

[Home](#) > [Journal](#) > [Social Sciences & Humanities](#) > [PSYCH](#)
[Indexing](#) | [View Papers](#) | [Aims & Scope](#) | [Editorial Board](#) | [Guideline](#) | [Article Processing Charges](#)
[PSYCH](#) > Vol.3 No.6, June 2012



Relationships as Regulators

PDF (Size: 341KB) PP. 467-479 DOI : 10.4236/psych.2012.36066

Author(s)

Tiffany Field

ABSTRACT

This paper reviews the Hofer (1984, 1996) and Field (1985, 1994) models on relationships as regulators, suggesting that relationships regulate optimal stimulation and thereby modulate arousal levels and attenuate stress. In these models, the behavioral, physiological and biochemical rhythms of individuals become synchronized within close relationships like mother-infant and peer relationships both in human and animal species, and they become more coordinated over time, with some potentially remaining stable, much like zeitgebers. Hofer supports his model by data on infant rat separation stress and Field describes "psychobiological attunement" between human infants and their mothers and between young peers. This review revisits the "relationships as regulators" model, summarizing studies on relationships between non-depressed versus depressed mothers and their infants, between infant, preschool and preadolescent friends versus acquaintances and between happily versus unhappily married couples. Although some behavioral and physiological data support Hofer's and Field's "relationships as regulators" model, many studies on relationships have focused instead on the effects of separation or loss. Both Hofer and Field suggest that the real question is "what was there about the relationship that was then missing after the loss?" Future research could address the question of potential mediators and underlying mechanisms for relationships becoming regulators. Potential mediators are explored here including mirror neurons, affective priming, imitation and empathy. The individuals' rhythms and the attraction to others' rhythms as regulators may be an epigenetic programming phenomenon, suggesting both genetic and early experience effects that endure across development.

KEYWORDS

Relationships; Psychobiological Attunement; Arousal; Separation

Cite this paper

 Field, T. (2012). Relationships as Regulators. *Psychology*, 3, 467-479. doi: 10.4236/psych.2012.36066.

References

- [1] Arbib, M. (2005). From monkey-like action recognition to human language: An evolutionary framework for neurolinguistics. *Behavioral and Brain Sciences*, 28, 105-124. doi: 10.1017/S0140525X05000038
- [2] Aron, A., Fisher, H., Mashek, D. J., Strong, G., Li, H., & Brown, L. L. (2005). Reward, motivation, and emotion systems associated with early-stage intense romantic love. *Journal of Neurophysiology*, 94, 327-337. doi: 10.1152/jn.00838.2004
- [3] Bagot, R. C., & Meaney, M. J. (2010). Epigenetics and the biological basis of gene x environment interactions, *Journal of American Academy of Child Adolescence Psychiatry*, 49, 752-771. doi: 10.1016/j.jaac.2010.06.001
- [4] Banse, R. (1999). Automatic Evaluation of self and significant others: Affective priming in close relationships. *Journal of Social and Personal Relationships*, 16, 803-821. doi: 10.1177/0265407599166007
- [5] Bauer, J. (2005). Warum ich fühle, was du fühlst. Intuitive Kommunikation und das Geheimnis der Spiegelneurone. Hamburg: Hoffmann und Campe.

- [Open Special Issues](#)
- [Published Special Issues](#)
- [Special Issues Guideline](#)

[PSYCH Subscription](#)
[Most popular papers in PSYCH](#)
[About PSYCH News](#)
[Frequently Asked Questions](#)
[Recommend to Peers](#)
[Recommend to Library](#)
[Contact Us](#)

Downloads:	272,012
------------	---------

Visits:	600,212
---------	---------

[Sponsors, Associates, and Links >>](#)

- [6] Black, P. H. (2002). Stress and the inflammatory response: A review of neurogenetic inflammation. *Brain, Behavior and Immunity*, 16, 622-653. doi:10.1016/S0889-1591(02)00021-1
- [7] Bowlby, J. (1982). *Attachment and loss: Vol. 1 attachment* (2nd ed.). New York: Basic Books
- [8] Carrère, S., & Gottman, J. M. (1999). Predicting divorce among newlyweds from the first three minutes of a marital conflict discussion. *Family Process*, 38, 293-301. doi:10.1111/j.1545-5300.1999.00293.x
- [9] Champagne, F. A., & Meaney, M. J. (2007). Transgenerational effects of social environment on variations in maternal care and behavioral response to novelty. *Behavioral Neuroscience*, 121, 1353-1363. doi:10.1037/0735-7044.121.6.1353
- [10] Chapple, E. D. (1970). *Culture and biological man: Exploration in behavioral anthropology*. New York: Holt, Rinehart & Winston.
- [11] Chen, Z., Williams, K. D., Fitness, J., & Newton, N. C. (2008). When hurt will not heal: Exploring the capacity to relive social and physical pain. *Psychological Science*, 19, 789-795. doi:10.1111/j.1467-9280.2008.02158.x
- [12] Diamond, L. M., Hicks, A. M., & Otter-Henderson, K. (2008). Every time you go away: Changes in affect, behavior, and physiology associated with travel-related separations from romantic partners. *Journal of Personality and Social Psychology*, 95, 385-403. doi:10.1037/0022-3514.95.2.385
- [13] Dettmer, A. M., Novak, M. A., Suomi, S. J., & Meyer, J. S. (2011). Physiological and behavioral adaption to relocation stress in differentially reared rhesus monkeys: Hair cortisol as a biomarker for anxiety-related responses. *Psychoneuroendocrinology*, Epub ahead of print.
- [14] Driver, J. L., & Gottman, J. M. (2004). Daily marital interactions and positive affect during marital conflict among newlywed couples. *Family Process*, 43, 301-314. doi:10.1111/j.1545-5300.2004.00024.x
- [15] Eisenberger, N. I., Lieberman, M. D., & Williams, K. D. (2003). Does rejection hurt? An fMRI study of social exclusion. *Science*, 302, 290-292. doi:10.1126/science.1089134
- [16] Feldman, R., & Eidelman, A. I. (2007). Maternal postpartum behavior and the emergence of infant-mother and infant-father synchrony in preterm and full-term infants: The role of neonatal vagal tone. *Developmental Psychobiology*, 49, 290-302. doi:10.1002/dev.20220
- [17] Feldman, R., Singer, M., & Zagoory, O. (2010). Touch attenuates infants' physiological reactivity to stress. *Developmental Science*, 13, 271-278. doi:10.1111/j.1467-7687.2009.00890.x
- [18] Feldstein, S., & Field, T. (2002). Vocal behavior in the dyadic interactions of preadolescent and early adolescent friends and acquaintances. *Adolescence*, 37, 495-513.
- [19] Ferrari, P. F., Paukner, A., Ionica, C., & Suomi, S. J. (2009). Reciprocal face-to-face communication between rhesus macaque mothers and their newborn infants. *Current Biology*, 19, 1768-1772. doi:10.1016/j.cub.2009.08.055
- [20] Ferrari, P. F., Paukner, A., Ruggiero, A., Darcey, L., Unbehagen, S., & Suomi, S. J. (2009). Interindividual differences in neonatal imitation and the development of action chains in rhesus macaques. *Child Development*, 80, 1057-1068. doi:10.1111/j.1467-8624.2009.01316.x
- [21] Ferrari, P. F., Visalberghi, E., Paukner, A., Fogassi, L., Ruggiero, A., & Suomi, S. J. (2006). Neonatal imitation in rhesus macaques. *PLoS Biology*, 4, e302. doi:10.1371/journal.pbio.0040302
- [22] Field, T. (1983). Early interactions and interaction coaching of high-risk infants and parents. In M. Perlmutter (Ed.), *Minnesota symposium on child psychology*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- [23] Field, T. (1985). Attachment as psychobiological attunement: Being on the same wavelength. In M. Reite, & T. Field (Eds.), *Psychobiology of attachment and separation*. New York: Academic Press.
- [24] Field, T. (1991). Young children's adaptations to repeated separations from their mothers. *Child Development*, 62, 539-547. doi:10.2307/1131129
- [25] Field, T. (1994). The effects of mother's physical and emotional unavailability on emotion regulation. *Monographs of the Society for Research in Child Development*, 59, 208-227. doi:10.2307/1166147
- [26] Field, T. (2007). *The Amazing infant*. London: Blackwell.

- [27] Field, T. (2009). *Heartbreak*. New York: Xlibris.
- [28] Field, T. (2010a). Postpartum depression effects on early interactions, parenting and safety practices: A review. *Infant Behavior and Development*, 33, 1-6. doi:10.1016/j.infbeh.2009.10.005
- [29] Field, T. (2010b). Touch for socioemotional and physical well-being: A review. *Developmental Review*, 30, 367-383. doi:10.1016/j.dr.2011.01.001
- [30] Field, T., Diego, M., & Hernandez-Reif, M. (2010). Prenatal depression effects and interventions: A review. *Infant Behavior and Development*, 33, 409-418.
- [31] Field, T., Diego, M., Pelaez, M., Deeds, O., & Delgado, J. (2009). Breakup distress in university students. *Adolescence*, 44, 705-727.
- [32] Field, T., Diego, M., Pelaez, M., Deeds, O., & Delgado, J. (2010). Breakup distress and the loss of intimacy in university students. *Psychology*, 1, 173-177. doi:10.4236/psych.2010.13023
- [33] Field, T., Diego, M., Pelaez, M., Deeds, O., & Delgado, J. (2010a). Intrusive thoughts: A primary variable in breakup distress. *College Student Journal*, in press.
- [34] Field, T., Diego, M., Pelaez, M., Deeds, O., & Delgado, J. (2010b). Negative emotions and behaviors are markers for breakup distress. *College Student Journal*, in press.
- [35] Field, T., Greenwald, P., Morrow, C., Foster, T., Guthertz, M. et al. (1992). Behavior state matching during interactions of preadolescent friends versus acquaintances. *Developmental Psychology*, 28, 242-250. doi:10.1037/0012-1649.28.2.242
- [36] Field, T., Healy, B., Goldstein, S., & Guthertz, M. (1990). Behavior state matching and synchrony in mother infant interactions of nondepressed versus depressed dyads. *Developmental Psychology*, 26, 7-14. doi:10.1037/0012-1649.26.1.7
- [37] Field, T., Healy, B., & LeBlanc, W. (1989). Sharing and synchrony of behavior states and heart rate in nondepressed versus depressed mother infant interactions. *Infant Behavior and Development*, 12, 357-376. doi:10.1016/0163-6383(89)90044-1
- [38] Field, T., Hernandez-Reif, M., Diego, M., Feijo, L., Vera, Y. et al. (2007). Still-face and separation effects on depressed mother-infant interactions. *Infant Mental Health Journal*, 28, 314-323. doi:10.1002/imhj.20138
- [39] Field, T., & Reite, M. (1984). Children's responses to separation from mother during the birth of another child. *Child Development*, 55, 1308-1316. doi:10.2307/1130000
- [40] Field, T., Schanberg, S. M., Scafidi, F., Bauer, C. R., Vega Lahr, N. et al. (1986). Tactile/kinesthetic stimulation effects on preterm neonates. *Pediatrics*, 77, 654-658.
- [41] Field, T., Vega Lahr, N., & Jagdish, S. (1984). Separation stress of nursery school infants and toddlers graduating to new classes. *Infant Behavior and Development*, 7, 527-530. doi:10.1016/S0163-6383(84)80012-0
- [42] Field, T., Woodson, R., Greenberg, R., & Cohen, D. (1982). Discrimination and imitation of facial expressions by neonates. *Science*, 218, 179-181. doi:10.1126/science.7123230
- [43] Geoffroy, M. C., Cote, S. M., Parent, S., & Seguin, J. R., (2006). Daycare attendance, stress, and mental health. *Canadian Journal of Psychiatry*, 51, 607-615.
- [44] Goldstein, S., Field, T., & Healy, B. (1989). Concordance of play behavior and physiology in preschool friends. *Journal of Applied Developmental Psychology*, 10, 337-351. doi:10.1016/0193-3973(89)90034-8
- [45] Gottman, J. M., Coan, J., Carrère, S., & Swanson, C. (1998). Predicting marital happiness and stability from newlywed interactions. *Journal of Marriage and the Family*, 60, 5-22. doi:10.2307/353438
- [46] Gottman, J. M., & Levenson, R. W. (1992). Marital processes predictive of later dissolution: Behavior, physiology, and health. *Journal of Personality and Social Psychology*, 63, 221-233. doi:10.1037/0022-3514.63.2.221
- [47] Gottman, J. M., & Levenson, R. W. (2002). A two-factor model for predicting when a couple will divorce: Exploratory analyses using 14-year longitudinal data. *Family Process*, 41, 83-96. doi:10.1111/j.1545-5300.2002.40102000083.x

- [48] Gottman, J. M., Levenson, R. W., Swanson, C., Swanson, K., Tyson, R., & Yoshimoto, D. (2003). Observing gay, lesbian and heterosexual couples' relationships: mathematical modeling of conflict interaction. *Journal of Homosexuality*, 45, 65-91. doi: 10.1300/J082v45n01_04
- [49] Gump, B. B., Polk, D. E., Kamarck, T. W., & Shiffman, S. M. (2001). Partner interactions are associated with reduced blood pressure in the natural environment: Ambulatory monitoring evidence from a healthy, multiethnic adult sample. *Psychosomatic Medicine*, 63, 423-433.
- [50] Heimann, M., Laberg, K. E., & Nordoen, B. (2006). Imitative interaction increases social interest and elicited imitation in non-verbal children with autism. *Infant and Child Development*, 15, 297-309. doi: 10.1002/icd.463
- [51] Heron, W. (1961). Cognitive and physiological effects of perceptual isolation. In P. Solomon (Ed.), *Sensory deprivation*. Cambridge, Massachusetts: Harvard University Press.
- [52] Hofer, M. (1984). Relationships as regulators: A psychobiologic perspective on bereavement. *Psychosomatic Medicine*, 46, 183-197.
- [53] Hofer, M. (1996). On the nature and consequences of early loss. *Psychosomatic Medicine*, 58, 570-581.
- [54] Holt-Lunstad, J., Uchino, B. N., Smith, T. W., Olson-Cerny, C., & Nealey-Moore, J. B. (2003). Social relationships and ambulatory blood pressure: Structural and qualitative predictors of cardiovascular function during everyday social interactions. *Health Psychology*, 22, 388-397. doi:10.1037/0278-6133.22.4.388
- [55] Jacobson, N. S., & Gottman, J. M. (1999). *When men batter women*. New York: Simon & Schuster.
- [56] James, W. (1950). *The principles of psychology* (Vol. 1). New York: Dover.
- [57] Jean, A. D., & Stack, D. M. (2009). Functions of maternal touch and infant' s affect during face-to-face interactions: New directions for the still-face. *Infant Behavior & Development*, 32, 123-128. doi:10.1016/j.infbeh.2008.09.008
- [58] Klein, K. E., & Wegmann, H. M. (1974). The resynchronization of human circadian rhythms after transmediterranean flights as a result of flight direction and mode of activity. In L. E. Scheving, F. Halberg, & J. F. Pauly (Eds.), *Chronobiology* (pp. 564-570). Tokyo: Igaku Shoin.
- [59] Lester, B. M., Tronick, E., Nestler, E., Abel, T., Kosofsky, B. et al. (2011). Behavioral epigenetics. *Annals of the New York Academy of Sciences*, 1226, 14-33. doi:10.1111/j.1749-6632.2011.06037.x
- [60] Levenson, R. W., Carstensen, L. L., & Gottman, J. M. (1994). The influence of age and gender on affect, physiology, and their interrelations: a study of long-term marriages. *Journal of Personality and Social Psychology*, 67, 56-68. doi:10.1037/0022-3514.67.1.56
- [61] Levenson, R. W., & Gottman, J. M. (1983). Marital interaction: Physiological linkage and affective exchange. *Journal of Personality and Social Psychology*, 45, 587-597. doi:10.1037/0022-3514.45.3.587
- [62] Levenson, R. W., & Gottman, J. M. (1985). Physiological and affective predictors of change in relationship satisfaction. *Journal of Personality and Social Psychology*, 49, 85-94. doi:10.1037/0022-3514.49.1.85
- [63] Loving, T. J., Crockett, E. E., & Paxson, A. A. (2009). Passionate love and relationship thinkers: Experimental evidence for acute cortisol elevations in women. *Psychoneuroendocrinology*, 34, 939-946. doi: 10.1016/j.psyneuen.2009.01.010
- [64] Mason, W. A., & Berkson, G. (1975) Effects of maternal mobility on the development of rocking and other behaviors in rhesus monkeys: A study with artificial mothers. *Developmental Psychobiology*, 8, 197-221. doi: 10.1002/dev.420080305
- [65] McClintock, M. K. (1983) Pheromonal regulation of the ovarian cycle: Enhancement, suppression, and synchrony. In J. G. Vandenberg (Ed.), *Pheromones and reproduction in mammals* (pp. 113-149). New York: Academic Press.
- [66] McGowan, P. O., Suderman, M., Sasaki, A., Huang, T. C., Hallett, M. et al. (2011). Broad epigenetic signature of maternal care in the brain of adult rats. *PLoS One*, 6, e14739. doi: 10.1371/journal.pone.0014739
- [67] Meltzoff, A. N., & Moore, M. K. (1977). Imitation of facial and manual gestures by human neonates.

- [68] Monk, T. H., Burk, L. R., Klien, M. H., Kupfer, D. J., Soehner, A. M., & Essex, M. J. (2010). Behavioral circadian regularity at age 1 month predicts anxiety levels during school-age years. *Psychiatry Research*, 178, 370-373. doi:10.1016/j.psychres.2009.09.020
- [69] Monk, T. H., Houck, P. R., & Shear, M. K. (2005). The daily life of complicated grief patients—What gets missed, what gets added? *Death Studies*, 30, 77-85. doi:10.1080/07481180500348860
- [70] Montagner, H., Restoin, A., & Henry, J. C. (1982). Biological defense rhythms, stress and communications in children. In W. W. Hartup (Ed.), *Review of child development research*. Chicago: University of Chicago Press.
- [71] Papousek, M. (2007). Communication in early infancy: An arena of intersubjective learning. *Infant Behavior & Development*, 30, 258-266. doi:10.1016/j.infbeh.2007.02.003
- [72] Paukner, A., Suomi, S. J., Visalberghi, E., & Ferrari, P. F. (2009). Capuchin monkeys display affiliation toward humans who imitate them. *Science*, 325, 880-883. doi:10.1126/science.1176269
- [73] Pelaez, M., Field, T., Diego, M., Deeds, O., & Delgado, J. (2011). Insecurity, controlling, and loss of interest behaviors relate to breakup distress in university students. *College Student Journal*, 452.
- [74] Pelaez-Nogueras, M., Field, T., Hossain, Z., & Pickens, J. (1996a). Depressed mothers' touching increases infants' positive affect and attention in still-face interactions. *Child Development*, 67, 1780-1792. doi:10.2307/1131731
- [75] Pelaez-Nogueras, M., Gewirtz, J. L., Field, T., Cigales, M., Malphurs, J., Clasky, S., & Sanchez, A. (1996b). Infant preference for touch stimulation in face-to-face interactions. *Journal of Applied Developmental Psychology*, 17, 199-213. doi:10.1016/S0193-3973(96)90025-8
- [76] Powell, L. H., Lovallo, W. R., Matthews, K. A., Meyer, P., Midgley, A. R., Baum, A. et al. (2002). Physiologic markers of chronic stress in premenopausal, middle-aged women. *Psychosomatic Medicine*, 64, 502-509.
- [77] Rizzolatti, G., Fadiga, L., Fogassi, L., & Gallese, V. (2002). From mirror neurons to imitation: Facts and speculations. In A. N. Meltzoff, & W. Prinz (Eds.), *The imitative mind*. Cambridge University Press, Cambridge.
- [78] Rizzolatti, G., Fadiga, L., Gallese, V., & Fogassi, L. (1996). Premotor cortex and the recognition of motor actions. *Cognitive Brain Research*, 3, 131-141.
- [79] Robles, T. F., & Kiecolt-Glaser, J. K. (2003). The physiology of marriage: Pathways to health. *Physiology and Behavior*, 79, 409-416. doi:10.1016/S0031-9384(03)00160-4
- [80] Roopnarine, J. L., & Field, T. M. (1984). Play behaviors of friends and acquaintances in nursery school. In T. Field, J. Roopnarine, & M. Segal (Eds.), *Friendships in normal and handicapped children*. Norwood, NJ: Ablex.
- [81] Rusbult, C. E., Kumashiro, M., Kubacka, K. E., & Finkel, E. J. (2009). "The part of me that you bring out": Ideal similarity and the Michelangelo phenomenon. *Journal of Personality and Social Psychology*, 96, 61-82. doi:10.1037/a0014016
- [82] Sbarra, D. A., & Hazan, C. (2008). Coregulation, dysregulation, self-regulation: An integrative analysis and empirical agenda for understanding adult attachment, separation, loss, and recovery. *Personality and Social Psychology Review*, 12, 141-167. doi:10.1177/1088868308315702
- [83] Schanberg, S., & Field, T. (1987). Sensory deprivation stress and supplemental stimulation in the rat pup and preterm human neonate. *Child Development*, 58, 1431-1447. doi:10.2307/1130683
- [84] Schwerdtfeger, A. & Friedrich-Mai, P. (2009). Social interaction moderates the relationship between depressive mood and heart rate variability: Evidence from an ambulatory monitoring study. *Health Psychology*, 28, 501-509. doi:10.1037/a0014664
- [85] Shahrokh, D. K., Zhang, T. Y., Diorio, J., Gratton, A., & Meaney, M. J. (2010). Oxytocin-dopamine interactions mediate variations in maternal behavior in the rat. *Endocrinology*, 151, 2276-2286. doi:10.1210/en.2009-1271
- [86] Shear, K., & Shair, H. (2005). Attachment, loss, and complicated grief. *Developmental Psychobiology*, 47, 253-267. doi:10.1002/dev.20091

[87] Singer, T., Seymour, B., O' Doherty, J., Kaube, H., Dolan, R. J., & Frith, C. D. (2004). Empathy for pain involves the affective but not sensory components of pain. *Science*, 303, 1157-1162.