International Cognitive Neuroscience Meeting,
Cognitive-IX, Abstracts
April 13-15, 2012, İstanbul

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Kognitif IX, İSTANBUL
ÖZETLER
13-15 Nisan 2012

INVITATION

Cognitive neuroscience meetings also known as Marmaris International Cognitive Meetings next year will be held in Istanbul as well as in an academic environment. There are two principal reasons for this decision. First one is financial short-cuts over the years. The second one is reduced numbers of attendies from interdisciplinary fields which have been very important for cognitive neuroscience and related meetings.

We will organize 3-day meeting starting from Friday April 13 th to Sunday afternoon. Each day will start plenary lectures and discussions continued by afternoon sessions including panels followed by the oral presentations. People who wish to present posters will have three full days. Panels will be organized by Dr. Lütfü Hanoğlu who is also meeting's secretary and Dr. Çiğdem Özkara who is well known in epilepsy research in Turkey.

The venue of the Cognitive IX th will be Istanbul Medipol University which is one of the recently established private universities in town. I am sure we will have warm welcome during the meeting which was already shown by the officials.

I invite you to the Cognitive IX th to share your research and knowledge again. Best wishes.

Dr. Oğuz Tanrıdağ

Programme

13 APRIL FRIDAY
10.00- 10.05   Opening - O. Tanrıdağ

OPENING PERFORMANCE
Classical Turkish Music
10.05- 10.35   A Cognitive Morning at Suleymaniye - Dr. Adnan Çoban and his group
10.40- 12.30   Plenary Sessions -1
Chair : O. Tanrıdağ, I. Baral Kulaksızoğlu

10.40- 11.30   Beauty, Desire and the Love - S. Zeki
11.30- 11.45   Coffee break
11.45- 12.30   Oxytocin in Depression: From Emotionto Cognition - Muzaffer Kaşer
12.30- 14.00   Lunch
12.45- 14.00   TNS Cognitive Group Meeting
14.00- 17.45   Language - Mind- Brain Relationships : Updates from the History and Recent Developments
Chair : Ö. Öktem, A. Bingöl
14.00- 14.40   I: How Language - Mind-Brain Relationships Had Been Assumed and Realized in the History ? : Observations and Notions from Antiquity to Modernity - O. Tanrıdağ
14.40- 15.30   II: Updates from the more recent History of the Language-Mind- Brain Relationships : Early Localization Era and Revisiting the Lichtheim's House - H. Gürvit
15.30- 16.00   Coffee break
16.00- 16.40   III: When Language Problem Becomes A Part of the General Cognitive Disturbance as an Early Symptom? - H. Gürvit
16.40- 17.20   IV: The Role of Cerebellum in Language Functions - A. Demirtaş Tatlıdede
17.20- 17.45   Coffee break
17.45- 19.05   Conferences
Chair: M. Bakar- G. Erkol
17.45- 18.25   Introduction to Probability Theory - Y. Denizhan
18.25- 19.05   Evolutionary Shortcomings of the Human Brain- T. Atasoy

14 APRIL SATURDAY
10.00- 12.30   Plenary Sessions-2
Chair: H. Gürvit , B. Bilgiç
10.00-10.45   Functional Reserve in Dementia as revealed by Molecular Imaging - D. Perani
10.45- 11.30   Social Cognition in Clinical Neurology - S. Cappa
11.30- 11.45   Coffee break
11.45-12.30   Persuasion and Computer Analysis of Human Behavior for Inducing Behavioral Change - A. A.Salah
12.30-13.15   The Role of Medial Orbito-Frontal Cortex in Self Actualization, Fulfillment and Agency - B. Erdeniz
13.15-14.00   Lunch
14.00- 18.00 PANEL 1: Conscioussness , Self and The Brain
Chair: O. Tanrıdağ, L. Hanoğlu
14.00- 14.40   Subcortical Conscioussness - J. Parvizi
14.40- 15.20   Conceptual and Methological Approach to Self in Imaging Studies - G. Northoff
15.20- 15.45   Coffee break
15.45- 16.25   Self Development in Autism Model - B. Korkmaz
16.25- 17.05   What Self-Centered Conscioussness Approaches Promise to Philosophy? - E. Süzgün
17.05- 17.45   Perception without Sensation? - S. Tarlacı
17.45-18.15   Questions and Comments

15 APRIL SUNDAY
 10.00- 12.30   Plenary Session-3
Chair: R. Sanver , B. Korkmaz
10.00-10.45   Simple and complex calculation in the brain - C. Semenza
 10.45- 11.30   Components of Irrational Economic Decision Making: Neuroeconomic, Cognitive and
Psychological View - G. Koçaslan
 11.30- 11.45   Coffee break
 11.45-12.30   Expressive Timing in Music and Cognitive Load - M. Çorlu
12.30-14.00   Lunch
14.00- 18.30   PANEL 2 : Default Network in the Brain
Chair: E. Başar, Ç. Özkara
14.00-14.40   Default Mode Network - J. Parvizi
14.40-15.20   Ego and Default Mode Network - G. Northoff
 15.20-16.00   EEG-Correlates of Self Referential Processes - G.G. Knyazev
 16.00-16.30   Coffee break
 16.30-17.10   Epilepsy, Conscioussness and Default Mode Network - Cavanni
17.10-17.50   Default Mode Network in Degenerative Disorders - G. Yener
17.50-18.30   Questions and Comments
18.30   CLOSED - O.Tanrıdağ

Semir Zeki

Joseph Parvizi

George Northoff

G.G. Knyazev

Hakan Gürvit

S. Cappa

C. Semenza

D. Perani

Erol başar

Başar Bilgiç

Lütfü Hanoğlu

Y. Denizhan

M. Çorlu

Sultan Tarlacı

Ayşe Bingöl

Tuğrul Atasoy

G. Koçaslan

Barış Korkmaz

Components of Irrational Economic Decision Making: Neuroeconomic, Cognitive and Psychological View

Gelengül Koçarslan

Istanbul University, Faculty of Economics
Department of Economics

Deviations from the assumptions of rational behavior assigned to "homoeconomicus" in the neoclassical economic theory have been an interesting research field especially after the most well known encounter example suggested by Maurice Alais in 1953 which is known as "Allais Paradox".

In 1979 Kahneman and Tversky suggested the value function that has a kink at the origin; concave for gains and convex for losses to develop neoclassical utility function that ignores the decision differences in gains and losses and focuses on the final wealth.

Recent integration of economics with psychology and neuroscience allows us to better understnad behavior/decision anomalies using different techniques and methods. This study investigates irrational economic decision making and enables to analyse the components of irrational economic decision-making examining economic, cognitive, psychological and neuroeconomic view.

Oxytocin in Depression: From Emotion to Cognition

Muzaffer Kaser, MD.

University of Cambridge

Depression is one of the most common psychiatric conditions affecting almost 1 in 5 people throughout their lives. Given that depression is strongly associated with emotional and interpersonal factors, addressing social and emotional processing impairments in depression can bring new insights to treatment. Recent studies suggest the therapeutic implications of oxytocin in affective psychiatric problems such as anxiety disorders and depression (1,2).

Oxytocin has been studied extensively with regard to its effects on social and affiliative behaviour. It has also been shown to regulate responses to stress, relieve anxiety and promote empathy. Oxytocin administration improves emotion recognition, increases trust and generousity and facilitates social interactions (3). Often cited as "prosocial hormones" along with its counterpart vasopressin, oxytocin is suggested operate at the level of primary affective responses as well as at higher cognitive level in relation to social functions. Wide range of effects at seemingly distinct neural mechanisms might result from oxytocin's unique distribution in brain giving rise to act as a bridge between emotion and cognition.

Emotional disturbances lie at the heart of depressive symptomatology. Neural basis of emotional dysfunction in depression is well

established and recent behavioural and neuroimaging studies have shown affective processing bias towards negative stimuli in patients with depression (4). Cognitive neuropsychological model of depression provides a thorough approach how dysfunctional bottom-up emotional processing and top-down cognitive biases interact (5). Oxytocin's potential as a critical mediator of these dysfunctional neural processes at multiple levels will be discussed.

References
1. Labuschagne et al. (2010) Oxytocin Attenuates Amygdala Reactivity to Fear in Generalized Social Anxiety Disorder. Neuropsychopharmacology 35:2403-2413.
2. Pincus et al. (2010) Inverse effects of oxytocin on attributing mental activity to others in depressed and healthy subjects: a double-blind placebo controlled fMRI study. Frontiers in Psychiatry. 134:1-10
3. MacDonald et al. (2010) The Peptide That Binds: A Systematic Review of Oxytocin and its Prosocial Effects in Humans. Harvard Review of Psychiatry. 18:1:1-21.
4. Naranjo et al. (2011) Major depression is associated with impaired processing of emotion in music as well as in facial and vocal stimuli. Journal of Affective Disorders. 128:243-251.
5. Roiser et al. (2012) Cognitive Mechanisms of Treatment in Depression. Neuropsychopharmacology. 37(1):117-136.

Age related performances on decision making task and neuroticism-risk taking relationship among university students

Serra İçellioğlu[a] Melis Seray Özden[b]
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Decision-making under ambigious situations is a cognitive ability that requires evaluation of different consequences, profit analysis and comparing these with the previous experiences. Individuals with decision making deficits, don't show any abnormalities in standart neuropsychological test performances but in daily life, they involve in risky situations, they don't learn from negative feedbacks and for this reason they show deficits in their social lives. Patients with ventromedial prefrontal cortex (VMPFC) lesions show the same symptoms. These patients are normal in their neuropsychological assessments, but they show worse performance on the Iowa Gambling Task (IGT). IGT is a neuropsychological test that assesses decision making in daily life through components of reward, punishment and ambiguity. Considering VMPFC is involved in decision making and it continues to develop through late adolescence, performance differences between age groups on IGT performances are expected. Prefrontal cortex is involved in higher cognitive functions such as executive functions and also personality. We can see a personality effect on IGT performances. For this reason in our study IGT will be given to a university student population consisted of 101 participants between 20-25years of age; and to a population consisted 90 participants between 25-60+ years of age. Gender and age differences between IGT performances will be analyzed. And also Eysenck Personality Inventory (EPI) will be given to the university students population in order to assess the neuroticism component of personality that can be associated with decision making.

The role of self inhibition in the understanding of others

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Introduction
It has been shown that there is a strong correlation between Theory of Mind (ToM)-reasoning and executive functions (EF) (e.g. Perner & Lang, 1999). A recent study showed that there are two component of ToM: (1) self-perspective inhibition (sI) and (2) belief reasoning (BR) (Samson, 2005). These two components seem to have common neural activation in the brain. Previous studies showed that dorso-lateral frontal and parietal areas as well as medio-frontal and temporo-parietal areas overlapped when participants were presented a combination of the False Belief and Inhibition Control tasks (e.g. by comparing brain activation during a ToM task and a separate Go/NoGo or Stop-Signal task) (van der Meer et al., 2011; Rothmayr et al., 2011). The present fMRI study aims to examine role of sI in the understanding of others by using a paradigm which examined FB combined with sI (represented by social distractors) in a social context.

Methods
We scanned 29 right-handed adults (9 male; mean age=22.1, SD=2.7; mean IQ=112, SD=10) using a task which consisted (1) of a version of the Sally-Anne paradigm as FB measure (Baron-Cohen et al, 1985) and (2) expected (exp) as well as unexpected (unexp) endings of the presented FB and true belief (TB) picture stories as measure for inhibitory control (high inhibition: unexp trials, low inhibition: exp trials).

Results

The fMRI data analysis for the contrast 'FB>TB' resulted in increased activation of left and right dorsolateral prefrontal cortex (l/rDLPFC), right anterior cingulate cortex (rACC), right caudate nucleus (rCAU), bilateral orbito-frontal gyrus (l/rOFG) and left precuneus (lPREC) and right temporo-parietal junction (rTPJ). Analyzing the contrast 'unexp>exp' we found increased activation in same clusters of the rACC and lDLPFC.

Discussion

The results confirmed the assumption that ToM reasoning consists of two components (1) self-perspective inhibition and (2) belief reasoning (Samson, 2005). According to ToM reasoning we found a network that included brain areas which were strongly related to inhibitory control, such as the rDLPFC, the rACC and the rCAU (Hare, 2005) as well as regions, that contributed to belief reasoning, such as the PREC (Vogeley, 2001) and the bilateral OFC (Dodell-Federer, 2011). The increase of activity within the lDLPFC and the rACC during the high sI-condition, in addition, supported the involvement of sI within ToM reasoning, as activation clusters overlapped within both contrasts ('FB>TB'; 'unexp>exp'). Thus, the here presented data show that ToM reasoning seems to consist of the interplay of these two processes, including respective neural pathways.

Literature

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Psikoz için ailesel risk grubunda şizotipi ve frontal işlevlerin incelenmesi

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AMAÇ

Bu çalışmada; psikoz için ailesel bir risk grubunu oluşturan şizofreni hastalarının sağlıklı birinci dereceden akrabalarında frontal işlevlerin değerlendirilmesi, şizotipal kişilik özelliklerinin şiddetinin ve sıklığının tespit edilmesi, ayrıca şizotipinin pozitif, negatif, dezorganize üç alt tipi ile ilişkili yürütücü işlev bozukluklarının incelenmesi; bu doğrultuda psikoza ailesel yatkınlıkta frontal işlevlerin olası rolünün saptaması amaçlandı.

OLGULAR VE YÖNTEM

Bu çalışma; cinsiyet bakımından homojen dağılmış, 16-35 yaş aralığındaki şizofreni hastalarının sağlıklı birinci dereceden akrabaları (n:26) ve kontrol grubuyla (n:31) yürütülmüştür. Katılımcılara, Şizotipal Kişilik Ölçeği'nin (ŞKÖ) kısa formu, Büyüsel Düşünce Ölçeği ve Algılamada Sapmalar Ölçeği uygulanmış; frontal işlevler, Wisconsin Kart Eşleme Testi'nin (WKET) bilgisayar versiyonu, Sayı Dizisi Testi, Londra Kulesi Testi (LKT), Sözel Akıcılık Testinin (SAT) hayvan sayma, kontrollü kelime çağrışım ve ardışık kategori adlandırma alt testleri, IOWA Kumar Testi'nin bilgisayar versiyonu, WAIS-R'ın ikili Benzerlikler Alt Testi, Stroop Testi ile değerlendirilmiştir.

BULGULAR

İki grup arasında, frontal işlevlerin değerlendirildiği WKET perseveratif hata (p<0,01) ve hata yüzdesi (P<0,05), toplam cevap sayısı skorlarında (p<0,05); LKT'nin toplam doğru yanıtı (p<0,01), hamle sayısı (p<0,001), kural hataları (p<0.05, p<0.01) ve zaman skorlarında (p<0,05; p<0,001), SAT'nin fonetik akıcılık alt testinde (p<0,05) anlamlı bir fark bulunurken; diğer nöropsikolojik testlerde anlamlı bir fark bulunmamıştır. Ayrıca şizotipinin üç alt tipinde yürütücü işlev bozuklukları açısından da bir fark bulunmamıştır. Grupların şizotipal kişilik özellikleri açısından da farklılaşmadığı görülmüştür. Ancak yapılan ileri istatistiksel analiz sonucunda; WKET'nin perseveratif hata skoru (p<0,05), LKT'nin hamle sayısı (p<0,05) ve negatif şizotipi (p<0,05) skorlarının iki grup arasındaki farklılığı yordadığı bulunmuştur.

TARTIŞMA: Bu çalışma; Türk popülasyonunda ilk defa, şizofreni hastası yakınları arasında şizotipal özellikleri ve frontal işlev bozukluklarını incelemesi ve psikozda ailesel yatkınlığın olası etkilerini göstermesi açısından önem taşımaktadır.

Evaluation of schizotypy and frontal functions in familial risk group for Psychosis

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OBJECTIVE

With this study, we aimed to establish evaluating frontal functions, the frequency and severity of schizotypal personality features and also executive dysfunctions related to three subtypes of schizotypy which are positive, negative and disorganized in unaffected first degree relatives of schizophrenic patients who are under a risk group for familial psychosis.

Thus, it was purposed to determine probable role of frontal functions in familial tendecy for psychosis.

METHOD and CASES

This study was performed with healthy first-degree relatives of schizophrenia patients (n=26) and control group (n=31) who are between 16-35 years old, distributed equally in terms of gender. A short version of Schizotypal Personality Questionnary (SPQ), Magical Thinking Questionnary and Aberrant Perceptions Questionnary were applied to all participants; frontal functions were evaluated with Wisconsin Card Sorting Test-Computer version(WCST), Number String Test, London Tower Test (LTT), List of animals, Controlled Oral Word Association and Continious Category Naming subscales of Verbal Fluency Test(VFT), Iowa Gambling Test-computer version, dual similarities subtest of WAIS-R and Stroop Test.

RESULTS

A significant difference was found between two groups in scores of WCST perseverative error (p<0,01) and percentage of perseverative error (p<0,05) and total number of answering score (p<0,05); total number of right response (p<0,01), move (p<0,001), rule violations (p<0,05; p<0,01) and timing (p<0,05; p<0,001) scores of LTT; and Controlled Oral Word Association subscales of VFT (p<0,05) that evaulate frontal functions; whereas there are no differences for other neuropsychological tests. Furthermore there were no difference between different subtypes of shizotypy in terms of executive functions. Also there were no differences between two groups in terms of schizotypal personality features. However, as a result of progressive statistical analyses, perseveration error score of WCST (p<0,05), LTT number of move (p< 0,05) and negative schizotypy (p<0,05) appeared as independent variables between two groups.

CONCLUSION

This study is remarkable because its evaluation of schizotypal features and examination of specific frontal dysfuctions between first-degree relatives of schizophrenic patients in Turkish population for the first time and also displays possible mediating effects of familial pychosis.

The Effect of the Menstrual Cycle on Stroop Test Performance: A Between-Subjects Design Study in an Undergraduate Student Sample

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Background and Purpose

The literature on sex differences in human cognitive functions is quite vast. Some studies have reported that these differences can vary depending on the type of the task (e.g., James and Kimura, 1997; Postma, Izendoorn and De Haan, 1998). Furthermore, it is shown that cognitive performance in women can be modulated by fluctuation of sex hormones levels during menstrual cycle by many researchers who are interested in hemispheric asymmetry (e.g., Hollander et al., 2005; Hausmann and Güntürkün, 2000; Weis et al., 2008). In addition, some studies have shown that the selective effect of menstrual cycle on specifically Stroop test performance (e.g., Hatta and Nagaya, 2009). The aim of this study is to determine changes in cognitive performance during different phases of the menstrual cycle in women with some of the neuropsychological tests including the Stroop test.

Methods

Seventy women with regular menstrual cycle and thirty-seven men undergraduate students participated in a between-subjects design study. Female participants were also separated groups across menstrual cycle phases: menses (cycle day 1–5; n=17), follicular phase (cycle day 6–12; n=23) and luteal phase (cycle day 16–23; n=30). Five cognitive tests (Rey-Osterrieth Complex Figure Test, Trail Making Test, Letter-Number Sequencing Test, and Stroop Test) and Beck Depression Inventory were administered to all participants.

Results

Analysis of the cognitive test measures revealed that a significant difference in only for time to complete Stroop interference condition among groups (women in menses, women in follicular phase, women in luteal phase, and men). Pairwise comparisons also indicated that women in menses who have high levels of sex hormones significantly needed more time to complete Stroop test than both of men and women in luteal phase.

Conclusion
Obtained consistency between these findings and the findings from some within-subjects design studies point out that Stroop test is a much more sensitive to different levels of sex hormones during menstrual cycle than the other neuropsychological tests in women.

Menstrual Döngünün Stroop Testi Performansına Etkisi: Bir Öğrenci Örnekleminde Gruplar Arası Desen Çalışması

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Giriş ve Amaç
İnsanlarda bilişsel işlevler üzerine cinsiyet farklılıkları konusunda oldukça geniş bir literatür bulunmaktadır. Bazı çalışmalar, bilişsel işlevlerde tespit edilen cinsiyet etkisinin görev türüne bağlı olarak değişebileceğini ortaya koymuştur. (örn, James ve Kimura, 1997; Postma, Izendoorn ve De Haan, 1998). Buna ek olarak, hemisferik asimetri ile ilgilenen pek çok araştırmacı tarafından kadınlarda menstrual döngü sırasında farklı seviyelerde salgılanan cinsiyet hormonlarının bilişsel performans üzerinde etkili olabileceği gösterilmiştir (örn, Hollander ve ark., 2005; Hausmann ve Güntürkün, 2000; Weis ve ark., 2008). Ayrıca, bazı araştırmalarda ise menstrual döngünün özellikle Stroop testi performansı üzerindeki seçici etkisinden bahsedilmektedir (örn, Hatta ve Nagaya, 2009). Bu çalışmada, menstrual döngünün farklı fazlarında bulunmanın kadınlarda bilişsel performansı nasıl etkileyeceği Stroop testinin de dâhil edildiği bazı nöropsikolojik ölçümler ile tespit edilmeye çalışılmıştır.

Yöntem
Gruplar arası desenin kullanıldığı çalışmaya düzenli menstrual döngüye sahip yetmiş kadın ile otuz yedi erkek üniversite öğrencisi katılmıştır. Kadın katılımcılar ayrıca menstrual döngünün fazlarına göre gruplara ayrılmaktadır: mens/regl fazı (1. – 5. günler; n=17), folliküler faz (6. – 12. günler, n=23) ve luteal faz (16. – 23. günler, n=30). Tüm katılımcılara beş nöropsikolojik test (Rey-Osterrieth Karmaşık Şekil Testi, İz Sürme Testi, Harf-Sayı Dizisi Testi ve Stroop Testi) ile Beck Depresyon Envanteri uygulanmıştır.

Bulgular
Nöropsikolojik ölçümler için yapılan analizler sonucunda, gruplar arasında (mens fazındaki kadınlar, folliküler fazdaki kadınlar, luteal fazdaki kadınlar ve erkekler) sadece Stroop testinin bozucu etki koşulunu tamamlama süresi açısından anlamlı fark olduğu tespit edilmiştir. Scheffe testi ile yapılan ikili karşılaştırmalar sonucunda ise, cinsiyet hormonlarının düşük seviyede salgılandığı mens fazındaki kadınların, Stroop testini tamamlamak için hem erkeklerden hem de luteal fazdaki kadınlardan anlamlı olarak daha fazla zamana ihtiyaç duydukları saptanmıştır.

Sonuç
Elde edilen bulguların literatürde bazı grup içi desen çalışmalarında tespit edilen bulgularla tutarlılık göstermesi, Stroop testinin diğer nöropsikolojik testlere göre kadınlarda menstrual döngü sırasında cinsiyet hormonlarındaki değişimlere daha duyarlı olduğunu işaret etmektedir.

Dopaminin Döngüsel Kortikal Gama Bantı Senkronu Üzerine Etkilerini Modellemek

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Dopamin, voltajdan bağımsız kaçak K^+ akımını bastırarak, hızlı-çivilenen internöronların uyarılabilirliklerini arttırmak dâhil GABAerjik internöronlar üzerindeki etkileriyle kısmen döngüsel kortikal aktiviteyi düzenler. Fakat bugüne kadar nöral ağ düzeyindeki etkileri incelenmemiştir. Bunun üzerine, dopaminin, dikkat ve işler bellek dâhil çeşitli kognitif süreçlerle bağları gösterilmiş olan gama bant aralığında ağ senkronizasyonuna etkilerini analiz etmek için uyarıcı ve hızlı-çivilenen internöronlardan oluşan bir simule nöral ağ kullandık. Dopaminin etkilerinin; hızlı-çivilenen internöronların kaçak K^+ iletkenliğini ve gama bandındaki ağ senkronizasyonunu çeşitlendirerek analiz eden Wang-Buzsaki nöronlarından oluşan bir biyofiziksel model formüle edildi. Kaçak K^+ iletkenliğinin parametrik bir şekilde çeşitlendirilmesi, düşük ve yüksek iletkenlik

seviyelerinde düşük gama bant gücü ve ortaç iletkenlik seviyesinde optimum senkronizasyonun gerçekleşmesiyle bir ters-u şekli ortaya çıkardı. Teta nöronlardan oluşan idealleştirilmiş bir model kullanarak bu etkiyi ketleyici nöronların uyarılabilirliklerini düzenleyen diğer faktörlere de açıklık getirecek şekilde genelleştirdik ve benzer sonuçlar gözlemledik. Buna ek olarak formüle ettiğimiz simule nöron ağının farklı frekanslardaki (20, 30 ve 40 Hz) periyodik uyarımlara nasıl kenetlendiğine bakarak, önceki simülasyonlardan elde ettiğimiz monotonik olmayan ilişkinin burada da geçerli olup olmayacağını araştırdık. Yapılan bu simülasyonlar önceki sonuçların sadece gama frekans bandındaki uyarımlara özel bir etki olduğunu gösterdi ki bu da şizofren hastaları ve sağlıklı kontrol gruplarının farklı frekanslardaki uyarıcılara işitsel korteksteki kenetlemelerini içeren insan çalışmalarıyla aynı yönde özellik göstermektedir. Sonuç olarak, bulgularımız dopaminin tek hızlı-çivilenen internöron seviyesindeki fizyolojik etkilerinin nöral ağ seviyesinde kortikal gama bant senkronizasyonuyla monotonik olmayan bir ilişkiye sebep olabileceğini gösteriyor. Aynı zamanda dopaminin tek nöron seviyesindeki etkilerinin ağ seviyesinde çok daha karmaşık davranışlara yol açabileceğini öneriyor ki bu da literatürdeki dopamin ve kortikal performans arasındaki ters-u şeklini açıklaması bakımından önem taşımaktadır.

Modeling the Effects of Dopamine on Cortical Circuit Gamma Band Synchrony

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Dopamine modulates cortical circuit activity, in part, through its actions on GABAergic interneurons, including increasing the excitability of fast spiking interneurons by suppressing a voltage-independent leak K^+ current (Gorelova et al., 2002). However, its effects at the neural network level have not been examined to date. With this motivation, we used a simulated neural network composed of excitatory and fast-spiking interneurons to analyze the effects of dopamine on network synchronization within the gamma band range, which has been shown to be implicated in various cognitive processes including working memory and attention. A biophysical model composed of Wang-Buzsaki neurons was formulated in which the effects of dopamine were implemented through varying the leak K^+ conductance of the fast-spiking interneurons and the network synchronization within gamma band (~40 Hz) was analyzed. Parametrically varying the leak K+ conductance revealed an inverted-U shaped relationship, with low gamma band power at both low and high conductance levels, and optimal synchronization occurring at intermediate conductance levels. We generalized this effect to account for other factors modulating the excitability of the inhibitory neurons using an idealized model with theta neurons and observed similar findings. Furthermore, the network's entrainment to periodic forcing at different frequencies (20, 30, and 40 Hz) was studied to investigate whether the same non-monotonic relationship would hold. These simulations suggested that the effect was more specific to periodic forcing at gamma frequency range, in line with the empirical findings in auditory steady state entrainment in healthy controls and individuals with schizophrenia. In conclusion, our results show that the physiological effects of dopamine on single fast-spiking interneurons can give rise to a non-monotonic relationship between cortical gamma band synchrony and dopamine levels. These findings suggest that the effects of dopamine at the single neuron level may give rise to more complex behavior at the network level, consistent with literature describing inverted-U shaped cortical function as a function of dopamine activity.

An Eye-Tracking Study on Structural Priming in Turkish Language Comprehension

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This study investigates structural priming in Turkish language comprehension. Structural priming is the facilitating effect of earlier processing of a certain syntactic structure on the

later processing of the same or a similar grammatical structure. It sheds light on the syntactic representations and processes that are active during sentence processing. The present study examines whether there is structural priming in the processing of two types of Turkish genitive-possessive constructions. These structures are possessive noun phrases (1) and possessive noun clauses (2) whose predicate consists of a nominalized verb. In both types of phrases, the first noun has the genitive suffix "-in", and the second word has the possessive suffix "-i". The difference between the two is that in (1) the head is a noun and in (2) the head is a verb that is nominalized by the "-DIK" suffix.

(1) Kadın,   [çocuğ-un ses -i]
            -ni   duy -du.
    Woman-NOM   child -GEN voice-
    POSS -ACC hear-Past.3sg
    "The woman heard the child's voice"

(2) Kadın,   [çocuğ-un ağla-
    dığ-ı]   -nı   duy -du.
    Woman-NOM   child -GEN cry -
    VN-POSS -ACC hear-Past.3sg
    "The woman heard that the child was crying."

In our eye-tracking study, 50 native-speakers of Turkish were presented with pairs consisting of such sentences on a computer screen. On each display, the participants read two sentences, one below the other. The first sentence was the prime sentence and the second was the target sentence. The critical word in each sentence was always the 3rd word, which was either a noun (1) or a nominalized verb (2). In the priming condition, the critical words were of the same grammatical type (Nominal Prime-Nominal Target or Verbal Prime-Verbal Target pairs) and in the no-priming condition they were of opposite types (Nominal Prime-Verbal Target or Verbal Prime-Nominal Target pairs). Each participant read all four combinations in sentence with seven different matrix verbs. One group of participants read pairs of sentences that contained the same matrix verb and the other group read pairs of sentences with different matrix verbs. The aim to have these two groups was to understand whether the lexical repetition of the verb influences priming in a verb-final language like Turkish. We measured fixation times for the critical words, using the TOBII Studio software. If there is facilitation through priming, then the target critical word that is of the same type as the prime critical word should be read faster than the target critical word that follows a prime with a different type.

A Mixed ANOVA on the total fixation durations of the critical words in the target sentences revealed that, overall, verbal targets were read more slowly than nominal targets. More crucially, there was a significant interaction between priming condition and grammatical category of the target critical word. For nominal critical words, the reading times were greater in the no-priming condition than in the priming condition, indicating the facilitating priming effect, as expected. For verbal critical words on the other hand, it was the other way around, i.e. there was a reversed priming effect. Finally, there was also a significant three-way interaction, which showed that the two groups (same or different matrix verbs) differed: the observed priming effects, especially the reversed priming effects were clearer in the same-matrix-verb group.

Our interpretation of these findings is that the increased reading times of verbal critical words (as opposed to nouns) could be due to their morphological complexity and semantic load. In addition, the matrix verb seems to have an effect on priming in this design. It is only in those cases where the matrix verbs are identical, that we see the priming effects. Therefore, the matrix verb appears to act as a "filter" or "gate" for priming effects to appear. When the matrix verbs are different, the readers don't go into the analysis of the internal structure of the critical words; however, when the matrix verbs are identical, they seem to initiate a secondary processing in this more embedded level. If the critical word at this level is a noun, they read it faster. If it is a verb, they decompose it, which causes the increased reading times. Having even one verbal item in the pair already slows down the process. When the two critical words are verbal, it takes naturally the longest time to process both. It should also be noted that these effects are not observed in first fixation duration analyses. Therefore, these cannot be resulting from the initial processing. It is possible that the participants go back and re-read some words. A more detailed ongoing analysis of the backtrackings of the participants' eye-gaze will shed more light on the nature of this hierarchical processing.

We also analyzed the total fixation durations on prime critical words and the matrix verbs. Overall, the results of prime-critical-word reading times indicate that the priming relation between the two sentences might influence the reading times of the primes as well, indirectly implying some sort of non-foveal reading or back-tracking/checking process. Finally, the matrix verb measures confirm that the matrix verbs in targets are read more quickly if they are identical to the one in primes.

Symmetry and Human Face Recognition
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Symmetry is usually associated with the concept of beauty. In the literature, there are several studies investigating the relationship between symmetry and subjective judgments such as attractiveness, healthiness, trustworthiness. Uniquely to this study, the effect of symmetry on human face recognition is examined where symmetry is assessed in relationship with information content. For this aim, a new face database, METU-SymFace, which contains original and symmetrical versions of 100 face images, is created. In METU-SymFace, non-facial areas are removed and major image characteristics such as illumination, pose are normalized. In this study, the effect of symmetry is tested with 100 original and 100 symmetric face images in a recognition task with 40 participants. According to the results, there is a positive correlation (r = .39) between symmetry and recognition performance: as the face gets more symmetric, it becomes more recognizable. On the other hand, symmetric faces are recognized slower than the asymmetric ones (p < .05). It has been reported that the information encapsulated in a face affects recognition performance. However, original face images contain more information than the symmetric ones. Therefore, there must be another factor which accounts for the superior recognition performance for the symmetric faces. Although our results support the holistic notion of face recognition rather than the feature-based approach, the differential performance in favor of symmetric faces is not supported by a holistic information measure such as entropy.

Bir uyaran ayrıştırma defisiti olarak Korsakoff amnestik sendromu
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AMAÇ
Bu çalışmada; 1996 ve 2000 yıllarında katıldıkları açlık grevlerini izleyerek Korsakoff sendromu (KS) tanısı almış hastaların 10-14 yıl sonrasındaki nöropsikolojik profillerini araştırmak amaçlandı. Ayrıca daha önce, bir tip amnestik sendrom olan hippokampal atrofi (HA) hastaları ve bazal ganglia disfonksiyonu (BG) olan Parkinson hastalarında test edilmiş olan uyaran ayrıştırma ve genelleme paradigmaları araştırıldı. Beklentimiz amnestik sendromlu KS grubunun BG grubu gibi değil fakat HA grubu gibi genelleme bozukluğu göstermeleriydi.

OLGULAR VE YÖNTEM
Bu çalışma, 13'ü hasta, 13'ü sağlıklı kontrol olmak üzere yaş, eğitim ve cinsiyet değişkenleri açısından eşleştirilmiş toplam 26 katılımcı ile yürütüldü. Katılımcılar, California Sözel Öğrenme Testi (CVLT), Sayı Menzili Testi, Londra Kulesi Testi, Wisconsin Kart Eşleme Testi (WCST), Sözel Akıcılık Testleri, Stroop Test, Iowa Kumar Testi, Edinilmiş Denklik Görevi ve Eşzamanlı Ayrıştırma ve Transfer Görevi ile değerlendirildi.

BULGULAR
Sağlıklı kontrol grubuna kıyasla, KS grubunda CVLT'de 5.deneme doğruları kısa gecikmeli serbest hatırlama ve uzun gecikmeli serbest hatırlama doğrularına göre anlamlı derecede azalmış bulundu (p=0.000, p=0.000). KS grubu, sağlıklı kontrollerden anlamlı derecede daha fazla edinme (p=0.000) ve ayrıştırma hatası (p=0.003) yaptı. Öte yandan, edinme fazını geçen ve geçemeyen Korsakoff hastaları arasında CVLT ölçümlerinde bir fark bulunmadı.

SONUÇ ve TARTIŞMA
Çalışmada, Korsakoff hastaları fronto-striatal şebekeleri içeren ölçümlerde (örn. WCST) sağlıklı kontrollerden farklı bulunmadı ve klasik amnestik hastalar gibi izole amnezik bir profil sergiledi. KS grubu, daha önce aynı paradigma ile test edilen HA hastalarının aksine genelleme fazında değil, BG grubuna benzer şekilde ayrıştırmada (edinme fazı) defisit gösterdiler. Edinme fazını geçen ve geçemeyen Korsakoff hastaları arasında CVLT ölçümlerinde bir fark bulunmaması, ayrıştırmadaki defisitin bellekten bağımsız ortaya çıktığına işaret etmektedir. Öte yandan, önceki çalışmalar KS'de örtük belleğin büyük ölçüde korunduğunu göstermektedir. Bu

durumda ayrıştırma defisiti, bazı KS hastalarında mevcut olan Wernicke komponentine (serebellar sendrom) bağlı olarak S-R öğrenme defisiti ile açıklanabilir.

Korsakoff amnestic syndrome as a stimulus generalization deficit

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OBJECTIVE
In this study, we aimed to evaluate that neuropsychological profile of hunger strikers who were diagnosed with Korsakoff's syndrome (KS) in 1996 and 2000 after 10 to 14 years. Furthermore, we also wanted to clarify their performance on the stimulus discrimination and generelazation paradigms which were previously tested in amnesic patients (hippocampal atrophy [HA]) and those with basal ganglia (BG) dysfunction (Parkinson's patients [PD]). HA group was shown to be impaired in generalization, on the contrary PD group was impaired in discrimination paradigms. Accordingly, our expectation was that the present KS group would perform similar to HA group.

METHOD and CASES
In this study 26 subjects, including 13 patients and 13 healthy subjects matching on age, sex and years of education were included. This study was performed with 26 subjects including 13 patients and 13 healthy subjects for control matched on age, sex and years of education. The partipicants were administered the California Verbal Learning Test (CVLT), Digit Span, Tower of London Test, Wisconsin Card Sorting Test (WCST), Verbal Fluency Tests, Stroop Test, Iowa Gambling Test, Acquired Equivalence Task and Concurrent Discrimination and Transfer Task.

RESULTS
There was a significant decay in KS group on CVLT short delay free recall and long delayed free recall measures as compared to to their 5th and last learning trial both with within and between subject analysis. KS group made significantly more acquisition (p=0.000) and discrimination (p=0.000) errors than HCs. On the other hand, there were no difference between those KS patients who had passed the acquisition phase and those who hadn't, in terms of their CVLT performance.

CONCLUSION

Korsakoff's patients were not different in the measure, including those of fronto-striatal networks (e.g. WCST) and they showed an isolated amnestic profile as classical amnestic patients. Like BG patients, KS group also showed a deficit in discrimination; but not in generalization phase, contrary to HA patients. Furthermore, because there were no difference between those KS patients who had passed the acquisition phase and those who hadn't, in terms of their CVLT performance, this finding indicated that the discrimination deficit is independent of the memory. On the other hand, previous studies show that implicit memory is largely preserved in KS. In this case, since some KS patients had also the Wernicke's component (cerebellar syndrome), we thought that this discrimination deficit could be explained with their S-R learning deficit.

Functional Interaction between Semantic and Episodic Memory in Schizophrenia Patients

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Introduction
Dual process models describe two distinct processes within episodic memory system: familiarity and conscious recollection. Different studies showed the impairment of conscious recollection in schizophrenia while familiarity seemed to be preserved (1). Semantic processing strategies at encoding help healthy subjects improve episodic memory scores at retrieval (2). A part from the usage of different semantic strategies, the semantic coherence of the stimulus itself can be another factor to contribute to memory performance. A study carried out in healthy subjects showed that semantically related word pairs used as stimuli compared to semantically unrelated word pairs allowed to enhance familiarity process performances while recollection scores remained unchanged (3). The aim of our study was to investigate the possibility for schizophrenia subjects to enhance their familiarity and/or conscious recollection processes performances by using semantically related stimuli.

Methods
Twelve schizophrenia subjects and 10 healthy controls of comparable age, gender, and educational level undertook an associative recognition memory task. We manipulated the semantic coherence of to be learned stimuli in order to measure the benefice obtained in

familiarity and conscious recollection processes by schizophrenia subjects compared to healthy controls. The estimates of familiarity and conscious recollection processes were calculated by using the Process Dissociation Procedure (4).

Results
Healthy controls obtained similar familiarity estimates for both related and unrelated word pairs while schizophrenia subjects had significantly higher scores for related word pairs compared to unrelated word pairs (p<.01). Familiarity estimates for unrelated word pairs were significantly lower in schizophrenia subjects compared to healthy controls (p<.02), while familiarity estimates for related word pairs did not show any difference between groups. Concerning conscious recollection, no significant difference was found between conscious recollection estimates for related and unrelated word pairs in schizophrenia subjects but a significant difference existed for healthy controls with higher scores for related word pairs (p<.003). Healthy controls had higher scores than schizophrenia subjects for related word pairs (p<.02) while no difference existed between groups for unrelated word pairs.

Conclusion
Both healthy controls and schizophrenia subjects could benefit from semantic relatedness of to be learned stimuli. However, in the control group, the effect of semantic relatedness was in the sense of an enhanced conscious recollection while in the schizophrenia group it was in the favour of an enhanced familiarity.

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Microsurgical Anatomy of Cognitive Neurosurgery

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Introduction
Central Core is a compact small area which is composed of complex fiber pathways, various nuclei groups and tiny vessels. Cognitional processes, emotional and neurochemical responses, neuroendocrinologic evoluations all occur in this highly organised area. The Neuroanatomical data were mostly derived from animal studies, histopathologic examinations or ultrastructural neuroscientific researches.

Methods
A brief three-dimentional microsurgical anatomy of this area were studied in our study. Human White Matter is classified according to ''Gray Matter''. FATTELLO Coding System has been developed which helps to identify fibers not just according to their "old nomenculature" but also their embriology, chemoarchitecture and functional zones 5 injected heads and 30 brains were prepared according to "Freezed in Water" technique. "Focal Fiber-Nucleus Dissection and Seperation" techniques were developed and performed with 3 Tesla MRI navigation guidance according to new classification of connectivity. Arteries and skullbase structures were preserved dissected and documented with a new "3D-HDR" (Three Dimentional High Dinamic Range Imaging) technique.

Results
Central Core was divided in to four regions: Insular, Anterior Anteromedial, Posterior Anteromedial and Posterior Central Core. Laterally Insular Cortex, Extreme Capsule and External Capsule were preserved and medially anteroposterior focal dissections were performed."Temporal and Frontal Stems" were described and three-dimentionally dissected and layers defined. Historical debates mentioned and Central Core's current and future aspects discussed. Peripheral Fiber Pathways of Human Brain and Periatrial Region were studied according to attributed connections, functional implications. The nuclei and fibers of Human Brain Telencephalon, Diencephalon, Mesencephalon were dissected, reviewed and discussed according to their surgical importance, functional relations and their MRI correlations.

Conclusions
Neurosurgical practice is dedicated to preserve "The Nature's masterpiece=Human Brain" with gentle, accurate and safe surgery. This study is the first study using ''MR Navigated'', ''3D-HDR'' documented ''Focal'' and ''Anterior to Posterior Fiber and Nuclei Dissection and Seperation

Techniques" which cranialbase and arteries are preserved.

Learning Objectives
1.Classification of Human Fiber Systems according to location, embriology, laterality,functional zones, surgical zones and chemoarchitecturalfeatures(Fattello Coding System)
2.Selection of Specimens according to fiber and nucleidissection procedures
3.Preparation of Specimens with Freezed-in Water Technique(A modification of Klinger Technique)
4.New Dissection Techniques:Focal Fiber Seperation, Focal Fiber Dissection, Nucleus Dissection and Seperation
5.New Documentation Techniques: Three-Dimentional High Dinamic Range Photography for Microsurgical Anatomical Research
6.MRI correlation of Fiber Pathways and Nuclei with 3 Tesla MR guidance
7.Definitions of Central Core,Frontal Stem,Parietal Stem,Temporal Stem
8.Microsurgical Anatomy of Language, Memory,Visual Processing, Auditory Processing, Limbic System
9.Limitations of Human white Matter and Gray Matter researches and Future Aspects.

How will your research improve patient care? This research is the first MRI navigated Three-Dimentional High Dinamic Range Documented study using Focal Fiber and Nuclei Dissection and Seperation Techniques. Our Study is also the detailest Anatomo-Functional Research performed on Human Brain Cadavers with new techiques which enables us to learn more about critical areas like Central Core, Periatrial Region.

Anti-N-Methyl-D-Aspartate Receptor Encephalitis with Minimal Cortical Impairment

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OBJECTIVE
Anti–N-methyl-D-aspartate receptor (NMDAR) encephalitis has been recently identified as a fulminant encephalopathy, presenting with a variety of symptoms including behavioral change, amnesia and seizures suggesting cortical gray matter involvement. Our two cases suggest that anti-NMDAR encephalitis might present with minimal cognitive impairment without the classical clinical features of the disease.

CASES and METHOD
A 42-year-old woman presented with acute-onset clinical and magnetic resonance imaging (MRI) findings indicating brainstem and diencephalon involvement and a 38-year-old woman presented with migraine-type headache and episodes of forgetfulness were included for this study. Routine blood assays, MRI sequences, cerebrospinal fluid (CSF) levels for glucose and protein, Mini Mental Status Score (MMSE), electroencephalography (EEG), CSF and serum levels for antineuronal antibodies and glutamic acid decarboxylase (GAD), voltage gated calcium channels (VGCC), voltage gated potassium channels (VGKC) antibodies were examined. Also, serum levels for NMDAR antibodies were detected with HEK293 cells transfection method with NR1 and NR2B which are subunits of NMDAR for both cases. Lastly, fluorodeoxyglucose positron emission tomography (FDG-PET) images were also considered.

RESULTS
Both cases have normal MMSE, complete blood biochemistry, sedimentation and EEG results. 42 year-old-woman had increased CSF protein levels while other case had normal results. NMDAR antibodies were positive for both patients while 42 year-old- woman had 3 over 4 and 38 year-old-case had 2 over 4. FDG-PET results showed increased FDG uptake in both inguinal and multiple pelvic lymph nodes and T2/FLAIR sequences showed hyperintense lesions in midbrain and thalamus in 42 year-old patient while 38 year-old-patient had normal MRI findings.

CONCLUSION
Our cases imply that anti-NMDAR encephalitis might present with minimal cognitive impairment, no apparent cortical gray matter involvement, a mild clinical course and without the classic clinical features of the disease, indicating that anti-NMDAR encephalitis is still an expanding concept. It has been postulated that the sequence of symptoms in anti-NMDAR encephalitis might be explained by preferential impairment of cortical gray matter neurons followed by the sequential involvement of subcortical neurons. Patients presenting with only neuropsychiatric symptoms have been described suggesting that the progression of

disease might be restricted to the impairment of cortical neurons in some cases.

Minimal Kortikal Bozuklukla Seyreden Anti-N-Metil-D-Aspartat Reseptörü Ensefaliti

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AMAÇ

Anti-N-metil-D-aspartat reseptörü (NMDAR) ensefaliti, davranış değişikliği, amnezi ve kortikal gri madde tutulumu gibi çeşitli semptomlarla güncel olarak tanımlanmış fulminan bir ensefalopatidir. Çalışmamızda sunduğumuz iki vakamız anti-NMDAR ensefalitinin, hastalığın klasik klinik özellikleri olmaksızın, minimal kognitif bozukluk ile birlikte de görüldüğünü ileri sürmektedir.

OLGULAR ve METOT

Akut klinik başlangıçlı, manyetik rezonans görüntüleme (MRG) bulgularında beyin sapı ve diensefalon tutulumu izlenen 42 yaşındaki kadın hasta ile migren tipi başağrıları ve unutkanlık öyküsüyle gelen 38 yaşındaki kadın hasta çalışmaya dahil edildi. Rutin kan testleri, MRG, beyin omurilik sıvısı (BOS) glukoz ve protein seviyeleri, Mini Mental Durum Değerlendirme Testi (MMSE), elektroensefalografi (EEG), antinöronal antikorlar, glutamik asit dekarboksilaz (GAD), voltaj kapılı kalsiyum ve potasyum kanallarına (VGCC, VGKC) karşı antikorlar, BOS ve serum seviyeleri test edildi. Ayrıca, NMDAR antikoruna karşı antikorlar da HEK293 hücrelerinin NMDAR alt üniteleri olan N1 ve NR2B ile transfekte edildi. Son olarak, fluorodeoksiglukoz pozitron emisyon tomografisi (FDG-PET) görüntüleri incelendi.

SONUÇLAR

İki olgunun da MMSE, tam kan biyokimyasal analizleri, sedimentasyon ve EEG değerleri normal sınırlardaydı. 42 yaşındaki olgunun BOS protein seviyesi artmış olarak saptanırken diğer olgununki normal olarak saptandı. NMDAR antikorları, 42 yaşındaki olguda 4 üzerinden 3 pozitif, 38 yaşındaki olguda ise 4 üzerinden 2 pozitif olmak üzere iki olgu için de pozitiflik olarak saptandı. 42 yaşındaki olguda FDG-PET sonuçları, inguinal ve multipl pelvik lenf nodüllerinde artmış FDG alımını işaret ederken, MRG bulgularında orta beyin ve talamusta hiperintens lezyonlar saptandı, 38 yaşındaki olguda ise MRG bulguları normaldi.

TARTIŞMA

Olgularımız anti-NMDAR ensefalitinin minimal kognitif bozuklukla seyredebileceğini, belirgin bir kortikal gri madde tutulumunun olmadığını, ılımlı klinik seyir ve hastalığın klasik klinik seyri olmaksızın anti-NMDAR ensefalitinin hâlâ genişleyen bir konsept olduğunu işaret etmektedir. Anti-NMDAR ensefalitindeki semptom dizilerinin, subkortikal nöronların ardarda tutulumunu takiben kortikal gri maddenin öncelikli bozukluğu ile açıklanabileceği var sayılmaktadır. Sadece nöropsikiyatrik semptomlar gösteren hastaların, bazı durumlarda, kortikal nöron bozukluğu ile sınırlı olabileceği ileri sürülmektedir.

Evaluation of the emotional valence of visual stimuli using event related potentials

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Objectives: The aim of this study is to investigate the effects of positive and negative emotional valence on electrical brain activity using event related potentials (ERPs). Although the valence effects on ERPs are inconsistently reported they have been mainly found in short and middle latency components.

Materials & Methods: 13 healthy volunteers were included in the study, and ERPs were recorded from 32 electrode sites. Emotional stimuli were task-irrelevant in order to obtain the isolated effect of emotion on ERPs. However, to avoid the possibility that participants' general levels of alertness and attention to stimuli may not continue throughout the whole experiment in the passive viewing condition, an attention task was added in the experiment. Participants performed a modified oddball paradigm. Pictures with positive or negative emotional valence were presented as standart stimuli in two separate sessions and a neutral stimulus was presented randomly as target stimulus with a probability of 30%. Participants were instructed to respond with a mouse-click when the target stimulus was presented. Pictures with positive and negative emotional valence were selected from the

International Affective Picture System with the mean valence level differing (7,13 / 2,96) but the mean arousal level being equal for the two sessions (4,99 / 5,02). SPSS 16.0 was used for statistical analyses, and data were analyzed by means of repeated measures analysis of variance (ANOVA).

Results: When mean amplitudes of ERPs to the emotional stimuli presented as standard stimuli in the oddball design were compared, valence effects were prominent at frontocentral sites between 200 and 400 ms with unpleasant pictures resulting in more negative amplitudes in comparison to pleasant ones (F(3/36)=44.85; p=0.000). This difference was more significant for the 200-300 ms time window (F(9/108)=11.42; p=0.000). ERPs to target stimuli, that reflect attention and decision-making processes, were also evaluated. There were no significant differences in the P3b amplitudes and latencies between the two separate sessions with positive or negative emotional stimuli.

Conclusion: Current findings suggest that emotional valence of visual stimuli can be distinguished using scalp ERPs. However, further analyses are needed to evaluate the neuronal mechanisms underlying and the brain structures producing the more negative potentials at frontal sites to unpleasant pictures for the 200-300 ms time window.

Keywords: Emotion, Emotional valence, Event related potentials, EEG

Changes in the electroencephalogram (EEG) depending on the emotional context in which the TV commercials are watched: a neuromarketing research

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Objectives: The aim of this study is to investigate whether the effect of a TV commercial changes depending on watching it in a positive or negative emotional context.

Materials & Methods: EEG recordings were carried out from 32 electrode sites while 13 healthy volunteers were watching the same TV commercial in the midst of two different TV series with different emotionel content. In both conditions participants watched the TV series for 1,5 minutes, than the TV commercial for 22 seconds and after that again the TV series for one minute. After both conditions participants were required to give subjective feedback on the emotional context of the TV series. After removal of the eye movement artifacts, frequency spectra of the EEG signals for TV commercials watched on both positive and negative emotional context were calculated using Fourier transform and delta (0.5-3.5 Hz), theta (3.5-7.5 hz), low alpha (8-10 Hz), high alpha (10-12 Hz) and beta (13-30 Hz) band powers were calculated based on these spectra. SPSS 16.0 was used for statistical analyses, and data were analyzed by means of repeated measures analysis of variance (ANOVA).

Results: Higher theta activity at the left frontal region, higher low alpha activity at the parieto-occipital regions and higher high alpha activity at the right and left temporal regions were observed for the TV commercial watched on a positive emotional context compared with that watched on the negative emotional context.

Conclusion: It was observed that the emotional context changed the effects of the same TV commercial on brain electrical activity. In the literature, there are findings for increased theta activity at the left frontal regions elicited during the observation of the TV commercials that were remembered or judged pleasant [1]. So in our study, it is possible to say that watching the same TV commercial in a positive context elicited a stronger emotional effect. In addition, various studies by Klimesch et al. [2] have associated low alpha oscillations with attention and vigilance levels and high alpha oscillations with memory. So our findings suggest that both attention and memory encoding processes are more active during watching the same TV commercial in a positive context.

Keywords: Emotion, TV commercial, EEG, Spectral analysis, Neuromarketing

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Investigation of the ERP responses alteration wıth duloxetine, biperidine and fluoxetine in treatment-resistant conversion disorder: a case study

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Objective: With the aim to contribute to an ERP based personalized-medicine approach, event-related potentials (ERP) obtained with a visual novelty paradigm in a case of treatment-resistant conversion disorder were investigated under four conditions: free of medicine, duloxetine use, biperidine use and fluoxetine use.

Materials and Methods: ERP responses and test performances were investigated at four consecutive conditions: at baseline, 2 weeks after initiation of duloxetine (SNRI), 2 weeks after initiation of biperidine (anticholinergic) after discontinuation of the former agent for 4 weeks, and 2 weeks after initiation of fluoxetine (SSRI) again after discontinuation of the former agent for 4 weeks.

Visual novelty paradigm contains blue circles as target stimuli, blue squares as standard stimuli, various pictures in the same size with the squares as novel stimuli with %15, %70 and %15 frequencies, respectively. The task of the subject was to respond to the target stimuli by pressing the left mouse button. Stimulus duration was 1 s and inter-stimulus-interval (ISI) was 2 s. EEG recordings were carried out from 31 channels of the extended 10-20 EEG electrode placement system.

Results: Behavioral Results: Accuracy rates significantly raised as follows; 41.3% at the baseline free of medicine, 70% after duloxetine use, 93.3% after biperidine use and 100% after fluoxetine use. Average reaction times decreased from 0.746 ms at the baseline to 0.411 ms after fluoxetine use.

ERP Results: For the target stimuli, N2 response amplitudes were higher in all three medicated conditions relative to the medicine-free baseline condition. Although no significant change was detected in P3b amplitude, however, the typical P3b topography appeared after fluoxetine use. In response to novel stimuli, N2 was again more pronounced in all three medicated conditions compared with the medicine-free baseline condition. P3a potential amplitude significantly increased with the use of biperidine and showed no other significant change among other three conditions.

Conclusion: These findings indicate that subjects with active conversion symptoms might have severe impairment in their ability to direct the attention from a temporary focus to the distracting stimuli, and clinical improvement might be associated with increased distractibility of the subject's attention. Our findings further suggest that the N2 wave of the ERP reflects a process responsible of the optimal direction of the attention to both target stimuli and the distracters.

Auditory event related oscillatory responses are delayed in patients with mild cognitive impairment

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Background: Mild cognitive impairment (MCI) is an important risk factor for Alzheimer's disease; accordingly, there is a strong need for an objective tool as a biomarker. Event related oscillations (ERO's) can be used as a tool to measure cognitive deficits and delta oscillatory

responses are considered to be related to decision making. In MCI, memory and decision making are impaired. Therefore a delay in delta peak latency is expected in MCI, so we investigated the delta peak latency in MCI and healthy controls.

Methods: In the present report, event-related oscillations of patients with MCI according to Petersen's criteria were analyzed upon application of an auditory oddball paradigm. A total of 21 MCI subjects and 22 age-, gender-, and education matched healthy control subjects were included in the study. Oscillatory responses were recorded from F3, Fz, F4, C3, Cz, C4, TP7, TP8, P3, Pz, P4, O1, Oz and O2 scalp electrodes. The delta (0.5-2.2 Hz) peak latency was compared between MCI and healthy control groups by means of the repeated measures of ANOVA.

Results: Significant differences in delta peak latency were found between the groups $[F_{(1.41)}=4.756; P=0.035]$. Post-hoc analyses using one-tailed independent samples t test showed that the delta response of MCI patients were delayed in the range of 5-18% compared to healthy controls over F3, TP7, O1, Oz and O2 electrodes.

Conclusion: Delay in delta peak latency in oscillatory responses imply a slower process in decision making in MCI. Accordingly, this delay can be considered as a possible biomarker for MCI patients in future research.

The impact of tempo of musical excerpts on time perception during time reproduction and verbal estimation tasks

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This project has been focused on understanding the impact of tempo of musical excerpts on time perception (Fraisse, 1963; Ornstein, 1969). More specifically, we have aimed to observe its several effects on retrospective and prospective dimension as well as time reproduction and verbal time estimation tasks (Block & Zakay; 1997, 2006). There have been 3 major initial aims to run this project: (1) to demonstrate the effect of tempo of music on time reproduction and verbal time estimation, (2) to demonstrate the difference between retrospective and prospective time judgments, and (3) to demonstrate the

comparison between verbal response and time reproduction both in retrospective and prospective conditions. The participants were presented musical excerpts in low or high tempo and then they were asked to reproduce this duration retrospectively. Then they are again presented musical excerpt in low or high tempo and they were required to reproduce the time, the second part was a prospective task. There were 4 conditions in total: low-low, high-high, low-high, high-low. Then the participants were given questionnaires by which they have given verbal time estimations about both of the durations. The presentations were made by a lap-top computer and musical excerpts were presented through head-phones. The results suggest the mild quantitative divergence between time reproduction and verbal time estimation tasks, the role of tempo in time estimations, the gender effect in time reproduction and verbal time estimation. Moreover, it could be argued that this difference might have been a result of a direct effect of contribution from different neural systems for different tasks like prospective and retrospective judgments as well as the difference in tempo (Koelsch & Siebel, 2005; Levitin & Tirovolas, 2009). At the final part, the results of this empirical study have been discussed from a neuroscience perspective with stating the impact of different neural systems during time judgment tasks.

Keywords: time reproduction, verbal time estimation, tempo, musical excerpts, retrospective, prospective, neural correlates of time and music cognition.

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Autobiography of aging mind: age-related effects on voluntary and involuntary autobiographical memories

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Autobiographical memory is the collection of memories of an individual based on her/his personal experiences. When overlooked to the studies which investigates the qualitative specifications of autobiographical memories; we see there are several adapted methods which are

commonly used. At one of the most common method among them, we see the method gives a clue to the individual and wants her/him to recall a related memory. On the other hand it is known that in daily life we don't make a special effort to remember a autobiographical memory. The first findings about voluntary memories characteristics differ from involuntary memories goes back to Ebbinghaus. However this difference are usually neglected at autobiographical memory researches as Bernsten stated at 1998. One of the explanation why the characteristics of voluntary and involuntary memories are generally neglected stated as involuntary memories are very difficult to experiment on even though it looks like a very well known daily life phenomenon. First systematic data about involuntary autobiographical memories comes from the dairy studies of Bernsten's (1996b). When looked at the studies about involuntary memories, it is seen that the most common method is recording the recalled memories during a day. This method is a very difficult method to apply since it is required to record the memories on a daily basis for duration of a specific time. A alternative new study technique for involuntary memories is computer-aided techniques. In the computer-aided techniques, the participants are asked to focus on a task on computer. During these tasks which are generally chosen as routine and basic, it is expected that the participants mind to distract from the given task and start thinking about other things and recalling memories. These recalled memories are technically involuntary memories. For voluntary memories, the participant is given a target and toward working on that target it is expected the participants mind to recall memories voluntarily.

In this study, it is aimed to research the characteristics of voluntary and involuntary memories with lately more and more widely used method the "computer-aided method" (Schlagman and Kvavilashvili, 2008). With this purpose, a two step process will be followed. At this first step the participants are told that during working on the task it is possible to get distracted and start thinking about different ideas and recalling memories. During working on the given task which is basically based on matching shapes and colors, it is asked to the participant to stop the task and record the memory if the participant recalls one.

When the participant completes the first task, they proceed to the second step which is the part about voluntary memories. At this step the participant sees 18 words in three different category on the computer monitor. The categories are relationship category, life category and emotion category and each consists six

words. At this second step, participants are asked to choose a word from each category and record a total of three (voluntarily) recalled memory about each category. By this way, at the end of each session with each participant at least one involuntary and three voluntary memory are obtained. The selection process of the words used, word frequency information and similar studies in literature is used. In this study, 175 participants number from different age groups is reached and when eliminated the incomplete datas, 154 participant's data is analyzed. The analysis of the study is continuing. The findings are going to be discussed under the light of the associated literature.

The analysis of the effect of voluntary and involuntary autobiographical memories to the self

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Analysis of the characteristics of autobiographical memories are among the study topics of both clinical psychology and cognitive psychology. When we look at the studies about this topic, we see that most of the studies are based on voluntary autobiographical memories. At most of those studies, the participant is given a target stimuli, a clue or an important date or event and asked for recalling a related autobiographical memory. There are very few findings about involuntary autobiographical memories which are stimulated without any guidance or intention. Lately, especially after the studies of Bernsten (1996; 1998); the answer of the question of if the characteristic of voluntarily memories are differing from involuntary memories became very important especially for clinical psychological studies. While Bernsten indicates the difference is not important, similar studies at clinical psychology field mentions that the difference between voluntary and involuntary memory is critical (Johanessen and Berntsen, 2010; Rubin, Boals and Berntsen, 2008; Williams and Moulds, 2007).

This study is conducted to compare the voluntary and involuntary autobiographical memories with the method of "keeping diary". In the study it is aimed to compare the voluntary and involuntary memories respect to if the memories are positive or negative, if they are affecting the personality, if they are special or ordinary, if they are relatively complete or not and how they are effecting the participant's emotional situation. With this purpose, consisting of 46 university students are asked to keep a diary for 24 days. All the

participants recorded daily two involuntary memory and a voluntary memory related to the clue that is given. On top of that, they completed several scale in order to evaluate the characteristics of their memories in different aspects. By this way, 72 memory is obtained from each participant. Notebooks are prepared so the participants can write down their memories and evaluate the written down memories.

With the help of these notebooks, total of 3312 memory which consists 1104 voluntarily and 2208 involuntary recordings and evaluations are obtained. The comparison is done between the voluntarily and two involuntary memories belongs to the same day and both type of memories are evaluated from several aspects. In this study, the findings about how the voluntary and involuntary memories are effecting the participant's self, how private it is for the participant and how it is affecting the emotions of the participants are presented.

When the results are overlooked; it is seen that the voluntary memories has more affect on self (F=74.64, p<.01) and consistent with this result that they are more private. On the other hand involuntary memories are more ordinary (F=18.58, p<.01). From the aspect of how much it effects the participant's emotional situation caused by the recalled memory, the findings shows the voluntary memories has more impact (F=20.74, p<.01). Moreover, the conclusion is reached that the voluntary memories are more negative compare to involuntary memories (F=7.64, p<.05). When the voluntary and involuntary memories are compared respect to which ones are more specific or abstract, no significant difference is observed. The obtained results show that the involuntary memories are not always negative and they are not always natural results of stressful life's as clinical literature emphasizes. Voluntary memories are characterized more negative, more related to personality and more private. On the other hand, involuntary memories are characterized more positively remembered however ordinary. The findings are in line with cognitive psychology literature and especially with the findings of Bernsten (1996; 1998).

Relationship between predispositon to altered states of conscıousness (ASC) and circadian rhytm; a preliminary study

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Introduction: According to Hobson, brain / states of consciousness is not static but dynamic. It determines a three dimensional "space of states" which consists of current state of consciousness; activation, input-output processing and chemical modulation. The level of consciousness constantly changes because of this dynamic structure, among these infinitely variable states we can distinguish only cardinal situations such as awakeness, dreams, lucid dreams etc. (1). The term "Altered states of consciousness" (ASC) defines situations in which subjective experiences of normal, awake individuals significantly differentiates from usual. These are short term cases unlike psychiatric disorders, and they may emerge when triggered (hallucinogen usage, hypnosis, meditation, religious rituals etc.) as well as spontaneously (2). Pineal Gland along with hypothalamic suprachiasmatic nucleus is responsible for as oscillatory circadian bio-rhytms which generates our endogenous biological clock. Melatonine secreted from pineal gland is essential for emergence of circadian rhytm (3). Neuro-hormones secreted from pineal gland along with Melatonine such as Pynoline(Pn) and Dimethyltryptamine(DMT) and 5-MeO-DMT have been recently detected. DMT and other amines –also named as natural hallucinogens- have been detected as active ingredients in some plants used in mystical rituals of various cultures, thus causing (ASC) (4,5,6). Therefore, humans on certain periods of the circadian rhythm might be more likely to ASC. In fact, for a very long time, ancient traditions have many religious rituals and practices for revealing mystical experiences (7). Teheccut Prayer which is practiced as a prophetic tradition in our culture has a similar feature. More extensive and widespread form of this ritual practice is performed as waking up for praying at the last part of the night (02-04 o'clock) after sleeping a while and enlivening the night by deep contemplation along with studies of wisdom. This slice of time coincides with the period which melatonin and other pineal gland secretions peak. In this study we present as a preliminary study; it's intended to assess the relationship between predisposition to ASC and circadian rhytm, by using a clinical method to investigate a group of volunteers who practices Teheccud Prayer and enlivens the night with wisdom.

Method: The self-report form, named as Dittrich's "Altered states of consciousness Rating Scale" which is developed to measure ASC, has been based to evaluate the consciousness of the subjects (2). The investigation form was revised by taking account of our own cultural features, and 19 new items have been added. Feedbacks

obtained from total of 35 voluntary participants (21 females and 14 males) who don't use any drugs, have no psychologic and organic disorders and regularly performing Teheccut Prayer, have been evaluated. Participants were asked to fill the mentioned form as representing their state of consciousness twice a day, after Teheccut Prayer (between 02-04 o'clock) and daytime after Noon Prayer (12-14 o'clock).

Results: First 5 of 11 basic consciousness alterations in the investigation form, were mostly representing subjective/ moods (experience of unity, spiritual experience, blisful state - happiness,dısembodiment, increase in clairvoyance/ insightfulness) indicating "expansion of consciousness". Remaining 6 consciousness alteration items were mostly representing "contraction of consciousness" (except the synesthesia item). Most of the participants (average 18.8 subjects %54) marked the sentences indicating first 5 items at night time (02-04 o'clock) which coincides with the peak of pineal secretions, while the very few of the same subjects (average 6.4 subjects %18) marked at daytime (12-14 o'clock) which coincides with bottom level of pineal secretions. Participants marked the other 5 state of consciousness items representing "contraction of consciousness" (Impaired control and cognition, anxiety, complex imagery, elemantary imagery, changed meaning of percepts) at night (average 9.2 subjects %26) and at daytime (average 5.9 subjects %17).

Conclusion; The self evaluation of state of consciousness obtained from the majority of our volunteers after midnight when pineal activity peaks, compared to evaluations at noon when pineal activity level is at bottom, indicates differentiated "altered states of consciousness". Although the results of this study has many methodological limitations, these results may preoccupy that, altered states of consciousness may occur in daily life, also these alterations may be predisposed of biological circadian rhytm. Additionally calling attention to possible biological bases for traditional religious practices.

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Locating Phonological Memory Storage Via Transcranial Magnetic Stimulation

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Purpose: In studies modeling verbal working memory it is assumed that the phonological codes of verbal information obtained through attention is stored and kept in memory by subvocal rehearsals. This study aims to locate short-term phonological storage in the verbal working memory using a Transcranial Magnetic Stimulation (TMS) with navigation.

Method: This study has been approved by Istanbul University, Faculty of Medicine Research Ethics Committee (File no: 2011/229-474). In this study, Sternberg paradigm has been used as the cognitive task. This paradigm is comprised of a four-unit task set (the stimulants) followed by four probes (2 target syllables and 2 distractor syllables) designed for the syllables to be remembered. The sets used in the paradigm are made up of phonologically similar, three-letter, meaningless, but utterable syllables. For each area four bloks consisting of eight sets have been applied. In this study, 10 right-handed healthy female subjects have been used. Prior to the study, brain MRI of the subjects were entered into the system. As the initial stage, each subject's motor thresholds were determined. The stimulation intensity was set to be 70%of the threshold. The areas where the study would be applied were determined by locating the supramarginal gyrus (5th area) on a 3x3 matrix and marking 8 further areas surrounding it. TMS was applied as a single-pulse using a figure-eight-shaped monophasic coil. As for placebo stimulation, supramarginal gyrus was chosen and the stimulation was applied by placing the bobbin vertically on the head. The simulation was applied in the 250th, 300th, 350th and 400th milliseconds following the appearance of the stimulants on the screen.

The responses of the subjects as to whether the probes were in the task set were recorded by their

right-clicking or left-clicking the mouse. In order to assess the effect of TMU, the accuracy rates and reaction times of the subjects' answers have been analyzed. The data were analyzed using SPSS 16.0 and repeated assessments using ANOVA.

Findings: The analysis revealed that the accuracy rate was higher when the stimulants were composed of similar syllables. It was observed that in the 1st area, TMU stimulants have resulted in a significantly higher accuracy rate compared to placebo ones ($F(1,9)=8.91$, p =.015). However, in the 5th area, the accuracy rate was higher in TMU, which was not statistically significant. It was found that when TMU was used in both areas, the accuracy rate in the 5th area was significantly lower than the accuracy rate in the 1st area. It was observed that the high accuracy rate in the 1st area is linked to the high accuracy rate obtained in the application of TMU in this area in the 250th millisecond.

Result: The accuracy rate in the 1st area (the area corresponding to the upper front section of the supramarginal gyrus increased when the TMU was applied in the 250th millisecond following the stimulants. Thus, this area is considered to be related to the phonological memory storage.

Key Words: short-term memory, phonological similarity, transcranial magnetic stimulation, supramarginal gyrus.

Determining Significant Increases in the High-Gamma Range During Daily Life Events

Müge Özker, Mohammad Dastjerdi, and Josef Parvizi

The level of involvement of a brain region in a cognitive task is usually measured in controlled experimental settings. Spontaneous brain dynamics are averaged out and only time-locked cognitive processes are taken into consideration.

The aim of the current study is to offer an alternative method to study significant increases in the induced neural activity without averaging over time-locked trials.

We recorded intracranial EEG signals from subjects while performing an experimental task including arithmetic, memory and rest conditions. Using the conventual method, we identified the site on the lateral parietal cortex (LPC) with significant time-locked increases in the high-gamma power during the arithmetic condition.

In the daily life continuous recordings from the subject's brain we used the analytical amplitude of the high gamma activity and its peak duration to define a threshold above which we identified significant increases of the ongoing activity in that range. We tested if the gamma peaks discriminate reliably any significant increase in the neural activity related to arithmetic processing. We classified target (arithmetic) and non target trials as True Positive, True Negative, False Positive and False Negative and then we calculated Sensitivity and Specificity rates. We determined the optimal threshold set by using Receiver Operator Characteristic curves. Finally we calculated the percentage of gamma peaks for the target (arithmetic) and non-target conditions. In two repeated experiments, the sensitivity and specificity of our method for detecting actual increases of gamma activity during arithmetic condition were greater than 96% and 97%, respectively. Percentage of the gamma peaks for the target (arithmetic) condition was 50% and 70% for the two hexperiments, whereas it was 0.6% and 0.5% for the non-target condition.

In conclusion, we report here a novel method by which we are able to trace the spontaneous activity of a specific brain region during daily life events and in natural settings. By highlighting the times when these changes occur, we have been able to gather powerful and meaningful information about the cognitive contexts of daily life in which a region of the human brain becomes activated. Video examples will be presented.