

Şiddet ve Agresyonun Nörobiyolojik, Psikososyal ve Çevresel Nedenleri

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Ayten Erdoğan

Dünya Sağlık Örgütü (WHO-DSÖ) 1961’de, şiddeti büyük bir halk sağlığı sorunu olarak kabul etmiştir.[1] WHO tarafından şiddet (violence) “sonucunda yaralanma, ölüm, psikolojik hasar, gelişimi bozma gibi zararlar veren ya da verme potansiyeli olan şekilde başka biri, gruba, ya da topluma karşı fiziksel gücün bilinçli ve kasıtlı kullanımı” olarak tanımlanmıştır.[2] Türkiye’den 2004 yılında yayınlanan bir raporda, Ankara’da 12-21 yaş arası ergen ve gençlerde evde şiddete tanık olanlar %17, yaşadıkları mahallede şiddete tanık olanlar %28, okulda şiddete tanık olanların oranı %34 olarak bulunmuştur. Ergen ve gençlerin sadece %27’si yaşam boyu şiddete maruz kalmamıştır. [3]

Agresiflik-saldırganlık fiziksel ya da psikolojik zarar vermeyi amaçlayan bir davranış gelişimi olarak tanımlanır. Psikolojik zarar vermeye en çok ergen kızlar arasında rastlanmaktadır.[4-6] Son yıllarda çocuk ve gençlerde şiddet davranışının ortaya çıkmasında rol oynayan faktörleri belirlemeye yönelik çalışmalar hız kazanmıştır. Son dönemde özellikle psikolojik ve fiziksel zarar verme ile ilişkili ergen ve akran istismarı (bullying) üzerine çalışmalar yoğunlaşmıştır.[7,8] Daha eski çalışmalar şiddet davranışının ortaya çıkmasında rol oynayabileceği düşünülen sosyal ve çevresel konular üzerinde yoğunlaşmıştır. Bu çalışmalar şiddet ve suç davranışının oluşması için başlıca risk faktörlerinin sosyal eşitsizlik, fakirlik gibi çevresel faktörler olduğunu belirlemişlerdir.[7,8] Ancak çalışmalarda şiddet ve suç davranışının oluşmasına neden olan biyolojik, genetik ve nörofizyolojik faktörlerin de belirlenmesi ile sosyal ve çevresel faktörlerin tek belirleyici olmadığı gösterilmiştir. Toplanan veriler birlikte değerlendirildiğinde şiddet ve suç davranışının biyolojik ve sosyoekonomik faktörlerin etkileşimi sonucu ortaya çıktığı kabul edilmektedir.[9]

Şiddetin nörobiyolojisi ile ilgili çalışmalar insanların farklı karakteristik özelliklerinin şiddet davranışının gelişiminde rol oynayacağı varsayımı üzerinden yü-

kontrol edebilme ve düzenleyebilme genetik ve sosyal faktörlerle ilişkilidir. Daha pozitif ve olumlu çevre şartlarında büyütülen çocuklar daha fazla kendilik kontrolü geliştirebilirler. Sonuç olarak biyolojik ve çevresel faktörler hem ayrı ayrı hem de birlikte etkileşerek saldırgan davranışların ortaya çıkmasında rol oynarlar.[60]

Riskli çevre şartları var olan biyolojik kusurları güçlendirerek saldırgan davranışın ortaya çıkması olasılığını arttırırken, pozitif çevre şartları bazı kusurların hafiflemesine ya da daha olumlu ve uyumlu tepkilerin verilmesine katkıda bulunabilir.[9]

SONUÇ

Saldırgan davranışların gelişmesinde birçok faktör rol oynar. Çalışmalar biyolojik ve sosyoçevresel faktörlerin ve bunların birleşiminin çevreye ve kendine yönelik saldırgan davranışlar ve antisosyal davranışın gelişmesinde rol oynadığını göstermiştir. Biyolojik ve çevresel faktörlerin etkileşimi hostile-düşmanca bir çevre tarafından katalize edilebilir, böylece saldırgan davranış gelişimi riski artabilir veya pozitif ve uygun çevresel şartlar olumsuz genetik, nörobiyolojik, mizaçsal, bilişsel, tıbbi, psikodinamik özellikleri bastırarak saldırgan davranışların gelişmesi olasılığını azaltabilir.[142]

Yüksek olasılıkla psikososyal, psikodinamik, mizaçsal, nöropsikiyatrik, çevresel, genetik faktörlerin, ebeveynlik stilleri, eğitim ve bakım kalitesi ve okul ruh sağlığı girişimlerinin karşılıklı etkileşimi şiddet davranışının gelişmesi ya da basılanmasında etkili olmaktadır. Olumlu psikososyal, ailesel, eğitimsel faktörler, psikiyatrik girişimler, koruyucu ruh sağlığı ve olumlu devlet politikalarının şiddete yatkınlıkla ilişkili olumsuz genetik ve nörobiyolojik bireysel farklılıklar üzerine iyileştirici etkileri olabilir.

KAYNAKLAR

1. World Health Organization. Prevention of violence: a public health priority. Forty-ninth Assembly May 20-25 1996 Geneva, Switzerland. World Health Association
2. World Health Organization. World report on violence and health. Geneva, World Health Organization, 2002.
3. Çuhadaroğlu F, Canat S, Kılıç EZ, Şenol S, Rugancı N, Öncü B ve ark. Ergen ve Ruhsal Sorunları Durum Saptama Çalışması, TÜBA raporları, No 4, Ankara, TÜBİTAK Matbaası, 2004.
4. Baron R, Richardson D. Human Aggression. New York, Plenum Press, 1994.
5. Berkowitz N. Aggression: Its Causes, Consequences and Control. New York, McGraw-Hill, 1993.
6. Ferguson CJ, Beaver KM. Natural born killers: the genetic origins of extreme violence. Aggression Violent Behav 2009; 14:286-294.
7. Buss D, Shackelford T. Human aggression in evolutionary psychological perspective.

Kaynaklar

- Clin Psychol Rev 1997; 17:605-619.
8. Okami P, Shackelford T. Human sex differences in sexual psychology and behavior. *Ann Rev Sex Res* 2001; 12:186-241.
 9. Mendes DD, Mari JJ, Singer M, Barros GM, Mello AF. Study review of the biological, social and enviromental factors associated with aggressive behavior. *Rev Bras Psiquatr* 2009; 31:77-85.
 10. Loeber R, Pardini D. Neurobiology and the development of violence: common assumptions and controversies. *Phil Trans R Soc* 2008; 363:2491-2503.
 11. Burke JD, Loeber R, Birmaher B. Oppositional defiant disorder and conduct disorder: a review of the past10 years. Part II. *J Am Acad Child Adolesc Psychiatry* 2002; 41:1275-1293.
 12. Lynam DR. Early identification of chronic offenders: who is the fledgling psychopath? *Psychol Bull* 1996; 120:209-234.
 13. Waschbusch DA. A meta-analytic examination of comorbid hyperactive-impulsive-attention problems and conduct problems. *Psychol Bull* 2002; 128:118-150.
 14. Giancola PR, Roth RM, Dominic JP. The mediating role of executive functioning in the relationbetween difficult temperament and physical aggression. *J Psychopathol Behav Assess* 2006; 28:211-221.
 15. Rothbart MK. Commentary: differentiated measures of temperament and multiple pathways to childhood disorders. *J Clin Child Adol Psychol* 2004; 33:82-87.
 16. Oldehinkel AJ, Hartman CA, De Winter AF, Veenstra R, Ormel J. Temperament profiles associated with internalizing and externalizing problems in preadolescence. *Dev Psychopathol* 2004; 16:421-440.
 17. Olson SL, Bates JE, Sandy JM, Lanthier R. Early developmental precursors of externalizing behavior inmiddle childhood and adolescence. *J Abnorm Child Psychol* 2000; 28:119-133.
 18. Owens E, Shaw DS. Predicting growth curves of externalizing behavior across the preschool years. *J Abnorm Child Psychol* 2003; 31:575-590.
 19. Vitale JE, Newman JP, Bates JE, Goodnight J, Dodge KA, Pettit GS. Deficient behavioral inhibition and anomalous selective attention in a community sample of adolescents with psychopathic traits and low-anxiety traits. *J Abnorm Child Psychol* 2005; 33:461-470.
 20. Beauchaine TP, Gatzke-Kopp L, Mead HK. Polyvagal theory and developmental psychopathology: emotion dysregulation and conduct problems from pre-school to adolescence. *Biol Psychol* 2007; 74:174-184.
 21. Coccaro EF, McCloskey MS, Fitzgerald DA, Phan KL. Amygdala and orbitofrontal reactivity to social threat in individuals with impulsive aggression. *Biol Psychiatry* 2007; 62:168-178.
 22. Gjone H, Stevenson J. The association between internalizing and externalizing behavior in childhood andearly adolescence: genetic or environmental common influences? *J Abnorm Child Psychol* 1997; 25:277-286.
 23. Rothbart MK, Ahadi S, Hershey KL. Temperament and social behavior in childhood. *Merrill Palmer Q (Wayne State Univ Press)* 1994; 40:21-39.
 24. Broidy LM. Developmental trajectories of childhood disruptive behavior and adolescent delinquency: a six-site, cross-national study. *Dev Psychol* 2003; 39:222-245.
 25. Fanti KA. Individual, social, and behavioral factors associated with co-occurring conduct problems and callous-unemotional traits. *J Abnorm Child Psychol* 2013; 41:811-824.

Kaynaklar

26. Raine A, Moffitt TE, Caspi A, Loeber R, Stouthamer-Loeber M, Lynam D. Neurocognitive impairments in boys on the life-course persistent antisocial path. *J Abnorm Psychol* 2005; 114:38-49.
27. Morgan AB, Lilienfeld SO. A meta-analytic review of the relation between antisocial behavior and neuropsychological measures of executive function. *Clin Psychol Rev* 2000; 20:113-136.
28. Seguin JR, Nagin D, Assaad JM, Tremblay RE. Cognitive neuropsychological function in chronic physical aggression and hyperactivity. *J Abnorm Psychol* 2004; 113:603-613.
29. Kumari V. Neural dysfunction and violence in schizophrenia: an fMRI investigation. *Schizophr Res* 2006; 84:144-164.
30. Seguin JR, Arseneault L, Boulerice B, Harden PW, Tremblay RE. Response perseveration in adolescent boys with stable and unstable histories of physical aggression: the role of underlying processes. *J Child Psychol Psychiatry* 2002; 43:481-494.
31. Pardini D. The callousness pathway to severe violent delinquency. *Aggress Behav* 2006; 32:590-598.
32. Birbaumer N, Veit R, Lotze M, Erb M, Hermann C, Grodd W et al. Deficient fear conditioning in psychopathy: a functional magnetic resonance imaging study. *Arch Gen Psychiatry* 2005; 62:799-805.
33. Blair RJ. Neurocognitive models of aggression, the antisocial personality disorders, and psychopathy. *J Neurol Neurosurg Psychiatry* 2001; 71:727-731.
34. Blair RJ, Peschardt KS, Budhani S, Mitchell DG, Pine DS. The development of psychopathy. *J Child Psychol Psychiatry* 2006; 47:262-276.
35. Brennan PA, Grekin ER, Mednick SA. Maternal smoking during pregnancy and adult male criminal outcomes. *Arch Gen Psychiatry* 1999; 56:215-219.
36. Orlebeke JF, Knol DL, Verhulst FC. Increase in child behavior problems resulting from maternal smoking during pregnancy. *Arch Environ Health* 1997; 52:317-321.
37. Liu JH. Prenatal and perinatal complications as predispositions to externalizing behavior. *J Prenatal Perinatal Psychol Health* 2004; 18:301-311.
38. Raine A. Annotation: the role of prefrontal deficits low autonomic arousal and early health factors in the development of antisocial and aggressive behavior in children. *J Child Psychol Psychiatry* 2002; 43:417-434.
39. Roebuck TM, Mattson SN, Riley EP. Behavioral and psychosocial profiles of alcohol-exposed children. *Alcohol Clin Exp Res* 1999; 23:1070-1076.
40. Delaney-Black V, Covington C, Templin T, Ager J, Nordstrom-Klee B, Martier S et al. Teacher-assessed behavior of children prenatally exposed to cocaine. *Pediatrics* 2000; 106:782-791.
41. Singer LT, Arendt R, Minnes S, Farkas K, Salvator A, Kirchner HL et al. Cognitive and motor outcomes of cocaine-exposed infants. *JAMA* 2002; 287:1952-1960.
42. Dennis RL, Fahey AG, Cheng HW. Alterations to embryonic serotonin change aggression and fearfulness. *Aggress Behav* 2013; 39:91-98.
43. Neugebauer HL, Hoek HW, Susser E. Prenatal exposure to wartime famine and development of antisocial personality disorder in early adulthood. *JAMA* 1999; 282:455-462.
44. Arseneault L, Tremblay RE, Boulerice B, Seguin JR, Saucier JF. Minor physical anomalies and family adversity as risk factors for violent delinquency in adolescence. *Am J Psychiatry* 2000; 157:917-923.
45. Liu JH, Raine A, Venables P, Dalais C, Mednick SA. Malnutrition at ages 3 years pre-

- disposes to externalizing behavior problems at ages 8, 11 and 17 years. *Am J Psychiatry* 2004; 161:2005-2013.
46. Yang Y, Raine A. Prefrontal structural and functional brain imaging findings in antisocial, violent and psychopathic individuals: a meta-analysis. *Psychiatry Res* 2009; 174:81-88.
 47. Archer T, Berman MO, Blum K, Gold M. Neurogenetics and epigenetics in impulsive behaviour: impact on reward circuitry. *J Genet Syndr Gene Ther* 2012; 3: 1000115.
 48. Bertsch K, Grothe M, Prehn K, Vohs K, Berger C, Hauenstein K et al. Brain volumes differ between diagnostic groups of violent criminal offenders. *Eur Arch Psychiatry Clin Neurosci*. 2013; 263:593-606.
 49. Gregory S, Ffytche D, Simmons A, Kumari V, Howard M, Hodgins S et al. The antisocial brain: psychopathy matters. *Arch Gen Psychiatry* 2012; 69:962-972.
 50. Schiffer B, Müller BW, Scherbaum N, Hodgins S, Forsting M, Wiltfang J et al. Disentangling structural brain alterations associated with substance use disorders. *Arch Gen Psychiatry* 2011; 68:1039-1049.
 51. Howner K, Eskildsen SF, Fischer H, Dierks T, Wahlund LO, Jonsson T. Thinner cortex in the frontal lobes in mentally disordered offenders. *Psychiatry Res* 2012; 203:126-131.
 52. Golden CJ, Jackson ML, Peterson-Rohne A, Gontkovsky ST. Neuropsychological correlates of violence and aggression: a review of the clinical literature. *Aggress Violent Behav* 1996; 1:3-25.
 53. Jones H. Neuropsychology of violence. *Forensic Reports* 1984; 5:221-233.
 54. Moffitt TE. The neuropsychological studies of juvenile delinquency: a critical review. In *Crime and Justice: A Review of the Literature*. (Eds M Tonry, N Morris). Chicago, University of Chicago, 1990.
 55. Morgan AB, Lilienfeld SO. A meta-analytic review of the relation between antisocial behavior and neuropsychological measures of executive function. *Clin Psychol Rev* 2000; 20:113-136.
 56. Seo D, Patrick CJ, Kennealy PJ. Role of serotonin and dopamine system interactions in the neurobiology of impulsive aggression and its comorbidity with other clinical disorders. *Aggress Violent Behav* 2008; 13:382-395.
 57. Rowe DC, Stever C, Chase D, Sherman S, Abramowitz A, Waldman ID. Two dopamine receptor genes related to reports of childhood retrospective inattention and conduct disorder symptoms. *Mol Psychiatry* 2001; 6:429-433.
 58. Denney RM, Koch H, Craig IW. Association between monoamine oxidase A activity in human male skin fibroblasts and genotype of the MAOA promoter-associated variable number tandem repeat. *Hum Genet* 1999; 105:542-551.
 59. Sabol SZ, Hu S, Hamer D. A functional polymorphism in the monoamine oxidase A gene promoter. *Hum Genet* 1998; 103:273-279.
 60. Caspy A, McClay J, Moffitt TE, Mill J, Martin J, Craig IA. Role of genotype in cycle of violence in maltreated children. *Science* 2002; 297:851-854.
 61. Foley DL, Eaves LJ, Wormley B, Silberg JL, Maes HH, Kuhn J et al. Childhood adversity, monoamine oxidase A genotype, and risk for conduct disorder. *Arch Gen Psychiatry* 2004; 61:738-744.
 62. Guo G, Roettger ME, Shih JC. Contributions of the DAT1 and DRD2 genes to serious and violence delinquency among adolescents and young adults. *Hum Genet* 2007; 121:125-136.
 63. Eisenberg DT, MacKillop J, Modi M, Beauchemin J, Dang D, Lisman SA et al. Exami-

- ning impulsivity as an endophenotype using a behavioral approach: a DRD2 TaqI A and DRD4 48-bp VNTR association study. *Behav Brain Funct* 2007; 3:2.
64. Beaver KM, Wright JP, DeLisi M, Walsh A, Vaughn MG, Boisvert D et al. A gene x gene interaction between DRD2 and DRD4 is associated with conduct disorder and antisocial behavior in males. *Behav Brain Funct* 2007; 3:30.
 65. Noble EP, Gottschalk LA, Fallon JH, Ritchie T, Wu JC. D2 dopamine polymorphism and brain regional glucose metabolism. *Am J Med Genet* 1997; 74:162-166.
 66. Beitchman JH, Baldassarra L, Mik H, De Luca V, King N, Bender D et al. Serotonin transporter polymorphisms and persistent, pervasive childhood aggression. *Am J Psychiatry* 2006; 163:1103-1105.
 67. Haberstick BC, Smolen A, Hewitt JK. Family-based association test of the 5HTTLPR and aggressive behavior in a general population sample of children. *Biol Psychiatry* 2006; 59:836-843.
 68. Retz W, Retz-Junginger P, Supprian T, Thome J, Rosler M. Association of serotonin transporter promoter gene polymorphism with violence: relation with personality disorders, impulsivity and childhood ADHD psychopathology. *Behav Sci Law* 2004; 22:415-425.
 69. Liao DL, Hong CJ, Shih HL, Tsai SJ. Possible association between serotonin transporter promoter region polymorphism and extremely violent crime in Chinese males. *Neuropsychobiology* 2004; 50:284-287.
 70. Jones G, Zammit S, Norton N, Hamshere MI, Jones SL, Milham C et al. Aggressive behaviour in patients with schizophrenia is associated with catechol-O-methyltransferase genotype. *Br J Psychiatry* 2001; 179:351-355.
 71. Kotler M, Barak P, Cohen H, Averbuch IE, Grinshpoon A, Gritsenko I. Homicidal behavior in schizophrenia associated with a genetic polymorphism determining low COMT activity. *Am J Med Genet* 1999; 88:628-633.
 72. Deckert J, Catalano M, Syagailo YV, Bosi M, Okladnova O, Bella D et al. Excess of high activity monoamine oxidase A gene promoter alleles in female patients with panic disorder. *Hum Mol Genet* 1999; 8:621-624.
 73. Widom CS, Brzustowicz LM. MAOA and the "cycle of violence:" childhood abuse and neglect, MAOA genotype, and risk for violent and antisocial behavior. *Biol Psychiatry* 2006; 60:684-689.
 74. Beitchman JH, Baldassarra L, Mik H, De Luca V, King N, Bender D et al. Serotonin transporter polymorphisms and persistent, pervasive childhood aggression. *Am J Psychiatry* 2006; 163:1103-1105.
 75. Haberstick BC, Smolen A, Hewitt JK. Family-based association test of the 5HTTLPR and aggressive behavior in a general population sample of children. *Biol Psychiatry* 2006; 59:836-843.
 76. Moore T, Scarpa A, Raine A. A meta-analysis of serotonin metabolite 5-HIAA and antisocial behavior. *Aggres Behav* 2002; 28:299-316.
 77. Ricci LA, Melloni RH (Jr). Repeated Fluoxetine administration during adolescence stimulates aggressive behavior and alters serotonin and vasopressin neural development in hamsters. *Behav Neurosci* 2012; 126:640-653.
 78. Rubin DH, Walkup JT. SSRIs, adolescents, and aggression: tempering human implications regarding SSRI-induced aggression in hamsters: comment on Ricci and Melloni. *Behav Neurosci* 2012; 126:742-747.
 79. Soma KK, Scotti MA, Newman AE, Charlier TD, Demas GE. Novel mechanisms for neuroendocrine regulation of aggression. *Front Neuroendocrinol* 2008; 29:476-489

Kaynaklar

80. Nelson RJ. Effects of nitric oxide on the HPA axis and aggression. *Novartis Found Symp* 2005; 268:147-160.
81. Book AS, Starzyk KB, Qunisey VL. The relationship between testosterone and aggression: a meta-analysis. *Aggress Violent Behav* 2001; 6:579-599.
82. Liu J, Wuerker A. Biosocial bases of aggressive and violent behavior-implications for nursing studies. *Int J Nurs Stud* 2005; 42:229-241.
83. Van der Meij L, Almela M, Buunk AM, Dubbs S, Salvador A. 2D:4D in men is related to aggressive dominance but not to sociable dominance. *Aggress Behav* 2012; 38:208-212.
84. McBurnett K, Lahey BB, Rathouz PJ, Loeber R. Low salivary cortisol and persistent aggression in boys referred for disruptive behavior. *Arch Gen Psychiatry* 2000; 57:38-43.
85. Modi ME, Young LJ. Oxytocin, vasopressin, and social behavior: implications for autism spectrum disorders. In *Autism Spectrum Disorders*, 1st edition. (Eds DG Amaral, G Dawson, DH Geschwind):599-610. New York, Oxford University Press, 2011.
86. Heim C, Young LJ, Newport DJ, Mletzko T, Miller AH, Nemeroff CB. Lower CSF oxytocin concentrations in women with a history of childhood abuse. *Mol Psychiatry* 2008; 14:954-958.
87. Bosch OJ, Meddle SL, Beiderbeck DI, Douglas AJ, Neumann ID. Brain oxytocin correlates with maternal aggression: link to anxiety. *J Neurosci* 2005; 25:6807-6815.
88. Ferris CF, Vasopressin/oxytocin and aggression. *Novartis Found Symp* 2005; 268:190-198.
89. Thompson RR, George K, Walton JC, Orr SP, Benson J. Sex-specific influences of vasopressin on human social communication. *Proc Natl Acad Sci U S A* 2006; 103:7889-7894.
90. Dwivedi Y. *The Neurobiological Basis of Suicide*, 1st ed. Boca Raton (FL), CRC Press, 2012.
91. Wang Y, He Z, Zhao C, Li L. Medial amygdala lesions modify aggressive behavior and immediate early gene expression in oxytocin and vasopressin neurons during intermale exposure. *Brain Behav Res* 2013; 245:42-49.
92. Kim JJ, Haller J. Glucocorticoid hyper- and hypofunction: stress effects on cognition and aggression. *Ann N Y Acad Sci* 2007; 1113:291-303.
93. Veenema AH, Neumann ID. Neurobiological mechanisms of aggression and stress coping: a comparative study in mouse and rat selection lines. *Brain Behav Evol* 2007; 70:274-285.
94. Golomb BA. Cholesterol and violence: is there a connection? *Ann Intern Med* 1998; 128:478-487.
95. Harris MB. Aggression, gender and ethnicity. *Aggress Violent Behav* 1996; 1:123-146.
96. Fishbein D. *Biobehavioral Perspectives in Criminology*. Belmont, CA, Wadsworth/Thomson Learning, 2001.
97. Bjork M, Dougherty DM, Moeller FG, Cherek DR, Swann AC. The effects of tryptophan depletion and loading on laboratory aggression in men: time course and a food-restricted control. *Psychopharmacology* 1999; 142:24-30.
98. Watts DL. Trace elements and neuropsychological problems as reflected in tissue mineral analysis (TMA) patterns. *J Orthomolecular Med* 1990; 5:159-166.
99. Werbach M. Nutritional influences on aggressive behavior. *J Orthomolecular Med* 1995; 7:45-51.
100. Bodjen JD, Oleske JM, Louria DB. Lead poisoning-one approach to a problem that

Kaynaklar

- won't go away. *Environ Health Perspect* 1997; 105:1284-1287.
101. Loeber R. The prediction of violence and homicide in young men. *J Consult Clin Psychol* 2005; 73:1074-1108
 102. Farrington DP. Predictors, causes and correlates of male youth violence. In *Youth Violence*. (Eds M Tonry, M Moore):421-475. Chicago, University of Chicago Press, 1998.
 103. Schraiber LB, D'Oliveira AF, Couto MT. Schraiber LB, D'Oliveira AF, Couto MT. Violence and health: recent scientific studies. *Rev Saude Publica* 2006; 40 Spec no.:112-120.
 104. Bennett S, Farrington DP, Huesmann R. Explaining gender differences in crime and violence: the importance of social cognitive skills. *Aggress Violent Behav* 2005; 10: 263-288.
 105. Miller N, Dollard J. *Social Learning and Imitation*. New Haven, NJ, Yale University Press, 1941.
 106. Akers RL, Jensen GF. The empirical status of social learning theory of crime and deviance: the past, present and future. In *Taking Stock: The Status of Criminological Theory* (Eds FT Cullen, JP Wright, KR Blevins):37-76. New Brunswick, NJ, Transaction Publishers, 2006
 107. Beaver KM, Shutt JE, Boutwell, BB, Ratchford M, Roberts K, Barnes JC. Genetic and environmental influences on levels of self-control and delinquent peer affiliation: results from a longitudinal sample of adolescent twins. *Crim Justice Behav* 2009; 36:41-60.
 108. Ovacık A, Sezgin U. Aile içi şiddetin erkek çocuğunun şiddet içeren suç işleme davranışına etkileri (Yüksek lisans tezi). İstanbul Adli Tıp Enstitüsü, İstanbul Üniversitesi, 2008.
 109. Vahip I. Evdeki şiddet ve gelişimsel boyutu: farklı bir açıdan bakış. *Türk Psikiyatr Derg* 2002; 13:312-319.
 110. Güleç H, Topaloğlu M, Ünsal D, Altıntaş M. Bir kısır döngü olarak şiddet. *Psikiyatride Güncel Yaklaşımlar* 2012; 4:112-137.
 111. Barkley RA, Fischer M, Smallish L, Fletcher K. Young adult follow-up of hyperactive children: antisocial activities and drug use. *J Child Psychol Psychiatry* 2004; 45:195-211.
 112. Deater-Deckard K, Dodge KA, Bates JE, Pettit GS. Multiple risk factors in the development of externalizing behavior problems: group and individual differences. *Dev Psychopathol* 1998; 10:469-493.
 113. Reif A, Rösler M, Freitag CM, Schneider M, Eujen A, Kissling C et al. Nature and nurture predispose to violent behavior: serotonergic genes and adverse childhood environment. *Neuropsychopharmacology* 2007; 32:2375-2383.
 114. Kotch JB, Lewis T, Hussey JM, English D, Thompson R, Litrownik AJ et al. Importance of early neglect for childhood aggression. *Pediatrics* 2008; 121:725-731.
 115. Johnston J. *The Complete Idiots's Guide to Psychology*. Indianapolis, Alpha Books, 2000.
 116. Stevens A, Price J. *Evolutionary Psychiatry: A New Beginning*, 2nd ed. London, Routledge, 2000.
 117. Cyr M, Mc Duff P, Wright J. Prevalence and predictors of dating violence among adolescent female victims of child sexual abuse. *J Interpers Violence* 2006; 21:1000-1017.
 118. Lewis SF, Fremouw W. Dating violence: a critical review of the literature. *Clin Psychol Rev* 2001; 21:105-127.

Kaynaklar

119. Kılıç EZ. Ergenlerde şiddet kullanımı: bireysel ve ailesel etkenler. *Nöropsikiyatri Arşivi* 2012; 49:260-265.
120. Anhut R, Heitmeyer W. Desintegration, Konflikt und Ethnisierung. Eine Problemanalyse und theoretische Rahmenkonzeption. In *Bedrohte Stadtgesellschaft. Gesellschaftliche Desintegrationprozesse and ethnisch-kulturelle Konfliktkonstellationen*. (Eds W Heitmeyer, R Anhut):48. Weinheim, Juventa, 2000.
121. Heitmeyer W, Anhut R. Disintegration, recognition, and violence: a theoretical perspective. *New Dir Youth Dev* 2008; 119:25-37.
122. Mann JJ, Waternaux C, Haas GL, Malone KM. Toward a clinical model of suicidal behavior in psychiatric patients. *Am J Psychiatry* 1999; 156:181-189.
123. Ak M, Gülsün M, Özmenler KN. Özkıyım ve kişilik. *Psikiyatride Güncel Yaklaşımlar* 2009; 1:45-54.
124. Meyer JH. Neuroimaging high risk states for suicide. In *The Neurobiological Basis of Suicide*, 1st ed. (Ed Y Dwivedi). Boca Raton, CRC Press, 2012.
125. Mann JJ, Currier D, Stanley B, Oquendo MA, Amsel LV, Ellis SP. Can biological tests assist prediction of suicide in mood disorders? *Int J Neuropsychopharmacol* 2006; 9:465-474.
126. Arango V, Underwood MD, Gubbi AV, Mann JJ. Localized alterations in pre- and postsynaptic serotonin binding sites in the ventrolateral prefrontal cortex of suicide victims. *Brain Res* 1995; 688:121-133.
127. Mann JJ, Huang YY, Underwood MD, Kassir SA, Oppenheim S, Kelly TM et al. A serotonin transporter gene promoter polymorphism (5-HTTLPR) and prefrontal cortical binding in major depression and suicide. *Arch Gen Psychiatry* 2000; 57:729-738.
128. Mann JJ, Brent DA, Arango V. The neurobiology and genetics of suicide and attempted suicide: a focus on the serotonergic system. *Neuropsychopharmacology* 2001; 24:467-477.
129. Arango V, Underwood MD, Mann JJ. Fewer pigmented locus coeruleus neurons in suicide victims: preliminary results. *Biol Psychiatry* 1996; 39:112-120.
130. Arango V, Ernsberger P, Marzuk PM, Chen JS, Tierney H, Stanley M et al. Autoradiographic demonstration of increased serotonin 5-HT₂ and beta-adrenergic receptor binding sites in the brain of suicide victims. *Arch Gen Psychiatry* 1990; 47:1038-1047.
131. Arango V, Ernsberger P, Sved AF, Mann JJ. Quantitative autoradiography of α 1- and α 2-adrenergic receptors in the cerebral cortex of controls and suicide victims. *Brain Res* 1993; 630:271-282.
132. Ordway GA, Widdowson PS, Smith KS, Halaris A. Agonist binding to α 2-adrenoceptors is elevated in the locus coeruleus from victims of suicide. *J Neurochem* 1994; 63:617-624.
133. Ordway GA, Smith KS, Haycock JW. Elevated tyrosine hydroxylase in the locus coeruleus of suicide victims. *J Neurochem* 1994; 62:680-685.
134. Heim C, Nemeroff CB. The role of childhood trauma in the neurobiology of mood and anxiety disorders: preclinical and clinical studies. *Biol Psychiatry* 2001; 49:1023-1039.
135. Coryell W, Schlessler M. The dexamethasone suppression test and suicide prediction. *Am J Psychiatry* 2001; 158:748-753.
136. Pacher P, Kecskemeti V. Trends in the development of new antidepressants: is there a light at the end of the tunnel? *Curr Med Chem* 2004; 11:925-943.
137. Merali Z, Du L, Hrdina P, Palkovits M, Faludi G, Poulter MO et al. Dysregulation in the suicide brain: mRNA expression of corticotropin releasing hormone recep-

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- tors and GABAA receptor subunits in frontal cortical brain region. *J Neurosci* 2004; 24:1478-1485.
138. Vinod KY, Arango V, Xie S, Kassir SA, Mann JJ, Cooper TB et al. Elevated levels of endocannabinoids and CB1 receptor-mediated G-protein signaling in the prefrontal cortex of alcoholic suicide victims. *Biol Psychiatry* 2005; 57:480-486.
139. Hungund BL, Vinod KY, Kassir SA, Basavarajappa BS, Yalamanchili R, Cooper TB et al. Upregulation of CB1 receptors and agonist-stimulated [35S]GTPγS binding in the prefrontal cortex of depressed suicide victims. *Mol Psychiatry* 2004; 9:184-190.
140. Christensen R, Kristensen P.K, Bartels E.M, Bliddal H, Astrup A. Efficacy and safety of the weight-loss drug rimonabant: A meta-analysis of randomised trials. *Lancet* 2007; 370:1706-1713.
141. Ross RR, Fabiano EA. *Time to Think: A Cognitive Model of Delinquency Prevention and Offender Rehabilitation*. Johnson City, TN, Institute of Social Sciences and Arts, 1985.
142. Ferguson CJ. An evolutionary approach to understanding violent antisocial behavior: diagnostic implications for a dual-process etiology. *J Forensic Psychol Pract* 2008; 8:321-343.