

## 22. BÖLÜM

### İnternet Bağımlılığı

Özden ARISOY<sup>1</sup>

İnsanoğlu, yüzyıllardır gelişimin peşinden koşmuş, sürekli daha iyiyi ve daha güzeli yakalamaya çalışmış ve bu amaçla hem kendisiyle hem doğayla savaşımını sürdürmüştür. Teknolojik gelişmeler, özellikle 20. yüzyılın ikinci yarısından sonra, insanoğlunun daha önceki devirlerle kıyaslanamayacak ölçüde bir sıçrama yapmasını sağlamış; iş hayatı, toplumsal yaşam ve bireysel ilişkilerde radikal değişimlere neden olmuştur. Bu değişimlerin yaşanmasındaki en önemli aktör hiç şüphesiz ki bilgisayar ve onun öncülük ettiği bilişim sektöründe yaşanan ilerleme ve dolayısıyla internettir.

İnternet, tüm dünyaya yayılmış irili ufaklı milyonlarca bilgisayarı birbirine bağlayan, dünya çapında yaygınlaşan ve sürekli büyüyen bir ağıdır. Bugün, bilginin çok hızlı olarak üretildiği ve kısa bir süre içinde ge-

çerliliğini yitirdiği bir çağda yaşamaktayız. Bu nedenle bilgi çağı, insanlar ve kurumlar arasında bilgi aktarımının hızlı ve etkin olarak yapılmasını gerektirmektedir. İnternetin temel işlevi de bu bilginin yayılmasını ve dağıtımını kolaylaştırmaktır çünkü internet bilgiye kolay, ucuz, hızlı ve güvenli ulaşmanın ve onu paylaşmanın günümüzdeki en geçerli yoludur.

Özellikle araştırmacılar ve bilgiye gereksinimi olanlar için, ağlar, hayati önem kazanmıştır. Bilgisayara bağlı bir modem, dünyaya açılan bir penceredir. İnternet sayesinde, insanlar istedikleri bilgiye kolay ve hızlı bir şekilde ulaşabilmekte; ağına parçası olan kütüphanelere, veri tabanlarına, üniversitelerin elektronik arşivlerine, tartışma listeleri ve haber gruplarının arşiv ve tutanaklarına erişilebilmektedir. İnternetle

<sup>1</sup> Prof. Dr., Bolu Abant İzzet Baysal Üniversitesi Tıp Fakültesi Psikiyatri Anabilim Dalı, ozdenarisoy35@gmail.com

çıkmaya başlayan bozukluk hakkında yeterli bilgiye sahip olmaları daha da önem kazanmaktadır.

Bu amaçla hazırlanan kitap bölümünde, özellikle son zamanlarda çığ gibi büyüyen “internet bağımlılığı” konusunda yapılmış araştırmalara yer verilerek bir farkındalık oluşturulmaya çalışılmıştır. Literatür tarandığında, dünyanın her yerinden, özellikle de yüksek teknolojiye sahip gelişmiş ülkelerinden bu konuyla ilgili sayısız vaka bildirimi ve araştırma rapor edilmeye başlandığı görülmüştür. Ülkemizde, bu kitabın ilk basımının yapıldığı yıllarda konuyla ilgili çok az çalışma yapılmış olmasına rağmen, özellikle son 10 yılda internet bağımlılığının ülkemizdeki araştırmacılar için de giderek ilgi çekici bir konu haline gelmeye başladığı söylenebilir. İnternette, bu konunun işlendiği pek çok forumda kendisinin internet bağımlısı olduğunun düşünen onlarca insandan e-posta gelmektedir.

Ülkemiz, özellikle genç nüfusun yüksekliği, yeni gelişen bir ülke olması, internet kullanımının giderek yaygınlaşması, işsizlik ve internet kafelerin kontrolsüzce çoğalması nedeniyle bu yeni tanımlanan bozukluk için uygun bir zemin oluşturmaktadır. Türkiye’de internet bağımlılığı problemi daha ziyade bu teknolojiye daha hakim olan gençlerde ve çocuklarda daha fazla görülmektedir ve artık aileler çocuklarının internet kullanımının yol açtığı sorunlar nedeniyle bu bozukluğun tedavisini yapabilecek merkezlerin arayışına girmeye başlamıştır.

Bizim için henüz yeni olan bu sorunu uzun bir süredir yaşamakta olan uzak doğu ülkelerinde ve ABD’de artık bu bozuklukla ilgili tedavi merkezleri oluşturulmuş ve hızla bu konuda deneyimli klinisyenlerin yetiştiril-

mesine başlanmıştır. Kitabımızın ilk basımının yapıldığı yıllarda ülkemizde henüz bu tip bir tedavi merkezi bulunmamış olmasına rağmen, gelişen çağa hızla ayak uyduran Türkiye’de “internet bağımlılığı” sorunu son beş yılda giderek artmaya ve klinisyenler de bu durumla daha sık karşılaşmaya başlamışlardır. Bu hızlı artış üzerine, ülkemizde ilk internet bağımlılığı polikliniği kitabımızın ilk basımından sonra 2012 yılında İstanbul’da Bakırköy Ruh ve Sinir Hastalıkları Hastanesi bünyesinde açılmış ve hizmet vermeye başlamıştır. Bu nedenle, internet kullanımının en yaygın olduğu genç nüfusun yoğunlukta olduğu ülkemizde, bu tip polikliniklerin sayısının hızla artabileceği, klinisyenlerimizin de giderek daha fazla sayıda, artık sınıflandırma sistemlerine de girmiş olan internet oyun oynama bozukluğu ya da henüz sınıflandırma sistemine girmemiş olsa da internet bağımlılığı vakaları ile karşılaşma ihtimallerinin oldukça yüksek olabileceği göz önüne alındığında; klinisyenlerimizin bu bozukluk konusunda yeterli bilgiye sahip olmaları, bu bozukluğu tanımları ve uygun tedavi yaklaşımları sergilemeleri büyük önem arz etmektedir.

**Teşekkür:** Arş. Gör. Dr. Mücahit Gökduman’a nörogörüntüleme kısmındaki literatür taramasına katkılarından dolayı teşekkür ederim.

## KAYNAKLAR

- Ahn, H. M., Chung, H. J., & Kim, S. H. (2015). Altered brain reactivity to game cues after gaming experience. *Cyberpsychology, Behavior, and Social Networking*, 18(8), 474-479.
- Altbäcker, A., Plózer, E., Darnai, G., Perlaki, G., Horváth, R., Orsi, G., ... & Janszky, J. (2016). Proble-

- matic internet use is associated with structural alterations in the brain reward system in females. *Brain imaging and behavior*, 10(4), 953-959.
- Amerikan Psikiyatri Birliği., (1994). Mental Bozuklukların Tanısal ve Sayımsal Elkitabı (DSM-IV), dördüncü baskı. *E Köroğlu (Çev. Ed.)*, Ankara: HYB.
- Amerikan Psikiyatri Birliği., (2013). Mental bozuklukların tanısal ve sayımsal el kitabı, Beşinci Baskı (DSM-5). *E Köroğlu (Çev. Ed.)*, Ankara: Hekimler Yayın Birliği.
- Antons, S., Brand, M., & Potenza, M. N. (2020). Neurobiology of cue-reactivity, craving, and inhibitory control in non-substance Addictive Behaviors. *Journal of the Neurological Sciences*, 116952.
- Armstrong, L., Phillips, J. G., & Saling, L. L. (2000). Potential determinants of heavier Internet usage. *International journal of human-computer studies*, 53(4), 537-550.
- Bae, S., Han, D. H., Jung, J., Nam, K. C., & Renshaw, P. F. (2017). Comparison of brain connectivity between Internet gambling disorder and Internet gaming disorder: A preliminary study. *Journal of Behavioral Addictions*, 6(4), 505-515.
- BALCI, Ş., & Gölcü, A. (2013). Facebook Addiction among university students in Turkey: Selçuk University Example". *Selçuk Üniversitesi Türkiyat Araştırmaları Dergisi*, 1(34), 255-278.
- Balta, O. C., & Horzum, M. B. (2008). İNTERNET BAĞIMLILIĞI TESTİ. *Journal of Educational Sciences & Practices*, 7(13).
- Beard, K. W., & Wolf, E. M. (2001). Modification in the proposed diagnostic criteria for Internet addiction. *Cyberpsychology & behavior*, 4(3), 377-383.
- Bianchi, A., & Phillips, J. G. (2005). Psychological predictors of problem mobile phone use. *CyberPsychology & Behavior*, 8(1), 39-51.
- Black, D. W., Belsare, G., & Schlosser, S. (1999). Clinical features, psychiatric comorbidity, and health-related quality of life in persons reporting compulsive computer use behavior. *Journal of clinical psychiatry*, 60(12), 839-844.
- Block, J. J., (2008). Issues for DSM-V: Internet addiction.
- Bostwick, J. M., & Bucci, J. A. (2008, February). Internet sex addiction treated with naltrexone. In *Mayo Clinic Proceedings* (Vol. 83, No. 2, pp. 226-230). Elsevier.
- Bölükbaş, K. (2003). İnternet kafeler ve internet bağımlılığı üzerine sosyolojik bir araştırma: Diyarbakır örneği. *Yayımlanmamış Yüksek Lisans Tezi, Dicle Üniversitesi, Sosyal Bilimler Enstitüsü, Diyarbakır*.
- Brand, M., Snagowski, J., Laier, C., & Maderwald, S. (2016). Ventral striatum activity when watching preferred pornographic pictures is correlated with symptoms of Internet pornography addiction. *Neuroimage*, 129, 224-232.
- Brand, M., Wegmann, E., Stark, R., Müller, A., Wölfling, K., Robbins, T. W., & Potenza, M. N. (2019). The Interaction of Person-Affect-Cognition-Execution (I-PACE) model for Addictive Behaviors: Update, generalization to Addictive Behaviors beyond internet-use disorders, and specification of the process character of Addictive Behaviors. *Neuroscience & Biobehavioral Reviews*, 104, 1-10.
- Brenner, V. (1997). Psychology of computer use: XL-VII. Parameters of Internet use, abuse and addiction: the first 90 days of the Internet Usage Survey. *Psychological reports*, 80(3), 879-882.
- Burleigh, T. L., Griffiths, M. D., Sumich, A., Wang, G. Y., & Kuss, D. J. (2020). Gaming disorder and internet addiction: A systematic review of resting-state EEG studies. *Addictive Behaviors*, 107, 106429.
- Cao, F., Su, L., Liu, T., & Gao, X. (2007). The relationship between impulsivity and Internet addiction in a sample of Chinese adolescents. *European Psychiatry*, 22(7), 466-471.
- Caplan, S. E. (2003). Preference for online social interaction: A theory of problematic Internet use and psychosocial well-being. *Communication research*, 30(6), 625-648.
- Caplan, S. E. (2006). Relations among loneliness, social anxiety, and problematic Internet use. *CyberPsychology & behavior*, 10(2), 234-242.
- Caspi, A., Sugden, K., Moffitt, T. E., Taylor, A., Craig, I. W., Harrington, H., ... & Poulton, R. (2003). Influence of life stress on depression: moderation by a polymorphism in the 5-HTT gene. *Science*, 301(5631), 386-389.

- Ceyhan, A. A. (2008). Predictors of problematic internet use on Turkish university students. *CyberPsychology & Behavior*, *11*(3), 363-366.
- Ceyhan, E., & Ceyhan, A. A. (2007). Problemlı internet kullanımı ölçeđi'nin geçerlik ve güvenilirlik çalışmaları.
- Chak, K., & Leung, L. (2004). Shyness and locus of control as predictors of internet addiction and internet use. *CyberPsychology & Behavior*, *7*(5), 559-570.
- Chen, C. Y., Huang, M. F., Yen, J. Y., Chen, C. S., Liu, G. C., Yen, C. F., & Ko, C. H. (2015). Brain correlates of response inhibition in I nternet gaming disorder. *Psychiatry and Clinical Neurosciences* *69*(4), 201-209.
- Chen, X., Wang, Y., Zhou, Y., Sun, Y., Ding, W., Zhuang, Z., ... & Du, Y. (2014). Different resting-state functional connectivity alterations in smokers and nonsmokers with internet gaming addiction. *BioMed research international*, 2014.
- Cheng, H., & Liu, J. (2020). Alterations in Amygdala connectivity in internet Addiction Disorder. *Scientific reports*, *10*(1), 1-10.
- Choi, E. J., Taylor, M. J., Hong, S. B., Kim, C., Kim, J. W., McIntyre, R. S., & Yi, S. H. (2018). Gaming-addicted teens identify more with their cyber-self than their own self: Neural evidence. *Psychiatry Research: Neuroimaging*, *279*, 51-59.
- Choi, J. S., Park, S. M., Lee, J., Hwang, J. Y., Jung, H. Y., Choi, S. W., ... & Lee, J. Y. (2013). Resting-state beta and gamma activity in Internet addiction. *International Journal of Psychophysiology*, *89*(3), 328-333.
- Chrisman, C. J., Albuquerque, P., Guimaraes, A. J., Nieves, E., & Casadevall, A. (2011). Phospholipids trigger *Cryptococcus neoformans* capsular enlargement during interactions with amoebae and macrophages. *PLoS Pathog*, *7*(5), e1002047.
- Chun, J. W., Choi, J., Cho, H., Lee, S. K., & Kim, D. J. (2015). Dysfunction of the frontolimbic region during swear word processing in young adolescents with Internet gaming disorder. *Translational psychiatry*, *5*(8), e624-e624.
- Çakırođlu, S. (2018). İnternet Oyun Oynama Bozukluđu Ölçeđi'nin Tükçeye uyarlanması. *Yayınlanmamış uzmanlık tezi, İstanbul Üniversitesi, İstanbul*.
- DA, P. N. R. F. G., Mossle, L. J. R. H. J., Fung, T. B. G. T. R., & González, D. B. G. A. M. Ibáñez A. Tam P., & O'Brien CP (2014). *An international consensus for assessing Internet gaming disorder using the new DSM-5 approach. Addiction (Abingdon, England)*, *109*(9), 1399-1406.
- Dalbudak, E., Evren, C., Aldemir, S., Coskun, K. S., Ugurlu, H., & Yildirim, F. G. (2013). Relationship of internet addiction severity with depression, anxiety, and alexithymia, temperament and character in university students. *Cyberpsychology, Behavior, and Social Networking*, *16*(4), 272-278.
- Davis, R. A. (2001). A cognitive-behavioral model of pathological Internet use. *Computers in human behavior*, *17*(2), 187-195.
- Dieter, J., Hoffmann, S., Mier, D., Reinhard, I., Beutel, M., Vollstädt-Klein, S., ... & Leménager, T. (2017). The role of emotional inhibitory control in specific internet addiction—an fMRI study. *Behavioural Brain Research*, *324*, 1-14.
- Dong, G. H., Wang, M., Zhang, J., Du, X., & Potenza, M. N. (2019). Functional neural changes and altered cortical-subcortical connectivity associated with recovery from Internet gaming disorder. *Journal of Behavioral Addictions*, *8*(4), 692-702.
- Dong, G., DeVito, E. E., Du, X., & Cui, Z. (2012). Impaired inhibitory control in 'internet addiction disorder': a functional magnetic resonance imaging study. *Psychiatry Research: Neuroimaging*, *203*(2-3), 153-158.
- Dong, G., DeVito, E., Huang, J., & Du, X. (2012). Diffusion tensor imaging reveals thalamus and posterior cingulate cortex abnormalities in internet gaming addicts. *Journal of Psychiatric Research*, *46*(9), 1212-1216.
- Dong, G., Hu, Y., Lin, X., & Lu, Q. (2013). What makes Internet addicts continue playing online even when faced by severe negative consequences? Possible explanations from an fMRI study. *Biological Psychology*, *94*(2), 282-289.
- Dong, G., Huang, J., & Du, X. (2012). Alterations in regional homogeneity of resting-state brain activity in internet gaming addicts. *Behavioral and Brain Functions*, *8*(1), 1-8.
- Dong, G., Li, H., Wang, L., & Potenza, M. N. (2017). Cognitive control and reward/loss proces-

- ing in Internet gaming disorder: results from a comparison with recreational Internet game-users. *European Psychiatry*, 44, 30–38.
- Dong, G., Li, H., Wang, L., & Potenza, M. N. (2017). The correlation between mood states and functional connectivity within the default mode network can differentiate Internet gaming disorder from healthy controls. *Progress in Neuro-Psychopharmacology and Biological Psychiatry*, 77, 185–193.
- Dong, G., Lin, X., & Potenza, M. N. (2015). Decreased functional connectivity in an executive control network is related to impaired executive function in Internet gaming disorder. *Progress in Neuro-Psychopharmacology and Biological Psychiatry*, 57, 76–85.
- Dong, G., Lin, X., Hu, Y., Xie, C., & Du, X. (2015). Imbalanced functional link between executive control network and reward network explain the online-game seeking behaviors in Internet gaming disorder. *Scientific reports*, 5(1), 1–6.
- Dong, G., Lin, X., Zhou, H., & Lu, Q. (2014). Cognitive flexibility in internet addicts: fMRI evidence from difficult-to-easy and easy-to-difficult switching situations. *Addictive Behaviors*, 39(3), 677–683.
- Dong, G., Liu, X., Zheng, H., Du, X., & Potenza, M. N. (2019). Brain response features during forced break could predict subsequent recovery in internet gaming disorder: A longitudinal study. *Journal of Psychiatric Research*, 113, 17–26.
- Dong, G., Shen, Y., Huang, J., & Du, X. (2013). Impaired error-monitoring function in people with internet addiction disorder: an event-related fMRI study. *European addiction research*, 19(5), 269–275.
- Dong, G., Wang, L., Du, X., & Potenza, M. N. (2018). Gender-related differences in neural responses to gaming cues before and after gaming: implications for gender-specific vulnerabilities to Internet gaming disorder. *Social Cognitive and Affective Neuroscience*, 13(11), 1203–1214.
- Dong, G., Wang, Z., Wang, Y., Du, X., & Potenza, M. N. (2019). Gender-related functional connectivity and craving during gaming and immediate abstinence during a mandatory break: Implications for development and progression of internet gaming disorder. *Progress in Neuro-Psychopharmacology and Biological Psychiatry*, 88, 1–10.
- Dong, G., Wu, L., Wang, Z., Wang, Y., Du, X., & Potenza, M. N. (2018). Diffusion-weighted MRI measures suggest increased white-matter integrity in Internet gaming disorder: evidence from the comparison with recreational Internet game users. *Addictive Behaviors*, 81, 32–38.
- Dong, H., Wang, M., Zheng, H., Zhang, J., & Dong, G. H. (2021). The functional connectivity between the prefrontal cortex and supplementary motor area moderates the relationship between internet gaming disorder and loneliness. *Progress in Neuro-Psychopharmacology and Biological Psychiatry*, 108, 110154.
- Du, X., Liu, L., Yang, Y., Qi, X., Gao, P., Zhang, Y., ... & Zhang, Q. (2017). Diffusion tensor imaging of the structural integrity of white matter correlates with impulsivity in adolescents with internet gaming disorder. *Brain and behavior*, 7(8), e00753.
- Du, X., Yang, Y., Gao, P., Qi, X., Du, G., Zhang, Y., ... & Zhang, Q. (2017). Compensatory increase of functional connectivity density in adolescents with internet gaming disorder. *Brain imaging and behavior*, 11(6), 1901–1909.
- Ekinci, A. (2002). Aziz Antonius'un baştan çıkarılması: Bir kötü alışkanlık olarak internet. Makale 20.07.2008 tarihinde [www.felsefeekibi.com](http://www.felsefeekibi.com) adresinden indirilmiştir.
- Feng, Q., Chen, X., Sun, J., Zhou, Y., Sun, Y., Ding, W., ... & Du, Y. (2013). Voxel-level comparison of arterial spin-labeled perfusion magnetic resonance imaging in adolescents with internet gaming addiction. *Behavioral and Brain Functions*, 9(1), 1–11.
- Firth, J., Torous, J., Stubbs, B., Firth, J. A., Steiner, G. Z., Smith, L., ... & Sarris, J. (2019). The "online brain": how the Internet may be changing our cognition. *World Psychiatry*, 18(2), 119–129.
- Fortson, B. L., Scotti, J. R., Chen, Y. C., Malone, J., & Del Ben, K. S. (2007). Internet use, abuse, and dependence among students at a southeastern regional university. *Journal of American College Health*, 56(2), 137–144.
- Ge, X., Sun, Y., Han, X., Wang, Y., Ding, W., Cao, M., ... & Zhou, Y. (2017). Difference in the functional

- connectivity of the dorsolateral prefrontal cortex between smokers with nicotine dependence and individuals with internet gaming disorder. *BMC neuroscience*, 18(1), 1-10.
- Goldberg, I. (1995). *Internet addiction disorder*. 18.10.2007 tarihinde <http://www.psychom.net/iasg.html> adresinden indirilmiştir.
- Gönül, A. S. (2002). Patolojik internet kullanımı. In *Yeni Symposium* (Vol. 40, No. 3, pp. 105-110).
- Greenfield, D. N. (1999). Psychological characteristics of compulsive Internet use: A preliminary analysis. *Cyberpsychology & behavior*, 2(5), 403-412.
- Griffiths, M. (1995, February). Technological addictions. In *Clinical psychology forum* (pp. 14-14). Division of Clinical Psychology of the British Psychol Soc.
- Griffiths, M. (2000). Internet addiction-time to be taken seriously?. *Addiction research*, 8(5), 413-418.
- Griffiths, M. D. (1996). Internet addiction: an issue for clinical psychology?. In *Clinical Psychology Forum* (Vol. 97, pp. 32-36). Nottingham Trent University.
- Griffiths, M. D. (1996b). Behavioral addictions: An issue for everybody? *Journal of Workplace Learning*, (Vol. 8, pp.19-25)
- Grohol, J. M. (1999). *Internet addiction guide*. Makale 26.07.2008 tarihinde [www.psychcentral.com/netaddiction](http://www.psychcentral.com/netaddiction) adresinden indirildi
- Han, D. H., Hwang, J. W., & Renshaw, P. F. (2011). Bupropion sustained release treatment decreases craving for video games and cue-induced brain activity in patients with Internet video game addiction.
- Han, D. H., Kim, S. M., Bae, S., Renshaw, P. F., & Anderson, J. S. (2017). Brain connectivity and psychiatric comorbidity in adolescents with Internet gaming disorder. *Addiction Biology*, 22(3), 802-812.
- Han, D. H., Kim, Y. S., Lee, Y. S., Min, K. J., & Renshaw, P. F. (2010). Changes in cue-induced, prefrontal cortex activity with video-game play. *Cyberpsychology, Behavior, and Social Networking*, 13(6), 655-661.
- Han, J. W., Han, D. H., Bolo, N., Kim, B., Kim, B. N., & Renshaw, P. F. (2015). Differences in functional connectivity between alcohol dependence and internet gaming disorder. *Addictive Behaviors*, 41, 12-19.
- He, Q., Turel, O., & Bechara, A. (2018). Association of excessive social media use with abnormal white matter integrity of the corpus callosum. *Psychiatry Research: Neuroimaging*, 278, 42-47.
- Hong, S. B., Harrison, B. J., Dandash, O., Choi, E. J., Kim, S. C., Kim, H. H., ... & Yi, S. H. (2015). A selective involvement of putamen functional connectivity in youth with internet gaming disorder. *Brain Research*, 1602, 85-95.
- Hong, S. B., Kim, J. W., Choi, E. J., Kim, H. H., Suh, J. E., Kim, C. D., ... & Yi, S. H. (2013). Reduced orbitofrontal cortical thickness in male adolescents with internet addiction. *Behavioral and Brain Functions*, 9(1), 1-5.
- Hong, S. B., Zalesky, A., Cocchi, L., Fornito, A., Choi, E. J., Kim, H. H., ... & Yi, S. H. (2013). Decreased functional brain connectivity in adolescents with internet addiction. *PLoS One*, 8(2), e57831.
- Hou, H., Jia, S., Hu, S., Fan, R., Sun, W., Sun, T., & Zhang, H. Redusert Striatal Dopamin Transporters hos personer med Internet Addiction Disorder (2012).
- Jang, K. S., Hwang, S. Y., & Choi, J. Y. (2008). Internet addiction and psychiatric symptoms among Korean adolescents. *Journal of School Health*, 78(3), 165-171.
- Jeong, B. S., Han, D. H., Kim, S. M., Lee, S. W., & Renshaw, P. F. (2016). White matter connectivity and Internet gaming disorder. *Addiction Biology*, 21(3), 732-742.
- Jin, C., Zhang, T., Cai, C., Bi, Y., Li, Y., Yu, D., ... & Yuan, K. (2016). Abnormal prefrontal cortex resting state functional connectivity and severity of internet gaming disorder. *Brain imaging and behavior*, 10(3), 719-729.
- Kim, E. J., Namkoong, K., Ku, T., & Kim, S. J. (2008). The relationship between online game addiction and aggression, self-control and narcissistic personality traits. *European Psychiatry*, 23(3), 212-218.
- Kim, H., Kim, Y. K., Lee, J. Y., Choi, A. R., & Choi, J. S. (2019). Hypometabolism and altered metabolic connectivity in patients with internet gaming disorder and alcohol use disorder. *Progress in*

- Neuro-Psychopharmacology and Biological Psychiatry*, 95, 109680.
- Kim, J. E., Son, J. W., Choi, W. H., Kim, Y. R., Oh, J. H., Lee, S., & Kim, J. K. (2014). Neural responses to various rewards and feedback in the brains of adolescent Internet addicts detected by functional magnetic resonance imaging. *Psychiatry and Clinical Neurosciences* 68(6), 463-470.
- Kim, J. Y., Chun, J. W., Park, C. H., Cho, H., Choi, J., Yang, S., & Ahn, K. J. (2019). The correlation between the frontostriatal network and impulsivity in internet gaming disorder. *Scientific reports*, 9(1), 1-9.
- Kim, K., Ryu, E., Chon, M. Y., Yeun, E. J., Choi, S. Y., Seo, J. S., & Nam, B. W. (2006). Internet addiction in Korean adolescents and its relation to depression and suicidal ideation: a questionnaire survey. *International journal of nursing studies*, 43(2), 185-192.
- Kim, M. K., Jung, Y. H., Kyeong, S., Shin, Y. B., Kim, E., & Kim, J. J. (2018). Neural correlates of distorted self-concept in individuals with internet gaming disorder: a functional MRI study. *Frontiers in Psychiatry*, 9, 330.
- Kim, M., Kim, D., Bae, S., Han, D. H., & Jeong, B. (2020). Aberrant structural network of comorbid attention deficit/hyperactivity disorder is associated with addiction severity in internet gaming disorder. *NeuroImage: Clinical*, 27, 102263.
- Kim, S. H., Baik, S. H., Park, C. S., Kim, S. J., Choi, S. W., & Kim, S. E. (2011). Reduced striatal dopamine D2 receptors in people with Internet addiction. *Neuroreport*, 22(8), 407-411.
- Kim, Y. R., Son, J. W., Lee, S. I., Shin, C. J., Kim, S. K., Ju, G., ... & Ha, T. H. (2012). Abnormal brain activation of adolescent internet addict in a ball-throwing animation task: possible neural correlates of disembodiment revealed by fMRI. *Progress in Neuro-Psychopharmacology and Biological Psychiatry*, 39(1), 88-95.
- Ko, C. H., Hsieh, T. J., Chen, C. Y., Yen, C. F., Chen, C. S., Yen, J. Y., ... & Liu, G. C. (2014). Altered brain activation during response inhibition and error processing in subjects with Internet gaming disorder: a functional magnetic imaging study. *European Archives of Psychiatry and Clinical Neuroscience*, 264(8), 661-672.
- Ko, C. H., Hsieh, T. J., Wang, P. W.
- Ko, C. H., Liu, G. C., Yen, J. Y., Chen, C. Y., Yen, C. F., & Chen, C. S. (2013). Brain correlates of craving for online gaming under cue exposure in subjects with Internet gaming addiction and in remitted subjects. *Addiction Biology*, 18(3), 559-569.
- Ko, C. H., Liu, G. C., Yen, J. Y., Yen, C. F., Chen, C. S., & Lin, W. C. (2013). The brain activations for both cue-induced gaming urge and smoking craving among subjects comorbid with Internet gaming addiction and nicotine dependence. *Journal of Psychiatric Research*, 47(4), 486-493.
- Ko, C. H., Yen, J. Y., Chen, C. C., Chen, S. H., Wu, K., & Yen, C. F. (2006). Tridimensional personality of adolescents with internet addiction and substance use experience. *The Canadian Journal of Psychiatry*, 51(14), 887-894.
- Kratzer, S., & Hegerl, U. (2007). Is "Internet Addiction" a disorder of its own?--a study on subjects with excessive internet use. *Psychiatrische Praxis*, 35(2), 80-83.
- Kühn, S., & Gallinat, J. (2014). Brain structure and functional connectivity associated with pornography consumption: the brain on porn. *JAMA Psychiatry*, 71(7), 827-834.
- Kühn, S., & Gallinat, J. (2015). Brains online: structural and functional correlates of habitual Internet use. *Addiction Biology*, 20(2), 415-422.
- Lavin, M., Marvin, K., Mclarney, A., Nola, V., & Scott, L. (1999). Sensation seeking and collegiate vulnerability to Internet dependence. *CyberPsychology & Behavior*, 2(5), 425-430.
- Lee, D., Lee, J., Lee, J. E., & Jung, Y. C. (2017). Altered functional connectivity in default mode network in Internet gaming disorder: influence of childhood ADHD. *Progress in Neuro-Psychopharmacology and Biological Psychiatry*, 75, 135-141.
- Lee, D., Lee, J., Namkoong, K., & Jung, Y. C. (2018). Subregions of the anterior cingulate cortex form distinct functional connectivity patterns in young males with internet gaming disorder with comorbid depression. *Frontiers in Psychiatry*, 9, 380.
- Lee, D., Lee, J., Yoon, K. J., Kee, N., & Jung, Y. C. (2016). Impaired anterior insular activation during risky decision making in young adults with internet

- gaming disorder. *Neuroreport*, 27(8), 605-609.
- Lee, D., Namkoong, K., Lee, J., & Jung, Y. C. (2018). Abnormal gray matter volume and impulsivity in young adults with Internet gaming disorder. *Addiction Biology*, 23(5), 1160-1167.
- Lee, D., Namkoong, K., Lee, J., & Jung, Y. C. (2019). Preliminary evidence of altered gray matter volume in subjects with internet gaming disorder: associations with history of childhood attention-deficit/hyperactivity disorder symptoms. *Brain imaging and behavior*, 13(3), 660-668.
- Lee, D., Namkoong, K., Lee, J., & Jung, Y. C. (2019). Preliminary evidence of altered gray matter volume in subjects with internet gaming disorder: associations with history of childhood attention-deficit/hyperactivity disorder symptoms. *Brain imaging and behavior*, 13(3), 660-668.
- Lee, J., Lee, S., Chun, J. W., Cho, H., Kim, D. J., & Jung, Y. C. (2015). Compromised prefrontal cognitive control over emotional interference in adolescents with internet gaming disorder. *Cyberpsychology, Behavior, and Social Networking*, 18(11), 661-668.
- Lee, Y. S., Han, D. H., Yang, K. C., Daniels, M. A., Na, C., Kee, B. S., & Renshaw, P. F. (2008). Depression like characteristics of 5HTTLPR polymorphism and temperament in excessive internet users. *Journal of Affective Disorders*, 109(1-2), 165-169.
- Li, B., Friston, K. J., Liu, J., Liu, Y., Zhang, G., Cao, F., ... & Hu, D. (2014). Impaired frontal-basal ganglia connectivity in adolescents with internet addiction. *Scientific reports*, 4(1), 1-8.
- Lin, F., Zhou, Y., Du, Y., Qin, L., Zhao, Z., & Xu, J. (2012). Unormal hvit substansintegritet hos ungdommer med internettavhengighetsforstyrrelse: en kanalbasert romlig statistikkstudie. *PLoS One*, 7, e30253.
- Lin, P. C., Kuo, S. Y., Lee, P. H., Sheen, T. C., & Chen, S. R. (2014). Effects of internet addiction on heart rate variability in school-aged children. *Journal of Cardiovascular Nursing*, 29(6), 493-498.
- Lin, S. S., & Tsai, C. C. (2002). Sensation seeking and internet dependence of Taiwanese high school adolescents. *Computers in human behavior*, 18(4), 411-426.
- Lin, W. C., Yen, C. F., Chen, C. S., & Yen, J. Y. (2015). Altered gray matter density and disrupted functional connectivity of the amygdala in adults with Internet gaming disorder. *Progress in Neuro-Psychopharmacology and Biological Psychiatry*, 57, 185-192.
- Liu, G. C., Yen, J. Y., Chen, C. Y., Yen, C. F., Chen, C. S., Lin, W. C., & Ko, C. H. (2014). Brain activation for response inhibition under gaming cue distraction in internet gaming disorder. *The Kaohsiung journal of medical sciences*, 30(1), 43-51.
- Liu, J., Gao, X., Li, L., Li, W., Li, X., Zhang, Y., & Zhou, S. (2011). Functional magnetic resonance imaging of brain of college students with internet addiction. *Zhong nan da xue xue bao. Yi xue ban = Journal of Central South University. Medical Sciences*, 36(8), 744-749.
- Liu, J., Li, W., Zhou, S., Zhang, L., Wang, Z., Zhang, Y., ... & Li, L. (2016). Functional characteristics of the brain in college students with internet gaming disorder. *Brain imaging and behavior*, 10(1), 60-67.
- Lorenz, R. C., Krüger, J. K., Neumann, B., Schott, B. H., Kaufmann, C., Heinz, A., & Wüstenberg, T. (2013). Cue reactivity and its inhibition in pathological computer game players. *Addiction Biology*, 18(1), 134-146.
- Ma, S. S., Worhunsky, P. D., Xu, J. S., Yip, S. W., Zhou, N., Zhang, J. T., ... & Fang, X. Y. (2019). Alterations in functional networks during cue-reactivity in Internet gaming disorder. *Journal of Behavioral Addictions*, 8(2), 277-287.
- Mathy, R. M., & Cooper, A. L. (2003). The duration and frequency of Internet use in a nonclinical sample: Suicidality, behavioral problems, and treatment histories. *Psychotherapy: Theory, Research, Practice, Training*, 40(1-2), 125.
- Mitchell, P. (2000). Internet addiction: genuine diagnosis or not?. *The Lancet*, 355(9204), 632.
- Morahan-Martin, J., & Schumacher, P. (2000). Incidence and correlates of pathological Internet use among college students. *Computers in human behavior*, 16(1), 13-29.
- Nichols, L. A., & Nicki, R. (2004). Development of a psychometrically sound internet addiction scale: A preliminary step. *Psychology of Addictive Behaviors*, 18(4), 381.

- Odabaşoğlu, G., Öztürk, Ö., Genç, Y., & Pektaş, Ö. (2007). On olguluk bir seri ile internet bağımlılığı klinik görünümleri. *Bağımlılık Dergisi*, 8(1), 46-51.
- Otte, A. (2016). Regional cerebral blood flow changes in patients with internet addiction. *Hellenic journal of nuclear medicine*, 19(3), 290-290.
- Özcan, N. K., & Buzlu, S. (2007). Internet use and its relation with the psychosocial situation for a sample of university students. *CyberPsychology & Behavior*, 10(6), 767-772.
- Öztürk, Ö., Odabaşoğlu, G., Eraslan, D., Genç, Y., & Kalyoncu, Ö. A. (2007). İnternet bağımlılığı: Kliniği ve tedavisi. *Bağımlılık Dergisi*, 8(1), 36-41.
- Park, C. H., Chun, J. W., Cho, H., & Kim, D. J. (2018). Alterations in the connection topology of brain structural networks in Internet gaming addiction. *Scientific reports*, 8(1), 1-9.
- Park, C. H., Chun, J. W., Cho, H., Jung, Y. C., Choi, J., & Kim, D. J. (2017). Is the Internet gaming-addicted brain close to be in a pathological state?. *Addiction Biology*, 22(1), 196-205.
- Pontes, H. M., Kiraly, O., Demetrovics, Z., & Griffiths, M. D. (2014). The conceptualisation and measurement of DSM-5 Internet Gaming Disorder: The development of the IGD-20 Test. *PLoS One*, 9(10), e110137.
- Pratarelli, M. E., Browne, B. L., & Johnson, K. (1999). The bits and bytes of computer/Internet addiction: A factor analytic approach. *Behavior Research Methods, Instruments, & Computers*, 31(2), 305-314.
- Rahmani, F., Moghaddam, H. S., & Aarabi, M. H. (2019). Microstructural changes and internet addiction behaviour: A preliminary diffusion MRI study. *Addictive Behaviors*, 98, 106039.
- Rotunda, R. J., Kass, S. J., Sutton, M. A., & Leon, D. T. (2003). Internet use and misuse: Preliminary findings from a new assessment instrument. *Behavior Modification*, 27(4), 484-504.
- Ryu, E. J., Choi, K. S., Seo, J. S., & Nam, B. W. (2004). The relationships of Internet addiction, depression, and suicidal ideation in adolescents. *Tae-han Kanho Hakhoe Chi*, 34(1), 102-110.
- Sar, A. H., & Işıklar, A. (2012). Adaptation of problem mobile phone use scale to Turkish. *Journal of Human Sciences*, 9(2), 264-275.
- SARGIN, N. (2013). Üniversite öğrencilerinin internete yönelik tutumları ve problemli internet kullanımları. *Turkish Journal of Education*, 2(2), 44-53.
- Scherer, K. (1997). College life online of college life and development. *Healthy and unhealthy Internet use Journal*, 38(6), 655-65.
- Seok, J. W., & Sohn, J. H. (2018). Altered gray matter volume and resting-state connectivity in individuals with internet gaming disorder: a voxel-based morphometry and resting-state functional magnetic resonance imaging study. *Frontiers in Psychiatry*, 9, 77.
- Shapira, N. A., Goldsmith, T. D., Keck Jr, P. E., Khosla, U. M., & McElroy, S. L. (2000). Psychiatric features of individuals with problematic internet use. *Journal of Affective Disorders*, 57(1-3), 267-272.
- Shapira, N. A., Lessig, M. C., Goldsmith, T. D., Szabo, S. T., Lazoritz, M., Gold, M. S., & Stein, D. J. (2003). Problematic internet use: proposed classification and diagnostic criteria. *Depression and anxiety*, 17(4), 207-216.
- Song, K. R., Potenza, M. N., Fang, X. Y., Gong, G. L., Yao, Y. W., Wang, Z. L., ... & Zhang, J. T. (2020). Resting-state connectome-based support-vector-machine predictive modeling of internet gaming disorder. *Addiction Biology*, e12969.
- Sun, Y., Wang, H., & Bo, S. (2019). Altered topological connectivity of internet addiction in resting-state EEG through network analysis. *Addictive Behaviors*, 95, 49-57.
- Sun, Y., Wang, Y., Han, X., Jiang, W., Ding, W., Cao, M., ... & Zhou, Y. (2019). Sex differences in resting-state cerebral activity alterations in internet gaming disorder. *Brain imaging and behavior*, 13(5), 1406-1417.
- Sun, Y., Ying, H., Seetohul, R. M., Xuemei, W., Ya, Z., Qian, L., ... & Ye, S. (2012). Brain fMRI study of crave induced by cue pictures in online game addicts (male adolescents). *Behavioural Brain Research*, 233(2), 563-576.
- Şenormancı, Ö., Konkan, R., Güçlü, O., & Şenormancı, G. (2013). Ruminative response styles and metacognitions in internet addicts. *Journal of Cognitive-Behavioral Psychotherapy and Research*, 2(3), 167-172.
- Şenormancı, Ö., Şenormancı, G., Güçlü, O., & Konkan, R. (2014). Attachment and family functioning in patients with internet addiction. *General Hospital Psychiatry*, 36(2), 203-207.

- Tan, Ç., Pamuk, M., & Dönder, A. (2013). Loneliness and mobile phone. *Procedia-Social and Behavioral Sciences*, 103, 606-611.
- Tarhan, T. (2013). *Ergenlerde depresyon düzeylerinin internet kullanım amaçları ve akademik başarı açısından incelenmesi* (Master's thesis, İstanbul Arel Üniversitesi Sosyal Bilimler Enstitüsü).
- Tavşancıl, E., & Keser, H. (2002). İnternet kullanımına yönelik likert tipi bir tutum ölçeğinin geliştirilmesi. *Eğitim bilimleri ve uygulama*, 1(1), 79-100.
- te Wildt, B. T., Putzig, I., Zedler, M., & Ohlmeier, M. D. (2007). Internet dependency as a symptom of depressive mood disorders. *Psychiatrische Praxis*, 34, S318-22.
- Tsai, C. C., & Lin, S. S. (2003). Internet addiction of adolescents in Taiwan: An interview study. *CyberPsychology & Behavior*, 6(6), 649-652.
- Tuncay A, Horzum MB (2013). İlköğretim Öğrencilerinin İnternet Bağımlılığı ve Aile İnternet Tutumu. *Türk Psikolojik Danışma ve Rehberlik Dergisi*,4:46-57.
- Türkiye İstatistik Kurumu, (2020). *2020 Yılı hane halkı bilişim teknolojileri kullanımı araştırması*. <http://www.tuik.gov.tr/> adresinden 07.12.2020 tarihinde erişilmiştir.
- Wang, L., Shen, H., Lei, Y., Zeng, L. L., Cao, F., Su, L., ... & Hu, D. (2017). Altered default mode, fronto-parietal and salience networks in adolescents with Internet addiction. *Addictive Behaviors*, 70, 1-6.
- Wang, L., Wu, L., Lin, X., Zhang, Y., Zhou, H., Du, X., & Dong, G. (2016). Altered brain functional networks in people with Internet gaming disorder: Evidence from resting-state fMRI. *Psychiatry Research: Neuroimaging*, 254, 156-163.
- Wang, L., Zhang, Y., Lin, X., Zhou, H., Du, X., & Dong, G. (2018). Group independent component analysis reveals alternation of right executive control network in Internet gaming disorder. *CNS Spectrums*, 23(5), 300-310.
- Wang, M., Zeng, N., Zheng, H., Du, X., Potenza, M. N., & Dong, G. H. (2020). Altered effective connectivity from the pregenual anterior cingulate cortex to the laterobasal amygdala mediates the relationship between internet gaming disorder and loneliness. *Psychological Medicine*, 1-10.
- Wang, M., Zheng, H., Du, X., & Dong, G. (2019). Mapping Internet gaming disorder using effective connectivity: A spectral dynamic causal modeling study. *Addictive Behaviors*, 90, 62-70.
- Wang, R., Li, M., Zhao, M., Yu, D., Hu, Y., Wiers, C. E., ... & Yuan, K. (2019). Internet gaming disorder: deficits in functional and structural connectivity in the ventral tegmental area-Accumbens pathway. *Brain imaging and behavior*, 13(4), 1172-1181.
- Wang, Y., Wu, L., Zhou, H., Lin, X., Zhang, Y., Du, X., & Dong, G. (2017). Impaired executive control and reward circuit in Internet gaming addicts under a delay discounting task: independent component analysis. *European Archives of Psychiatry and Clinical Neuroscience*, 267(3), 245-255.
- Wang, Y., Yin, Y., Sun, Y. W., Zhou, Y., Chen, X., Ding, W. N., ... & Du, Y. S. (2015). Decreased prefrontal lobe interhemispheric functional connectivity in adolescents with internet gaming disorder: a primary study using resting-state FMRI. *PLoS One*, 10(3), e0118733.
- Wang, Z., Hu, Y., Zheng, H., Yuan, K., Du, X., & Dong, G. (2019). Females are more vulnerable to Internet gaming disorder than males: Evidence from cortical thickness abnormalities. *Psychiatry Research: Neuroimaging*, 283, 145-153.
- Wang, Z., Liu, X., Hu, Y., Zheng, H., Du, X., & Dong, G. (2019). Altered brain functional networks in Internet gaming disorder: independent component and graph theoretical analysis under a probability-discounting task. *CNS Spectrums*, 24(5), 544-556.
- Wee, C. Y., Zhao, Z., Yap, P. T., Wu, G., Shi, F., Price, T., ... & Shen, D. (2014). Disrupted brain functional network in internet addiction disorder: a resting-state functional magnetic resonance imaging study. *PLoS One*, 9(9), e107306.
- Wen, X., Sun, Y., Hu, Y., Yu, D., Zhou, Y., & Yuan, K. (2020). Identification of internet gaming disorder individuals based on ventral tegmental area resting-state functional connectivity. *Brain Imaging and Behavior*, 1-9.
- Weng, C. B., Qian, R. B., Fu, X. M., Lin, B., Han, X. P., Niu, C. S., & Wang, Y. H. (2013). Gray matter and white matter abnormalities in online game addiction. *European journal of radiology*, 82(8), 1308-1312.

- Wang, L. S. M., Lee, S., & Chang, G. (2003). Internet over-users' psychological profiles: a behavior sampling analysis on internet addiction. *Cyberpsychology & behavior*, 6(2), 143-150.
- Widyanto, L., & Griffiths, M. (2006). 'Internet addiction': a critical review. *International Journal of mental health and Addiction*, 4(1), 31-51.
- Widyanto, L., & Griffiths, M. (2007). Internet addiction: Does it really exist?(revisited). In *Psychology and the Internet* (pp. 141-163). Academic Press.
- Widyanto, L., & McMurrin, M. (2004). The psychometric properties of the internet addiction test. *Cyberpsychology & behavior*, 7(4), 443-450.
- Wu, L. L., Potenza, M. N., Zhou, N., Kober, H., Shi, X. H., Yip, S. W., ... & Zhang, J. T. (2020). A role for the right dorsolateral prefrontal cortex in enhancing regulation of both craving and negative emotions in internet gaming disorder: A randomized trial. *European Neuropsychopharmacology*, 36, 29-37.
- Yang, S. C., & Tung, C. J. (2007). Comparison of Internet addicts and non-addicts in Taiwanese high school. *Computers in human behavior*, 23(1), 79-96.
- Yao, Y. W., Liu, L., Worhunsky, P. D., Lichenstein, S., Ma, S. S., Zhu, L., ... & Yip, S. W. (2020). Is monetary reward processing altered in drug-naïve youth with a behavioral addiction? Findings from internet gaming disorder. *NeuroImage: Clinical*, 26, 102202.
- Yellowlees, P. M., & Marks, S. (2007). Problematic Internet use or Internet addiction?. *Computers in human behavior*, 23(3), 1447-1453.
- Yen, J. Y., Ko, C. H., Yen, C. F., Chen, S. H., Chung, W. L., & Chen, C. C. (2008). Psychiatric symptoms in adolescents with Internet addiction: Comparison with substance use. *Psychiatry and Clinical Neurosciences* 62(1), 9-16.
- Yen, J. Y., Ko, C. H., Yen, C. F., Wu, H. Y., & Yang, M. J. (2007). The comorbid psychiatric symptoms of Internet addiction: attention deficit and hyperactivity disorder (ADHD), depression, social phobia, and hostility. *Journal of adolescent health*, 41(1), 93-98.
- Yip, S. W., Gross, J. J., Chawla, M., Ma, S. S., Shi, X. H., Liu, L., ... & Zhang, J. (2018). Is neural processing of negative stimuli altered in addiction independent of drug effects? Findings from drug-naïve youth with internet gaming disorder. *Neuropsychopharmacology*, 43(6), 1364-1372.
- Yoo, H. J., Cho, S. C., Ha, J., Yune, S. K., Kim, S. J., Hwang, J., ... & Lyoo, I. K. (2004). Attention deficit hyperactivity symptoms and internet addiction. *Psychiatry and Clinical Neurosciences* 58(5), 487-494.
- Yoon, H., Kim, S. A., Ahn, H. M., & Kim, S. H. (2015). Altered neural activity in the anterior and posterior insula in individuals with problematic Internet use. *European addiction research*, 21(6), 307-314.
- Young K. S. (1999). *Internet Addiction: symptoms, evaluation and Treatment*. Makale 11.08.2007 tarihinde <http://www.netaddiction.com/articles/habitforming.pdf> adresinden indirildi.
- Young, K. (1996). Internet addiction: The emergence of a new clinical disorder. *Cyber Psychology and Behavior*, 3, 237-244.
- Young, K. S. (1997). *What makes internet addictive: Potential explanations for pathological internet use*. Makale 11.08.2007 tarihinde <http://www.netaddiction.com/articles/habitforming.pdf> adresinden indirildi
- Young, K. S. (2004). Internet addiction: A new clinical phenomenon and its consequences. *American behavioral scientist*, 48(4), 402-415.
- Young, K. S. (2007). Cognitive behavior therapy with Internet addicts: treatment outcomes and implications. *Cyberpsychology & behavior*, 10(5), 671-679.
- Young, K. S., & Rogers, R. C. (1998). The relationship between depression and Internet addiction. *Cyber Psychology & Behavior*, 1, 25-28.
- Yuan K, Qin W, Yu D, Bi Y, Xing L, Jin C ve ark (2016). Core brain networks interactions and cognitive control in internetgaming disorder individuals in late adolescence/early adulthood. *Brain structure function*.;221(3):1427-42.
- Yuan, K., Qin, W., Wang, G., Zeng, F., Zhao, L., Yang, X., ... & Tian, J. (2011). Microstructure abnormalities in adolescents with internet addiction disorder. *PLoS One*, 6(6), e20708.
- Yuan, K., Qin, W., Yu, D., Bi, Y., Xing, L., Jin, C., & Tian, J. (2016). Core brain networks interactions and cognitive control in internet gaming disorder individuals in late adolescence/early adulthood. *Brain Structure and Function*, 221(3), 1427-1442.

- Zha, R., Bu, J., Wei, Z., Han, L., Zhang, P., Ren, J., ... & Zhang, X. (2019). Transforming brain signals related to value evaluation and self-control into behavioral choices. *Human Brain Mapping, 40*(4), 1049-1061.
- Zhai, J., Luo, L., Qiu, L., Kang, Y., Liu, B., Yu, D., ... & Yuan, K. (2017). The topological organization of white matter network in internet gaming disorder individuals. *Brain imaging and behavior, 11*(6), 1769-1778.
- Zhang, J. T., Ma, S. S., Li, C. S. R., Liu, L., Xia, C. C., Lan, J., ... & Fang, X. Y. (2018). Craving behavioral intervention for internet gaming disorder: remediation of functional connectivity of the ventral striatum. *Addiction Biology, 23*(1), 337-346.
- Zhang, J. T., Ma, S. S., Yan, C. G., Zhang, S., Liu, L., Wang, L. J., ... & Fang, X. Y. (2017). Altered coupling of default-mode, executive-control and salience networks in Internet gaming disorder. *European Psychiatry, 45*, 114-120.
- Zhang, J. T., Ma, S. S., Yip, S. W., Wang, L. J., Chen, C., Yan, C. G., ... & Fang, X. Y. (2015). Decreased functional connectivity between ventral tegmental area and nucleus accumbens in Internet gaming disorder: evidence from resting state functional magnetic resonance imaging. *Behavioral and Brain Functions, 11*(1), 1-7.
- Zhang, J. T., Yao, Y. W., Li, C. S. R., Zang, Y. F., Shen, Z. J., Liu, L., ... & Fang, X. Y. (2016). Altered resting-state functional connectivity of the insula in young adults with Internet gaming disorder. *Addiction Biology, 21*(3), 743-751.
- Zhang, J. T., Yao, Y. W., Potenza, M. N., Xia, C. C., Lan, J., Liu, L., ... & Fang, X. Y. (2016). Altered resting-state neural activity and changes following a craving behavioral intervention for Internet gaming disorder. *Scientific Reports, 6*(1), 1-8.
- Zhang, Y., Mei, W., Zhang, J. X., Wu, Q., & Zhang, W. (2016). Decreased functional connectivity of insula-based network in young adults with internet gaming disorder. *Experimental Brain Research, 234*(9), 2553-2560.
- Zhou, Y., Lin, F. C., Du, Y. S., Zhao, Z. M., Xu, J. R., & Lei, H. (2011). Gray matter abnormalities in Internet addiction: a voxel-based morphometry study. *European journal of radiology, 79*(1), 92-95.