*, *14*(5), 563-578. doi:10.1080/15250000903144207.
- Charles, E.P., and **Rivera, S.M.** (2009). Object permanence and method of disappearance: Looking measures further contradict reaching measures. *Developmental Science*, *12*(6), 991-1006. doi:10.1111/j.1467-7687.2009.00844.x.
- Losin, E.A., **Rivera, S.M.**, O’Hare, E.D., Sowell, E.R., and Pinter, J.D. (2009). Abnormal fMRI activation pattern during story listening in Down syndrome. *American Journal on Intellectual and Developmental Disabilities*, *114*(5), 369–380. doi:10.1352/1944-7558-114.5.369.
- Farzin, F., **Rivera, S.M.**, Whitney, D. (2009). Holistic crowding of Mooney faces. *Journal of Vision*, *9*(6), 1-15. doi: 10.1167/9.6.18.
- Farzin, F., **Rivera, S.M.**, and Hessel, D.L. (2009). Brief report: Visual processing of faces in individuals with fragile X syndrome: An eye tracking study. *Journal of Autism and Developmental Disorders*, *39*(6), 946-952. doi:10.1007/s10803-009-0744-1.
- Bourgeois, J.A., Coffey, S.M., **Rivera, S.M.**, Hessel, D., Gane, L.W., Tassone, F., Greco, C., Finucane, B., Nelson, L., Berry-Kravis, E., Grigsby, J., Hagerman, P.J., and Hagerman, R.J. (2009). A review of fragile X premutation disorders: expanding the psychiatric perspective. *Journal of Clinical Psychiatry*, *70*(6), 852-862. doi:10.4088/JCP.08m04476.
- Corbett, B.A., Carmean, V., Ravizza, S., Wendelken, C., Henry, M.L., Carter, C. and **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. doi:10.1016/j.psychres.2008.08.005.
- Koldewyn, K., Hessel, D., Adams, J., Tassone, F., Hagerman, P.J., Hagerman, R.J., and **Rivera, S.M.** (2008). Reduced hippocampal activation during recall is associated with elevated FMR1 mRNA and psychiatric symptoms in men with the fragile X premutation. *Brain Imaging and Behavior*, *2*(2), 105-116. doi:10.1007/s11682-008-9020-9.
- Farzin, F., Whitney, D., Hagerman, R.J., and **Rivera, S.M.** (2008). Contrast detection in infants with fragile X syndrome. *Vision Research*, *48*(13), 1471-1478. doi:10.1016/j.visres.2008.03.019.
- Rivera, S.M.** & Reiss, A.L. (2008). From genes to brain to behavior: The case of fragile X Syndrome. In J. Rumsey & M. Ernst (Eds.), *Neuroimaging in Developmental Clinical Neuroscience*. Cambridge University Press.
- Hagerman, R.J., **Rivera, S.M.**, and Hagerman, P.J. (2008). The fragile X family of disorders: A model for autism and targeted treatments. *Current Pediatric Reviews*, *4*(1), 40-52. doi:10.2174/157339608783565770.
- Nordahl, C.W., Dierker, D., Mostafavi, I., Schumann, C.M., **Rivera, S.M.**, Amaral, D.G., and Van Essen, D.C. (2007). Cortical folding abnormalities in children with autism revealed by surface-based morphometry. *Journal of Neuroscience*, *27*(43), 11725-11735. doi:10.1523/JNEUROSCI.0777-07.2007.
- Adams, J.S., Adams, P.E., Nguyen, D., Brunberg, J.A., Tassone, F., Zhang, W., Koldewyn, K., **Rivera, S.M.**, Grigsby, J., Zhang, L., DeCarlie, C., Hagerman, P.J. and Hagerman, R.J. (2007). Volumetric brain changes in females with fragile X associated tremor/ataxia syndrome (FXTAS). *Neurology*, *69*(9), 851-859. doi:10.1212/01.wnl.0000269781.10417.7b.
- Simon, T.J., and **Rivera, S.M.** (2007). Neuroanatomical Approaches to the Study of Mathematical Ability and Disability. In D. B. Berch & M. M. M. Mazocco (Eds.), *Why is Math So Hard for Some Children? The Nature and Origins of Mathematical Learning Difficulties and Disabilities*. Baltimore, MD: Paul H. Brookes Publishing Co.
- Hessel, D., **Rivera, S.M.**, Koldewyn, K., Cordeiro, L., Adams, J., Tassone, F., Hagerman, P.J. and Hagerman, R.J. (2007). Amygdala dysfunction in men with the fragile X premutation. *Brain*, *130* (2), 404-416. doi:10.1093/brain/awl338.
- Rivera, S.M.** and Zawaydeh, A.N. (2007). Word comprehension facilitates object individuation in 10- and 11-month-old infants. *Brain Research*, *1146*, 146-157. doi:10.1016/j.brainres.2006.08.112.
- Cohen S., Masyn, K., Adams J., Hessel D., **Rivera, S.M.**, Tassone, F., Brunberg J., DeCarli, C., Zhang, L., Cogswell J., Loesch, D., Leehey, M., Grigsby, J., Hagerman P.J., Hagerman R. (2006). Molecular and imaging

correlates of the fragile X-associated tremor ataxia syndrome (FXTAS). *Neurology*, 67(8), 1426-1431. doi:10.1212/01.wnl.0000239837.57475.3a.

Rivera, S.M. and Koldewyn, K. (2005). Unraveling the mystery of motion perception impairments in autism: Some further considerations. *Current Psychology of Cognition*, 23(1-2), 189-197.

Williams, S.E., **Rivera, S.M.** and Reiss, A.L. (2005). Functional MRI of working memory in pediatric head injury. *Brain Injury*, 19(7), 549-553.

Rivera, S.M., Reiss, A.L, Eckert, M.A., and Menon, V. (2005). Developmental changes in mental arithmetic: Evidence for increased functional specialization of the left inferior parietal cortex. *Cerebral Cortex*, 15(5), 1779-1790. doi:10.1093/cercor/bhi055.

Hessl, D., **Rivera, S.M.**, and Reiss, A.L (2004.) The neuroanatomy and neuroendocrinology of fragile X syndrome. *Mental Retardation and Developmental Disabilities Research Reviews*, 10(1), 17-24. doi:10.1002/mrdd.20004.

Langer, J., **Rivera, S.M.**, Schlesinger, M., and Wakeley, A. (2002). Early Cognitive Development: Ontogeny and Phylogeny. In: Valsiner, J. & Connolly, K. (Eds.), *Handbook of Developmental Psychology*. London: Sage.

Rivera, S.M., Menon, V., White, C.D., Glaser, B., and Reiss, A.L. (2002). Functional brain activation during arithmetic processing in females with fragile X syndrome is related to FMR-1 protein expression. *Human Brain Mapping*, 16(4), 206-218. doi:10.1002/hbm.10048.

Menon, V., Mackenzie, K., **Rivera, S.M.**, & Reiss, A.L. (2002). Prefrontal cortex involvement in processing incorrect arithmetic equations: Evidence from event-related fMRI. *Human Brain Mapping*, 16(2), 119-130. doi:10.1002/hbm.10035.

Menon V., **Rivera S.M.**, White C.D., Eliez, S., Glover G.H., and Reiss A.L. (2000). Functional optimization of arithmetic processing in perfect performers. *Cognitive Brain Research*, 9(3), 343-345. doi:10.1016/S0926-6410(00)00010-0.

Menon V., **Rivera S.M.**, White C.D., Glover G.H., and Reiss A.L. (2000). Dissociating prefrontal and parietal activation during arithmetic processing. *Neuroimage*, 12(4), 357-365.

Wakeley, A., **Rivera, S.M.** & Langer, J. (2000). Can young infants add and subtract? *Child Development*, 71(6), 1525-1534.

Wakeley, A., **Rivera, S.M.**, and Langer, J. (2000). Not proved: Reply to Wynn. *Child Development*, 71(6), 1537-1539.

Rivera, S.M., Wakeley, A. & Langer, J. (1999). The drawbridge phenomenon: Representational reasoning or perceptual preference? *Developmental Psychology*, 35(2), 427-435. doi:10.1037/0012-1649.35.2.427.

Manuscripts under review

Pokorny, J., Hatt, N.V., Rogers, S.J., and **Rivera, S.M.** (2016). Comparing the neural responses of the action observation and mentalizing networks in adolescents with and without autism.

Gaines, A., Schneider, A., Johnston, C., Famula, J., Hagerman, R., Tassone, F., **Rivera, S.M.** and Hessl, D.R. (2016). Psychiatric Disorders Among Women with the Fragile X Premutation without Children Affected by Fragile X Syndrome.

Barry, R., Burris, J., Graf Estes, K., and **Rivera, S.M.** (2016). The Influence of Familiarity on Gaze Following and Learning.

Burris, J., Barry, R. and Rivera, S.M. (2016). An Eye Tracking Investigation of Attentional Biases Toward Affect in Young Children.

Wang, J.Y., Hessl, D., Hagerman, R.J., Simon, T.J., Tassone, F., Ferrer, E., and **Rivera, S.M.** (2016). Abnormal Trajectories in Cerebellum and Brainstem Volumes in Carriers of the Fragile X Premutation.

Halket, E.S., Wang, J.M., Tassone, F., Hessl, D.L. and Rivera, S.M. (2016). Atypical insular activation during social evaluation in female fragile X premutation carriers.

Invited Talks and Addresses

Rivera, S.M. Eye movements as window into brain development in typically and atypically developing children. Invited address at the International Congress of Infant Studies, New Orleans, LA, May 26-28, 2016.

Rivera, S.M. Gene-Brain Relationships in the fragile X Spectrum of Involvement. Invited talk at the Experimental Neuropsychology and Cognition Research Center, University of Montréal, January 22, 2016.

Rivera, S.M. Gene-Brain Relationships in the fragile X Spectrum of Involvement: Evidence From Infancy to Old Age. Invited talk at the Sackler Institute, NYU School of Medicine. March 6, 2014.

Rivera, S.M. The fragile X spectrum of involvement: Gene-brain interactions across the lifespan. Talk given at Birkbeck, University of London as **Marie Curie Visiting Scholar**. January 15, 2014.

Rivera, S.M. Gene-brain-behavior relationships in disorders affecting numerical cognition. Invited workshop (faculty) at the Summer Institute in Cognitive Neuroscience, U.C. Santa Barbara, July 6, 2011.

Rivera, S.M. Investigating gene-brain relationships across the lifespan in the fragile X spectrum of disorders. Invited talk at U.C. Berkeley, March 10, 2011.

Rivera, S.M. Alterations in a fronto-parietal circuit may underlie many of the observed cognitive deficits seen across the fragile X spectrum. Invited Talk at Brandeis University, January 20, 2011.

Rivera, S.M. An overview of the U.C. Davis M.I.N.D. institute and review of ongoing research studies in autism and fragile X Syndrome. Invited keynote address at the International Conference of Autism, Skive, Denmark, November 12-13, 2010.

Rivera, S.M. Early visual processing deficits in fragile X and autism. Invited talk at the Summer Institute on Neural Developmental Disorders, Sacramento, CA, August 6, 2010.

Rivera, S.M. Number processing in typical and atypical development. Invited talk at the Conference on Neurocognitive Development, Berkeley, CA, July 12-14, 2009.

Rivera, S.M. Neuroimaging of "spectrum disorders": Autism and fragile X syndrome. Invited Keynote address for the Imaging Research Center Fall Carnival, Davis, CA, Sept. 16, 2008.

Rivera, S.M. Neuroanatomical approaches to the study of math ability and disability. Invited talk at the Learning and the Brain Conference, San Francisco, CA, February 6-9, 2008.

Rivera, S.M. Eye tracking and baby studies: Investigations in fragile X syndrome. Invited symposium lecture at the 10th International Society for the Study of Behavioural Phenotypes Meeting, Sacramento, CA, October, 2007.

Rivera, S.M. The neural bases of quantitative reasoning: Insights from typical and atypical development. Invited talk at the American Educational Research Association Meeting, April 7-11, 2006.

Rivera, S.M. Functional Neuroarchitecture of the Autistic Brain. Invited talk at the Summer Institute on Neurodevelopmental Disorders, August 4-5, 2005

Rivera, S.M. The neural bases of quantitative reasoning, insights from typical and atypical development. Invited talk at the Annual American Educational Research Association Meeting, San Francisco, CA, April, 2006.

Rivera, S.M., David, N., Barcellos, T., Henry, M.L. and Hagerman, R.J. Effects of the fragile X-associated Tremor Ataxia Syndrome on cerebellar functioning: An fMRI study. Invited Symposium talk: 9th International Fragile X Conference, Washington, DC, June, 2004.

Rivera, S.M. Cerebellar dysfunction in older males with the fragile X premutation: An fMRI investigation. Invited symposium talk: 8th International Fragile X Conference, Chicago, IL, July 17-21, 2002.

Recent Conference Presentations

Barry, R.A., Burris, J.L., **Rivera, S.M.** (2016). An Eyetracking Investigation of Infants Use of Emotional Gaze Cues. Presented at the International Congress of Infant Studies, New Orleans, LA, May 26-28, 2016.

Barry, R.A., Graf-Estes, K., **Rivera, S.M.** (2016). Mechanisms of Selective Learning in Toddlers. Presented at the International Congress of Infant Studies, New Orleans, LA, May 26-28, 2016.

Burris, J.L, **Rivera, S.M.** (2016). An eyetracking investigation of attentional biases towards threatening and happy faces. Presented at the International Congress of Infant Studies, New Orleans, LA, May 26-28, 2016.

Burris, J.L., McGee, B., **Rivera, S.M.** (2015) The developmental trajectory of attentional biases to emotional male and female faces across the first two years of life. Presented at the Biennial Meeting of Society of Research in Child Development, Philadelphia, PA, March, 2015.

Gaul, K., Burris, J.L., Halket, E., **Rivera, S.M.** (2015) Strengths and weaknesses in visuospatial processing and its relationship to autism symptomology in young boys with fragile X syndrome. Poster presented at the Biennial Meeting of Society for Research in Child Development, Philadelphia, PA, March, 2015.

Rivera, S.M. (2014) The Effect Of Sertraline On Language Development In FXS Using A Passive-Viewing Eyetracking Task. Talk presented at the 14th International Fragile X Conference, Orange County, CA, July, 2014.

Sievers, E. & **Rivera, S.M.** (2014) Brain Activation To Social Evaluation Using An Implicit Trust Task In Fragile X Premutation Carriers. Talk presented at the 14th International Fragile X Conference, Orange County, CA, July, 2014.

Owen, E. & **Rivera, S.M.** (2014). Numerical Processing in FXS: An Attention-Shifting Analysis. Talk presented at the 14th International Fragile X Conference, Orange County, CA, July, 2014.

Rivera, S.M. (2014). Visual attention in infants and toddlers with fragile X: Eye-tracking evidence for “when pathway” disruption. Talk presented at the XIX Biennial International Conference on Infant Studies, Berlin, Germany, July, 2014.

Rivera, S.M. (2013) Evidence of a dose response of the FMR1 gene in parietal and limbic brain circuits of fragile X premutation carriers. Talk presented at the First International Conference on FMR1 Premutation: Basic Mechanisms and Clinical Involvement, Perugia, Italy, July 2013.

Rivera, S.M. (2013) Visual motion processing deficits in infants with the fragile X premutation. Talk presented at the First International Conference on FMR1 Premutation: Basic Mechanisms and Clinical Involvement, Perugia, Italy, July 2013.

I Wang, J-Y., Hessel D., Schneider, A., Tassone, F., Hagerman, R.J. and **Rivera, S.M.** (2013). Influence of the FMR1 Gene on Motor Fiber Tracts in Males with Normal and Premutation Alleles. Talk presented at the First International Conference on FMR1 Premutation: Basic Mechanisms and Clinical Involvement, Perugia, Italy, July 2013.

Schneider A., Muzar Z., Summers S., Tassone F., Seritan A., **Rivera S.M.**, Grigsby J., Hessel D., and Hagerman R. (2013). Female Characteristics of Fragile X-associated Tremor/Ataxia Syndrome. Talk presented at the First International Conference on FMR1 Premutation: Basic Mechanisms and Clinical Involvement, Perugia, Italy, July 2013.

Bailey, D.B., Berry-Kravis, E., De Sonia, A., Famula, J., Gane, L., Guarda, S., Hagerman, R., Hoffend, C., Lo J., Powell, C., **Rivera, S.M.**, Prescott, C., Roche, M., Rohde, S., Skinner, D., Sorenson, P., Tassone, F., Wheeler, A. (2013). The Fragile X Newborn Screening Pilot Study: Lessons Learned from the Detection of FMR1 Premutation Carrier Infants. Talk presented at the First International Conference on FMR1 Premutation: Basic Mechanisms and Clinical Involvement, Perugia, Italy, July 2013.

Bailey D.B., Wheeler A., Hoffend C., Prescott C., De Sonia A., Berry-Kravis E., Sorenson P., **Rivera S.M.**, Hagerman R., and Tassone F. (2013). Early Development and Behavior of FMR1 Premutation Infants Identified by Newborn Screening. Talk presented at the First International Conference on FMR1 Premutation: Basic Mechanisms and Clinical Involvement, Perugia, Italy, July 2013.

Rivera, S.M., deGennaro, P., Gallego, P., Niemeyer, G., Kaltman, E., Wakeley, A., and Langer, J. (2013). Video game training on inverse spatial relations as a way to facilitate proportional reasoning in children. Poster presented at the Biennial Meeting of Society for Research in Child Development, Seattle, WA, April, 2013.

Barry, R., Graf Estes, K., and **Rivera, S.M.** (2013). Do social and nonsocial cues enhance statistical learning in distracting environments? Poster presented at the Biennial Meeting of Society for Research in Child Development, Seattle, WA, April, 2013.

Owen, E., and **Rivera, S.M.** (2013). Attention shifting in infants with Fragile X Syndrome; Investigating the brain’s orienting network. Poster presented at the Biennial Meeting of Society for Research in Child Development, Seattle, WA, April, 2013.

Sievers, E., Pokorny, J., Neff, M., and **Rivera, S.M.** (2013). Development of the neural correlates of

gesture processing in adolescence. Poster presented at the Biennial Meeting of Society for Research in Child Development, Seattle, WA, April, 2013.

Kim, S.-Y., Hashimoto, R.I., Simon, T.J., & **Rivera, S.M.** (2013). Developmental changes in neural substrates of spatiotemporal processing in adults and children with the fragile X premutation. Poster presented at the 2013 Cognitive Neuroscience Society meeting, San Francisco, CA, April, 2013.

Rivera, S.M. (2013). Evidence of visual processing impairments in infants with the fragile X premutation. Talk presented at the 46th Annual Gatlinburg Conference, San Antonio, TX, March, 2013.

Rivera, S.M. (2012). Five years of studying the visual and early cognitive development of Infants and toddlers with fragile X syndrome: What have we learned? Talk presented at the 13th International Fragile X Conference, Miami, FL, July, 2012.

Kim, S.-Y., Simon, T.J., & **Rivera, S.M.** (2012). Differences in brain activation during temporal working memory processing in fragile X premutation carriers. Talk presented at the 13th International Fragile X Conference, Miami, FL, July, 2012.

Rothstein, L., Gallego, P., Burris, J., **Rivera, S.** (2012). Ventral stream visual processing in infants and toddlers with fragile X syndrome. Poster presented at the 13th International Fragile X Conference, Miami, FL, July, 2012.

Wang JY, Hagerman RJ, **Rivera SM.** (2012). A multimodal imaging study of subcortical gray matter abnormalities in fragile X premutation. Talk presented at the 13th International Fragile X Conference, Miami, FL, July, 2012.

Owen, E. and **Rivera, S.M.** (2012). Attention shifting in infants with fragile X syndrome; Investigating the brain's orienting network. Talk presented at the 13th International Fragile X Conference, Miami, FL, July, 2012.

Burris, J. and **Rivera, S.M.** (2012). Efficacy measures of minocycline on visual processing and spatial reasoning in children and adolescents with fragile X syndrome. Talk presented at the 13th International Fragile X Conference, Miami, FL, July, 2012.

Gallego, P.K., and **Rivera, S.M.** (2012). Math and conservation in children with FXS. Talk presented at the 13th International Fragile X Conference, Miami, FL, July, 2012.

Wang, J.Y., Hessler, D., Schneider, A., Hagerman, R.J., Tassone, F., and **Rivera, S.M.** (2011). The associations of FMR1 expression, white matter connectivity, and cognition in healthy males. Talk presented at the 41st Annual Society for Neuroscience Meeting, Washington, D.C., November, 2011.

Garcia-Arocena, D., Wang, J., Selmeczy, D., Tassone, F., Fon, J., Woo, E., Hagerman, R.J., Hagerman, P.J. and **Rivera, S.M.** (2011). Impact of telomeres in patients with fragile X-Associated Tremor/Ataxia Syndrome. Talk presented at the 41st Annual Society for Neuroscience Meeting, Washington, D.C., November, 2011.

Kim, S.-Y., Burris, J., Bassal, F., Tassone, F., Hessler, D. and **Rivera, S.M.** (2011). Socio-emotional dysfunction and its relationship with neural correlates of emotional processing in children and adolescents with fragile X syndrome. Poster presented at the 41st Annual Society For Neuroscience Meeting, Washington, D.C., November, 2011.

Pokorny, J.J., Hatt, N.V., Rogers, S.J., and **Rivera, S.M.** (2011). The neural basis of intention understanding in autism and typical development. Poster presented at the 41st Annual Society for Neuroscience Meeting, Washington, D.C., November, 2011.

Rivera, S.M. (2011). Playing video games that target understanding of inverse spatial relations facilitates reasoning about causal proportions in children. Talk presented at the 41st Annual Meeting of the Jean Piaget Society, Berkeley, CA., June, 2011.

Kim, S.-Y., Burris, J., Basal, F., Tassone, F., and **Rivera, S.M.** (2011). Amygdala dysfunction in children and adolescence with fragile X syndrome. Poster presented at the International Meeting for Autism Research, San Diego, CA., May, 2011.

Pokorny, J., Hatt, N.V., Colombi, C., Vivanti, G., Rogers, S.J. and **Rivera, S.M.** (2011). The effect of object goals and visibility on the mirror neuron system in autism and typical development. Poster presented at the International Meeting for Autism Research, San Diego, CA., May, 2011.

Kim, S.-Y., Hashimoto, R., Simon, T.J., & **Rivera, S.M.** (2011). Evidence for a dose-sensitive response to FMR1 gene expression in the fronto-parietal cortex for the numerical processing. Poster presented at the 18th Annual Meeting of the Cognitive Neuroscience Society, San Francisco, CA., April, 2011.

Pokorny, J.J., Hatt, N., Rogers, S.J., & **Rivera, S.M.** (2011). Action understanding and the mirror neuron system in autism and typical development. Poster presented at the Jacobs Foundation Conference 2011 on Adolescence: Exploration and Self-Regulation of the Unknown, Marbach Castle, Germany, April, 2011.

Gallego, P.K., Owen, E.R. Burris, J. & **Rivera S.M.** (2011). Live object occlusion and tracking in infants with FXS. Poster presented at the Biennial Meeting of Society for Research in Child Development, Montreal, Canada, March, 2011.

Wang, J.Y., Hessler, D., Tassone, F., Schneider, A., Iwahashi, C., Hagerman, P.J., **Rivera, S.M.** (2010). A comprehensive assessment of structural connectivity in fragile X premutation. Talk presented at the 40th Annual Meeting, Society for Neuroscience, San Diego, CA., November, 2010.

Rivera, S.M. (2010). White and gray matter changes in FXTAS and non-FXTAS premutation carriers. Talk presented at the 12th International Fragile X Conference, Detroit, MI., July, 2010.

Rivera, S.M. (2010). Parietal cortex shows a dose-sensitive response to FMR1 gene expression in carriers of the fragile X permutation. Talk presented at the 12th International Fragile X Conference, Detroit, MI., July, 2010.

Rivera, S.M. (2010). Tracing trajectories of strengths and challenges in young children with fragile X syndrome: why development itself is so important. Talk presented at the 12th International Fragile X Conference, Detroit, MI., July, 2010.

Rivera, S.M. (2010). Converging evidence for disruption of parietal lobe function in infants with fragile X syndrome. Talk presented at the 12th International Fragile X Conference, Detroit, MI., July, 2010.

Owen, E. & **Rivera, S.M.**, (2010). Numerical Processing in Infants with FXS. Talk presented at the 12th International Fragile X Conference, Detroit, MI., July, 2010.

Farzin, F & **Rivera, S.M.**, (2010). Spatial and temporal visual attention in infants with FXS. Talk presented at the 12th International Fragile X Conference, Detroit, MI., July, 2010.

Wang, J. & **Rivera, S.M.**, (2010). Age related deficiency of structural connectivity in fragile X premutation males without tremor/ataxia syndrome. Poster presented at the 12th International Fragile X Conference, Detroit, MI., July, 2010.

Wang, J.M., Tassone, F., Iwahashi, C., Hagerman, P.J., Hessler, D.R., & **Rivera, S.M.**, (2010) Differences in amygdala activation correlate with molecular measures in male carriers of the FMR1 premutation. Talk presented at the 12th International Fragile X Conference, Detroit, MI., July, 2010.

Gallego, P., Owen, E & **Rivera, S. M.** (2010). Cognitive outcomes through behavioral therapeutic intervention in infants with FXS. Poster presented at the 12th International Fragile X Conference, Detroit, MI., July, 2010.

Rivera, S.M. & Hessler, D. (2010). Capturing the Fragile X Premutation Phenotypes: Issues and Complexities. Paper presented at the Gatlinburg Conference on Research & Theory in Intellectual & Developmental Disabilities. Baltimore, MD, March, 2010.

Rivera, S.M., Hashimoto, R., Hatt, N.V., Shapiro, H. and Simon, T.J. (2009). Evidence for a dose-sensitive response to FMR1 gene expression in the fronto-parietal cortex. Paper presented at annual Society for Neuroscience meeting, Chicago, IL., October, 2009.

Rivera, S.M. (2009). Object Representation and Tracking in Infants with Fragile X Syndrome. Paper presented at European Science Foundation Conference: Gene Expression to Neurobiology and Behaviour, Sant Feliu de Guixols, Spain, September, 2009.

Hashimoto R., Hatt N., Shapiro H., Marcelino L., Godwin C., Simon T.J., **Rivera S.M.** (2009). Altered Cortical Activity of the Numerical System in Individuals with Fragile X Mutations. Presented at the 64th Annual Scientific Convention & Meeting of Society of Biological Psychiatry, Vancouver, Canada, May, 2009.

Hashimoto R., Backer K., Hagerman R.J., and **Rivera S.M.** (2009). An fMRI Study of Working Memory

Deficits in Premutation Carriers of the Fragile X Mental Retardation 1 Gene With and Without Fragile X-Associated Tremor/Ataxia Syndrome. Presented at the 15th Annual Meeting of Human Brain Mapping, San Francisco, CA, June, 2009.

Farzin, F., **Rivera, S.M.**, Sakai, S.M., and Whitney, D. (2009). Temporal limit of phase discrimination in infants. *Journal of Vision*. Presented at the Annual Vision Sciences Society Meeting, Naples, FL, May 2009.

Hatt, N.V., Colombi, C., Saron, C.D., Rogers, S.J., Saron, C.D. and **Rivera, S.M.** (2009). Neural Basis of Action and Intention Understanding in Autism and Typical Development. Presented at the International Meeting for Autism Research, Chicago, IL, May, 2009.

Colombi, C., Saron, C.D., Beransky, M., Takarae, Y., Vivanti, G., Nadig, A., **Rivera, S.M.**, Champion-Fritz, Z., Ozonoff, S. and Rogers, S.J. (2009). Mirror Neuron System Activation in Autism in Response to Transitive and Intransitive Actions. Presented at the International Meeting for Autism Research, Chicago, IL, May, 2009.

Marcelino, L.M., Beransky, M., Colombi, C., Riggins, T., Horton, D.M., Deprey, L. Kenet, Tl, Rogers, S.J., **Rivera, S.M.**, and Saron, C.D. (2009). Subphenotyping of Autism Spectrum Disorders Using Auditory Event-Related Potentials. Presented at the International Meeting for Autism Research, Chicago, IL, May, 2009.

Farzin, F., Whitney, D., **Rivera, S.M.** (2009). Spatiotemporal Contrast Sensitivity in 6- to 15-Month-Old Infants. Presented at the Biennial Society for Research in Child Development Meeting, Denver, CO, April, 2009.

Hendrickson, K.I., Farzin, F., Hagerman, R.J., **Rivera, S.M.** (2009). Changing developmental trajectories in young infants with fragile X syndrome. Presented at the Biennial Society for Research in Child Development Meeting, Denver, CO, April, 2009.

Wang, J.M., Koldewyn, K., Hessler, D.A., Selmecky, D. Hagerman, R.J., Hagerman, P.J., Iwahashi, C., Tassone, F., Schneider, A., and **Rivera, S.M.** (2009). Fragile X Mental Retardation-1 Gene mRNA as a Predictor for Amygdala Volume in Fragile X Premutation Men. Presented at the annual Cognitive Neuroscience Society Meeting, San Francisco, CA, March, 2009

Rivera, S.M., Koldewyn, K., Le, L., Hagerman, R.H., Tassone, F., Gane, L., Schneider, A., and Hessler, D.L. (2008). Amygdala and Hippocampal function in the fragile X premutation: linking genes, behavior and brain function. Paper presented at annual Society for Neuroscience meeting, Washington, D.C., November 2008.

Beransky, R.M., Marcelino, L.M., Colombi, C., Horton, D.M., DeBoer, T.D., **Rivera, S.M.** and Saron, C.D. (2008). Electrophysiological Subphenotyping of Autism Based on the Loudness Dependency of Auditory Event-Related Potentials. Poster presented at annual Society for Neuroscience meeting, Washington, D.C., November 2008.

Farzin, F., Whitney, D., **Rivera, S.M.** (2008). Low-level visual processing in infants with FXS. Paper presented at the 11th International Fragile X Conference, St. Louis, MO, July, 2008.

Rivera, S.M., Farzin, F. (2008). High-level cortical visual processing in infants with fragile X. Paper presented at the 11th International Fragile X Conference, St. Louis, MO, July, 2008.

Farzin, F., **Rivera, S.M.**, Weru, J., Hessler, D. (2008). Face processing in individuals with fragile X syndrome: An eye tracking study. Presented at the 11th International Fragile X Conference, St. Louis, MO, July, 2008.

Koldewyn, K., Le, L., Hagerman, R.J., Tassone, F., Gane, L., Schneider, A., Hessler, D.R., and **Rivera, S.M.** (2008). Functional Imaging of the Limbic System in Men with the Fragile X Premutation, Presented at the 11th International Fragile X Conference, St. Louis, MO, July, 2008.

Farzin F., **Rivera S.M.**, and Whitney D. (2008). Holistic face processing in infants using Mooney faces. Poster presented at the Annual Vision Sciences Society Meeting, Naples, FL, May 2008.

Koldewyn, K., Whitney, D.W., and **Rivera, S.M.** (2008). Neural bases of visual motion perception deficits in autism. Paper presented at the Annual Vision Sciences Society meeting, Naples FL, May 2008.

Koldewyn, K., Whitney, D.W., and **Rivera, S.M.** (2008). Neural correlates of coherent and biological motion perception deficits in autism. Poster presented at the International Meeting for Autism Research, London, England, May 2008.

Koldewyn, K., Whitney, D.W., and **Rivera, S.M.** (2007). Visual Motion Processing in Autism: A psychophysical and fMRI study. Poster presented at annual Society for Neuroscience meeting, San Diego CA,

November 2007.

Reynolds Losin, E.A., **Rivera, S.M.**, O'Hare, E.D., Sowell, E.R. and Pinter, J.D. (2007). fMRI findings of abnormal activation patterns during an auditory story listening task in individuals with Downs syndrome. Poster presented at annual Society for Neuroscience meeting, San Diego CA, November 2007.

Rivera, S.M., Hessel, D.L., Koldewyn, K., Tassone, F. and Hagerman, R.J. (2007). Brain-based evidence of limbic system dysfunction in fragile X premutation carriers. Paper presented at the 13th International Workshop on Fragile X and X-Linked Mental Retardation, Venice, Italy, October, 2007.

Farzin, F. and **Rivera, S.M.** (2007). Object Representation and Tracking in Infants with Fragile X Syndrome. Paper presented at the 10th International Society for the Study of Behavioural Phenotypes Meeting, Lake Tahoe, CA, October, 2007. *Journal of Intellectual Disability Research*, 51(9).

Koldewyn, K., Henry, M. Le, L. and **Rivera, S.M.** (2007). Children with autism show differences in brain activation, despite similar behavioral performance, on a mental arithmetic task. Poster presented at the Cognitive Neuroscience Society Meeting, New York, NY, May 5-8, 2007.

Reynolds, E.A., Pinter, J., Koldewyn, K., Le, L., Backer, K., Tang, M., and **Rivera, S.M.** (2007). Deficient intraparietal sulcus activity during number comparison in individuals with Down syndrome. Poster presented at the Cognitive Neuroscience Society Meeting, New York, NY, May 5-8, 2007.

Saron, C.D., Horton, D.M., DeBoer, T., Beransky, M., Colombi, C. and **Rivera, S.M.** (2007). Attenuated primary auditory cortex activation in toddlers with autism spectrum disorders: Evidence from high-density middle latency AEPs. Poster presented at the International Meeting for Autism Research, Seattle, WA, May 3-5, 2007.

Farzin, F., Whitney, D., Hagerman, R.J., and **Rivera, S.M.** (2007). Visual processing in infants with fragile X syndrome. *Journal of Vision*, Annual Vision Sciences Society Meeting, Sarasota, FL, May 2007.

Farzin, F., Whitney, D., Hagerman, R.J., and **Rivera, S.M.** (2007). Visual development in infants with fragile X Syndrome. Poster presented at the Biennial Meeting of the Society for Research in Child Development, Boston, MA, March 2007.

Zawaydeh, A.N., Farzin, F., and **Rivera, S.M.** (2007). The effect of language on infants' object representation system: An investigation using eye-tracking methodology. Poster presented at the Biennial Meeting of the Society for Research in Child Development, Boston, MA, March 2007.

Research Support

Active:

Interdisciplinary Research Seed Funding grant (Rivera, S.M.) 11/15/2015-6/30/2018

UC Davis Institute of Social Sciences \$10,000 *total direct*

Development of an ERP outcome measure for treatment studies in Autism Spectrum Disorder

This grant supports the development of an event related potential (ERP) outcome measures designed to reveal subtle changes that are taking place in the brain of children with autism spectrum disorder as they undergo treatment.

Role: PI

UCD2014P14 (Rivera, S.) 8/11/2014-9/31/2016

PHRMA FOUNDATION \$120,000 *total direct*

Increased mitochondrial DNA damage and neurodegeneration in fragile X-associated tremor/ataxia syndrome.

This project investigates genetic bases for brain abnormalities in genetic disorders such as fragile X premutation and full mutation and neurodegenerative disorders including Alzheimer's disease and Parkinson's disease in which mtDNA mutation is thought to play a significant role.

3R01MH078041-09S1 (Rivera, S.) 07/01/2016 – 03/31/2017
NIH/NIMH \$ 149,492 *total direct*
Trajectories and Markers of Neurodegeneration in Fragile X Premutation Carriers-Supplement
This supplement to the parent R01 supports the development of protocols to apply automatic segmentation techniques for brain segmentation that have shown enormous promise for elucidating changes in brain morphology that may start in young premutation carriers many years before the clinical manifestations of FXTAS. The development of these techniques will greatly increase the value of the findings from the parent grant by allowing us to detect even more subtle changes in brain morphology than would have been picked up by methods originally proposed.

HRD 1209325 (Katehi, L) 9/1/2012-8/31/2017
NSF ADVANCE Institutional Transformation \$3,575,000 *total direct*
Institutional transformation to build and sustain a diverse community of innovative STEM scholars.
The UC Davis ADVANCE program utilizes a four-pronged approach to increasing the participation and advancement of women in the STEM fields. This approach includes: establishment of a Center for Advancing Multi-Cultural Perspectives on Science (CAMPOS), implementation of programs to reduce the impact of unconscious bias, empowerment of STEM women faculty, and a rigorous social science research and evaluation program that is designed to both inform and assess the innovative approach being utilized to create and sustain an inclusive STEM environment.
Role: co-Investigator

2R01MH078041-06 (Rivera, S./Hessl, D., M/PI) 7/1/2012-6/30/2017
NIH/NIMH \$3,056,096 *total direct*
Trajectories and Markers of Neurodegeneration in Fragile X Premutation Carriers
This project will follow a group of men with the premutation and healthy controls in a longitudinal study to examine the trajectory of change of the structure and function of the brain and neuropsychological measures in an effort to determine factors explaining the early disease process that will occur in some of these men.
Role: PI

R01HD036071-14 (Hagerman, R.J.) 4/1/2012-3/31/2017
NIH \$2,091,505 *total direct*
Genotype-Phenotype Relationships in Fragile X Families
This proposal will assess detailed molecular mechanisms including mitochondrial abnormalities, mosaicism between the lymphocytes and fibroblasts, the antisense FMR1 (ASFMR1) splice isoforms and occult methylation to determine the molecular markers of premutation clinical involvement.

Role: Co-Investigator
Interdisciplinary Research Seed Funding grant (Rivera, S.M.) 11/15/2015-6/30/2018
UC Davis Institute of Social Sciences \$10,000.00
Development of an ERP outcome measure for treatment studies in Autism Spectrum Disorder
This grant supports the development of an event related potential (ERP) outcome measures designed to reveal subtle changes that are taking place in the brain of children with autism spectrum disorder as they undergo treatment.
Role: PI

Completed:

1 R40MC22641-01-00 (Hagerman, R.) 9/1/2011-8/31/2014
HRSA \$1036782 *total direct*
Controlled Trial of Sertraline in Young Children with Fragile X Syndrome
This project evaluates the benefit of sertraline for treatment of early developmental delay, including

language delays, social deficits and attentional deficits, in young children with FXS.
Role: Co-Investigator

1 R01MH090194, Subaward No. 13-2320 (Rivera, S.) 3/1/2013-2/28/14
NIH/NIMH \$10,806

Emergence and Stability of Autism in fragile X Syndrome

This is a longitudinal prospective study of the early autism features in infants with FXS and FXpm at 9, 12, and 24 in contrast to infants with an older sibling diagnosed with autism (hereafter referred to as "ASIBS") and typical controls (TD).

Role: PI of subaward (Roberts, J. PI of main award)

2R01MH068398 (Ozonoff) 1/1/09-11/30/13
NIH/NICHD \$2,919,155 *total direct*

Infants at Risk: A Longitudinal Study

In this grant, infant siblings of children with autism are followed longitudinally as is the original sample of infant sibs as they enter school. Experimental measures will focus on underlying processes that may reveal differences in at-risk children prior to the onset of behavioral signs of disorder.

Role: Co-Investigator

3 R01 MH078041-04S1 (Hessl/Rivera) 07/01/11-06/31/13
NIH/NIMH \$3,750,000 *total direct*

Limbic system function in carriers of the fragile X premutation

This revision to the parent grant will investigate relations between molecular, genetic, neuropsychological and physiological systems underlying social-emotional and memory functioning in adult females with the fragile X premutation.

Role: co-PI

1 R01 MH078041 (Hessl/Rivera) 6/1/07-5/31/12
NIH/NIMH \$1,500,000 *total direct*

Limbic system function in carriers of the fragile X premutation

This project investigates relations between molecular genetic, neuropsychological and physiological systems underlying social-emotional and memory functioning in adult males with the fragile X premutation.

Role: Co-PI

1 R01 HD056031 (Rivera) 8/8/07-5/31/12
NIH/NICHD \$ 1,274,000 *total direct*

Visual Processing and Later Cognitive Effects in Infants with fragile X Syndrome

This project is a prospective, longitudinal study that will elucidate early visual processing differences in infants with fragile X Syndrome and how abnormal visual processing, if present, relates to cognitive deficits known to emerge in early childhood.

Role: PI

1 RL1NS062412 (Simon/Rivera) 09/30/07-06/30/12
NIH/NINDS \$1,792,000 *total direct*

Fragile X Spectrum as a Model to Explore Mechanisms in Neurogenetic Disorders

Component 5 of 1UL1RR024922-01 Hagerman, PJ (P.I.) NIH/NCRR

NeuroTherapeutics Research Consortium

The principal objective of Component 5 is to understand how variations in the mutation of a single gene (FMR1) produce a spectrum of cognitive dysfunction in both childhood and adulthood. To this end, we will generate the first detailed neurocognitive profile of an integrated set of cognitive domains that preliminary

data suggest are highly vulnerable to changes in the expression of FMRP.
Role: Co-PI on Component 5

3P30-HD02274 (Tassone) 7/1/2008-6/30/2013
NIH/NICHD \$3,457,150 *total direct*
Fragile X Research Center and Newborn Screening at UC Davis

This is a component of a center grant in collaboration with the University of Washington, and involves newborn screening and clinical research with newborn probands with fragile X and their extended family members.

Role: Co-Investigator

Pilot Grant Program (Rivera) 07/01/10-2/31/13
U.C. Davis M.I.N.D. Institute \$25,000

Identifying Meaning in Gestural Cues in Autism: A behavioral and fMRI study

The goal of this project is to investigate how individuals with autism recognize social cues, such as gestures and body postures. This will be studied, behaviorally and using fMRI, by parametrically varying the intensity of the gestural cues so that we can determine how exaggerated the behavior must be before individuals with autism can detect the meaning of the action.

Role: PI

1R01MH089626 (Amaral, D., Rogers, S., Van de Water, J.) 09/21/09-08/31/11
NIH/NIMH \$1,429,402

Interdisciplinary Investigation of Biological Signatures of Autism Subtypes

The overall goal of this interdisciplinary project is to identify different subtypes of autism based on behavioral, biochemical, and brain imaging markers.

Role: Co-Investigator

Translational Research re: FXD (Hagerman, R.) 9/1/2009-8/31/2011
National Fragile X Foundation \$50,000

A Double-Blind Randomized Controlled Cross-over Trial of Minocycline in Children with Fragile X Syndrome

The overall goal of this project is to evaluate the efficacy of minocycline in individuals with fragile X syndrome.

Role: Co-Investigator

Administrative Supplement (Berglund) 10/01/2009-08/30/2011
NIH/NCRR \$325,000

A Toolbox of Outcome Measures for Targeted Treatment Trials in Children - UC Davis Clinical and Translational Science Center

The overall goal of this project is to create a toolbox of quantitative measures that can be utilized in targeted treatment trials for neurodevelopmental disorders in children.

Role: Co-Investigator

1 R21 MH080025 (Rivera) 9/1/07-5/31/10
NIH/NIMH \$417,000

Amygdala Function in Children and Adolescents with Fragile X Syndrome

The goal of the project is to investigate molecular, neuroanatomical and functional aspects of amygdala dysfunction in child and adolescent females and high-functioning males with the fragile X full mutation.

Role: PI

Cure Autism Now Pilot Research Study (Saron) 11/01/05-6/30/09
Cure Autism Now \$120,000

Behavioral and Brain Responses to Sensory Processing in Children with Autism Spectrum Disorders

This project examines the behavioral (reaction time), electromyographic (EMG), and brain (EEG) responses to sensory processing in children with Autism Spectrum Disorders (ASD) as compared to typically developing (TD) children. Specifically, it examines the integration of multiple sensory systems through analysis of dense-channel array event related potentials (ERPs) elicited in response to visual, auditory, and somatosensory stimuli delivered alone or in simultaneous combination

Role: Co- PI

Autism Speaks Mentored Research Award (Rivera) 1/1/07-12/31/08
Autism Speaks \$56,000

Biological Motion Perception in Autism: A window into social cognition deficits?

The goal of this project is to gain new knowledge about the social deficits seen in autism by studying biological motion perception. It employs fMRI paradigms probing both biological motion and coherent motion perception, in an effort to determine to what extent these deficits can be explained primarily as a dorsal stream deficit versus deficits in higher-order social cognition areas.

Role: PI

Pilot Grant Program (Rivera) 7/01/03-7/01/04
U.C. Davis M.I.N.D. Institute \$20,000

Do children with autism show an atypical functional neural architecture or tasks on which their performance is not impaired?

This project investigated the neural pathogenesis of autism by using fMRI with high-functioning children with autism, and evaluating their brain activation patterns (with respect to those of matched controls) on two task domains for which no cognitive deficits exist: arithmetic reasoning, and simple response inhibition.

Role: PI

Investigator Initiated Award (Saron) 07/01/04 – 07/01/06
U.C. Davis M.I.N.D. Institute \$60,000

Brain Dynamics of Simple Multisensory Integration in Autism Spectrum Disorders.

This project investigated the brain regions involved in multisensory integration in typically developing (TD) children and children with autism spectrum disorders (ASD).

Role: Co-PI

Grant to Promote Extramural Funding (Rivera) 07/01/05-9/30/06
U.C. Davis Committee on Research \$46,000

Sensory, social, and emotional processing in infants with fragile X Syndrome

This grant provided support to gather data needed to apply for an NIH R01 award for a prospective, longitudinal study to elucidate early visual processing differences in infants with fragile X Syndrome. The study probed how abnormal visual processing, if present, relates to cognitive deficits known to emerge in early childhood.

Role: PI

Pilot Grant Program (Rivera) 01/01/06-12/31/06
U.C. Davis M.I.N.D. Institute \$25,000

Biological Motion Perception in Autism: A window into social cognition deficits?

The goal of this project is to gain new knowledge about the social deficits seen in autism by studying biological motion perception. It employs fMRI paradigms probing both biological motion and coherent motion perception, in an effort to determine to what extent these deficits can be explained primarily as a dorsal stream deficit and to what extent they may be the result of deficits in higher-order social cognition areas.

Role: PI