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ABSTRACTS

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List of Abstracts

Cognitive Functions in Patients with Multiple Sclerosis: A Neurocognitive Approach

Ali Rıza Sonkaya, Zeynep Zeliha Bayazit, Tuba Aydınoğlu

Abstract

Cognitive impairment is seen in about half of patients with Relapsing Remitting Multiple Sclerosis (RRMS). The aim of this study was to measure whether altered cortical activation during a sustained attention task occurs along with limited extent of neuropsychological problems. Compensatory brain activation in patients with MS compared with healthy subjects may also be observed when the subjects are performing cognitive functions. We studied a cohort of 12 patients with RRMS who were within 3 years of diagnosis and 12 healthy subjects. A psychometric assessment was performed using the Wechsler Memory Scale (WMS) and the Multiple Sclerosis Functional Composite Score (MSFC). In addition, functional MRI (fMRI) was performed during a Paced Visual Serial Addition Task (PVSAT), a visual analogue of the Paced Auditory Serial Addition Task (PASAT). With regard to psychometric results, the WMS general memory score showed statistically significant differences between patients and controls. We did not find differences for either the MSFC or the PASAT scores. A group analysis of the functional imaging data during the PVSAT revealed different activation patterns for patients compared with control subjects. We interpret the different patterns of activation, accompanied with intact performance in a sustained attention task of our MS sample compared with healthy controls, as the consequence of compensatory mechanisms. This is an expression of neuronal plasticity during early stages of a chronic disease.

Keywords

Multiple Sclerosis, Cognitive Functions, Cognition, fMRI, Brain Placity

Modeling and Predicting the Effect of Culture in Communication: A Mixed Study Using Naming Game and Social Networks

Özge Nilay Yalçın

Abstract

In this study we proposed a model that highlights the effect of culture in language and form a hypothesis that suggests we can see these effects on the utterances of individuals and predict their behavior. We used a variation of the famous naming game to simulate our model, and later compared our results with the empirical data we collected from an online social network platform, Twitter. The use of hashtags as an act of labeling for popular topics is investigated due to the resemblance of the phenomenon with the naming game. The simulation of the model created a population with varying preferences on the topics of communication, which is a more realistic approach than the always converging case of the classical naming game. Another cultural force on partner selection, generated a topology within the population from an initial state of homogeneity. Empirical results were compatible with the simulation that uses those cultural forces and the model has a high predictive power within the scope of selected topics.

Keywords

semiotic dynamics, naming game, communication theory, social networks, evolutionary linguistics

Brain Potentials of Prosody-Syntax Interaction in Turkish

İpek Pınar Bekar, Özgür Aydın, İclal Ergenç

Abstract

The on-line processing of prosodic and syntactic information in many languages was investigated in previous studies (e.g. Steinhauer, 1999, 2003; Astesano, 2004; Eckstein & Friederici 2005; 2006). Using event-related potentials (ERP), this study provides neurophysiologic evidence for a prosody-syntax interaction in Turkish post-verbal position in declarative sentences. Our sample group was composed of 18 Turkish participants between ages of 18-35 from Ankara University. Experimental material (300 sentences) was contained two prosodic-syntactic violations as seen in (1).

(1) a. Ayşe BAHÇE-DE yıka-dı halı-yı.
Ayşe garden-LOC wash-PAST carpet-ACC
'Ayşe washed the carpet in the garden'
(prosodically correct and syntactical correct)
b. Ayşe bahçe-de yıka-dı HALI-YI.
Ayşe garden-LOC wash-PAST carpet-ACC
'Ayşe washed the carpet in the garden'
(prosodically incorrect and syntactical correct)
c. Ayşe BAHÇE-DE yıka-dı halı-ya.
Ayşe garden-LOC wash-PAST carpet-DAT
'Ayşe washed the carpet in the garden'
(prosodically correct and syntactical incorrect)
d. Ayşe bahçe-de yıka-dı HALI-YA.
Ayşe garden-LOC wash-PAST carpet-DAT
'Ayşe washed the carpet in the garden'
(prosodically incorrect and syntactical incorrect)

For prosodic manipulation, the critical word intonated as focused in post-verbal position (the non-focused position in Turkish). For the syntactic manipulation, the case marking effect was violated by accusative form (correct) vs. dative form (incorrect). For main effect of syntax (Figure 1), a broadly distributed left negativity and late positivity (P600) was observed at critical word (200-400 msec and 550-750 msec) which served more in posterior regions of the brain scalp. For pure prosodic effect (Figure 2), a right anterior negativity (RAN) was elicited in an early time window (150-350 msec). For the interaction effect (Figure 3), left negativity and left positivity were seen more smaller when syntax was violated by prosody. This suggests that an immediate influence of post-verbal non-focusing position in Turkish during auditory sentence comprehension.

Keywords

prosody, P600, RAN, early negativity, interaction

On Arabic Abstract and Concrete Words Recall Using Free, Cued, and Serial Recall Paradigms: Is It Abstractness, Concreteness, or Zero Effect?

Ahmed Alduais, Yasir Almukhaizeem

Abstract

This research was funded by the Research Centre, College of Languages and Translation Studies and the Deanship of Scientific Research under (Cognitive Linguistics Research Group), King Saud University, Riyadh, Kingdom of Saudi Arabia.

Purposes: Four studies were conducted to o see whether abstract or concrete words are better recalled in free recall type and to measure primacy and recency displayed effects in free recall paradigms. Whether abstract or concrete words are better recalled in cued recall type and to measure forward and backward displayed factors in cued recall.Whether abstract or concrete words are better recalled in serial recall.
Methods: 9 undergraduates in each group (3 groups)in King Saud University, Saudi Arabia participated in this study where they were trained to differentiate between abstract and concrete words. A list of 20 Arabic abstract and concrete words was then given to them to be classified into abstract and concrete words based on four factors: concreteness, imageability, meaningfulness and age of acquisition. An observation sheet was provided to the experiment administrator to document observed recall effects and recalled words. Three methods were used to facilitate this experiment: auditory, visual and hand-writing methods.
Results and Conclusions: The first study was concluded with that there was neither an advantage for abstract words over concrete ones nor an advantage for concrete words over the abstract ones, it was a rather a zero effect. List length effect didn't affect memory recall during free recall paradigms. The second study was condluded with that recency effect is more frequent than primacy effect in free recall paradigms.The total number of recalled abstract words was slightly yet insignificantly higher than the total number of recalled concrete words in cued recall paradigms of Arabic abstract and concrete words recall. Also, there was no statistically significant difference between forward and backward recall tests; although, a minor noticed difference was statistically calculated. Using more than a cue in cued recall paradigms increased the chances of words recall.There wasn't a statistically significant difference between the total number of recalled Arabic abstract and concrete words in serial recall paradigms in favour of the abstract words. The third study was concluded with that among the nine pre-specified effects, some were observed while some were not observed at all. List length effect seems to affect the short-term memory recall of Abstract and concrete words. The fourth study indicated that abstract and concrete words are better recalled in free recall paradigms than in cued and serial recall paradigms. Yet, words are more poorly and considerably recalled in serial recall than in both free and cued recall paradigms. There was also neither an advantage of concrete words over abstract ones nor for abstract words over concrete ones albeit insignificant statistical difference was calculated in the case of cued and serial recall paradigms in favour of abstractness effect.

Keywords

Abstract words, concrete words, free recall, cued recall, serial recall, recall effects, abstractness effect, concreteness effect, zero effect

Examining Effect of Motivation, Interference and Attention on Short-term Memory Recall of Arabic Abstract and Concrete Words Using Free, Cued, and Serial Recall Paradigms

Ahmed Alduais, Yasir Almukhaizeem

Abstract

This research was funded by the Research Centre, College of Languages and Translation Studies and the Deanship of Scientific Research under (Cognitive Linguistics Research Group), King Saud University, Riyadh, Kingdom of Saudi Arabia.

Purposes: To see if there is a correlation between attention, motivation and interference and short-term memory recall yet to examine attention, motivation and interference as a factor affecting memory recall of Arabic and abstract words through free, cued, and serial recall paradigms.
Methods: Four groups of undergraduates in King Saud University, Saudi Arabia participated in this study. The first group consisted of 9 undergraduates who were trained to perform three types of recall for 20 Arabic abstract and concrete words. The second, third and fourth groups consisted of 27 undergraduates where each group members were trained only to perform one recall type: free recall, cued recall and serial recall respectively. In the first study, attention level was the independent variable and number of recalled abstract and concrete words was the deponent variable. In the second study, motivation was the independent variable and number of recalled abstract and concrete words was the deponent variable. In the third study, interference (short-term memory interruption) was the independent variable and number of recalled abstract and concrete words was the deponent variable. The used materials in this study were: abstract and concrete words classification form based on four factors was distributed to the participants (concreteness, imageability, meaningfulness, and age of acquisition), three oral recall forms, three written recall forms, and observation sheets for each type of recall. Three methods were used: auditory, visual, and written methods. Results and Conclusions: Our findings included that increases and decreases in paid attentional efforts were correlated with increases and decreases in retrievable and non-retrievable Arabic abstract and concrete words (short-term memory recall). Besides, motivation effect on short-term memory recall of Arabic abstract and concrete words was not significant especially in the case of free and serial recall paradigms. On the contrary, Pearson's correlation supported the research hypothesis that there was a moderate positive correlation between the two variables, $r = 0.713$, $n = 440$, $p = 0.000$, with $R2 = .508$. And interference as a factor effecting short-term memory recall didn't show any significant effect where there was a noticeable increase or decrease in the number of recalled words; although, it is moderately yet positively correlated to short-term memory recall.

Keywords

Abstract words, concrete words, words recall, free recall, cued recall, serial recall, recall effects, motivation, interference, attention, short-term memory

Word Learning from Interactive Baby Media

Kaveh Azartash, Dorjay Yuden, Trina Sarkar, Dhonam Pemba

Abstract

In the United States, parents, educators and scientists have been debating the efficacy of digital media in language learning. Although numerous products designed and marketed for infants promote language learning, there is still a large debate about whether these products are actually effective. This study examined how many new foreign words children between 18 and 24 months could learn from digital media. Children participated in three experimental groups: parent reading, interactive eBook playing, and video watching over a 5 week period and one control group with no intervention. Results suggested that children only learned in an interactive environment (parent reading and interactive eBook) and not from passive video viewing. This study highlighted the importance of interactive design for language learning through digital media. Although previous research has shown that children can learn words from a video chat, this study is the first to demonstrate the importance of word learning through animated and illustrated media.

Keywords

Linguistics, Language acquisition, infant media, infant learning, language development

The Development of Narrative Skills in Turkish-Speaking Children: A Complexity Approach

Hale Ögel Balaban, Annette Hohenberger

Abstract

Narrative is a complex discourse unit. Creating it requires "a joint process of event comprehension and language production" (Trabasso & Rodkin, 1994, p.87), and perspective taking, understanding and explaining behaviors and emotions of others. In the present study, it is claimed that these requirements map into three levels of complexity: 1) Plot complexity reflecting the temporal and thematic organization of the narrative, 2) Syntactic complexity expressing the coherent causal, temporal and logical order of the reported events, and 3) Evaluative complexity indicating the narrator's perspective toward the events. The aim of the present study was to examine the development in each level and their relationships with each other. Moreover, the contribution of ToM, the executive function and the comprehension of complex syntactic structures to each level was analyzed. One hundred and five Turkish-speaking children in 4 age groups (3&4, 5,7&8, and 10&11years) and 15 adults participated on 1.Elicitation of narratives task, 2. Emotional Stroop Task, 3. First- (for 3- to 4-year-old children) and Second-order (for older children and adults) ToM tasks, 4. Real-apparent emotion task (for 3- to 4-year-old children), and 5. Comprehension of complement clauses task. As expected, preliminary results indicated developmental increases in each level of complexity. Evaluative complexity and plot complexity were found to be positively related. Moreover, both of the syntactic complexity and the plot complexity correlated with the executive function whereas the evaluative complexity was related to the comprehension of sentential complements. The significance of these findings for the development of narrative skills would be discussed.

Keywords

narrative skills, complexity, ToM, cognitive development

A Dynamic Field Theory Based Pilot Model To Control Aircraft Pitch Attitudes

Yasin Kaygusuz, Murat Çakır

Abstract

In this study, a dynamic field theory (DFT) based cognitive model of a pilot performing pitch attitude control of a 3 degree of freedom aircraft model is presented. The cognitive model is validated by comparing the pilot model's pitch attitude hold performance with real flight test results of a human pilot on a real aircraft. A high degree of similarity was observed between the behaviour of the human pilot and the DFT model. The paper contains a brief summary of older control theory based pilot models, describes the similarities between control theoretic and DFT approaches, and shows the DFT pilot's flexibility to adapt to different temporal behaviours.

Keywords

Dynamic field theory, pilot cognitive model, cognitive modeling

Gestures Production under Instructional Context: The Role of Mode of Instruction

Melda Coşkun, Cengiz Acartürk

Abstract

There is a close relationship between diagrams and gestures in terms of employing space and the spatial relations between mental representations of objects of interest during the course of communication. According to Tversky, Jamalian, Giardino, Kang, and Kessell (2013), gestures can be viewed as virtual diagrams in the air, whereas diagrams are the permanent traces of gestures on the surface. More generally, alongside language, gestures and diagrams may be conceived, as communication modalities that externalize common conceptual and spatial mental representations (Acartürk, 2010).

Diagrams and gestures differ in their temporal characteristics. A major difference between gestures and diagrams is that gestures are momentary actions, whereas diagrams are relatively permanent visual representations. On the other hand, it is likely that the close relationship between diagrams and gestures is based on their common roots in cognitive sub-systems that are committed to processing spatial information.

In this study, we aim at examining how communication mode influences the production of gestures under specific contextual environments. We focus on gesture production in diagram-rich environments due to this close coupling between the two modalities. Twenty-four content specialists who had expertise content knowledge in math or science were asked to present a topic of their choice as if there was a listener under three instructional settings: a blackboard, paper-and-pencil, and a tablet. All experiment sessions were videotaped. Participants' gestures were investigated in three groups: deictic gestures that point to entities, representational gestures that present picturable aspects of semantic content, and beat gestures that are speech-related rhythmic hand movements.

The results of the experimental investigation revealed that gesture production patterns of the participants were influenced by the contextual environment (in this case, the mode of instruction). In particular, the participants produced more gestures when they used a board-and-boardmarker (in a standing position), compared to the instructional context, in which they used a tablet or paper-and-pencil (both in a sitting position).

In future work, we plan to address the limitations in the present study: A real classroom setting would influence the gesture production patterns. Finally, the specific domain of discourse, depending on its semantic richness in spatial terms, may influence production of different gesture types.

Keywords

Gesture production, Multimodal communication, Diagrams

Without God, Everything is Permitted? The Reciprocal Influence of Religious and Meta-Ethical Beliefs

Onurcan Yılmaz, Hasan G. Bahçekapılı

Abstract

The relation between religious and moral thought has been difficult to unravel because of the multifaceted nature of both religion and morality. We chose to study the belief dimension of religion and the meta-ethics dimension of morality and investigated the relation between God-related thoughts and objectivist/subjectivist morality in three studies. We expected a reciprocal relation between the idea of God and objective morality since God is one prominent way through which objective moral truths could be grounded and thus the lack of such objective truths might imply the absence of God who could set such truths. Study 1 revealed negative correlations between moral subjectivism and several measures of religious belief. Study 2 showed that people adopt moral objectivism more and moral subjectivism less after being implicitly primed with religious words in a sentence unscrambling task. Study 3 showed that people express less confidence about the existence of God after reading a persuasive text about the subjective nature of moral truths. Taken together, the results demonstrate that religious and meta-ethical beliefs are indeed related and can reciprocally influence each other.

Keywords

moral cognition, cognitive science of religion, meta-ethics, religious belief, implicit priming

A Cognitive Science Approach to Second Language Acquisition: An Analysis of Factors Affecting Discrimination of Chinese Tones

Tzu-Ching Kao, Deniz Zeyrek

Abstract

Learning tones in standard Chinese is one of the most challenging tasks for students. This paper aims to use aspects from Chinese linguistics to build a cognitive model with an online application–Pittsburgh Science of Learning Center's DataShop--to discover factors that affect tone perception. Our research indicates that learners attempt to apply pitch variations to different tones as do native speakers, but that interferences from vowels and consonants can affect their perception of particular tone categories in varying degrees.

Keywords

cognitive model, Chinese tones, second language acquisition

The Effect of Thematic Roles and Prosody in the Detection of Ungrammaticality in Turkish

Pınar Bekar, Özgür Aydın

Abstract

Understanding how silent reading suggests a prosodic evidence for ungrammaticality is important during measuring eye movements. It is claimed that prosodic patterns are imposed on written language during silent reading (e.g., Ashby & Clifton, 2005; Fodor, 1998; Rayner &Pollatsek, 1989).This study tested whether prosodic processing occurs during silent reading in Turkish and examined the importance of prosody in the detection of ungrammaticality during silent reading by measuring eye movements in Turkish post-verbal position.

There were 20 participants between the ages of 18-35. Our experimental conditions which were manipulated towards grammaticality and congruence were composed of 150 sentences with two prosodic violation (see 1-3): Post-verbal and sentence-initial focussing via wh-questions. An additional 50 grammatical sentences were included as filler sentences in order to maintain the same number of acceptable and unacceptable sentences across the whole set of materials.The specified AOIs (area of interest) for the analysis of eye movement parameters are focused and verb segments (underlined in 1-3).

(2) Post-Verbal Focus (ungrammatical/incongruent)
Q: Dükkan-da çocuk kim-i gör-dü?
market-LOC child who-ACC see-PAST
'Who did the child see in the market?'
A: *Dükkan-da çocuk gör-dü KADIN-I
market-LOC child see-PAST woman-ACC
'The child saw the woman in the market'

(2) Sentence-Initial Focus (grammatical/incongruent)
Q: Çocuk dükkan-da kim-i gör-dü?
child market-LOC who-ACC see-PAST
'Who did the child see in the market?'
A: #KADIN-I çocuk dükkan-da gör-dü.
woman-ACC child market-LOC see-PAST 'The child saw the woman in the market'

(3) Pre-Verbal Focus (grammatical/congruent)
A: Çocuk dükkan-da KADIN-I gördü.
child market-LOC woman-ACC see-PAST
'The child saw the woman in the market'

To detect ungrammaticalityof the sentences with focused post-verbal constituent (1) which is not allowed in Turkish (Erguvanlı, 1984; Kural, 1992; Göksel, 1998; Göksel&Özsoy, 1998; Özge&Bozşahin, 2010), the parser was incrementally guided by thematic role of the verb (i.e., gördü 'saw') andthe post verbal focused constituent (i.e., KADINI 'woman'). In the sentence with focused sentence-initial constituent (2)which is grammatical but unacceptable in the given context (incongruent), the parserinitially accesses the focused segment, but then revises to the verb.

For the focusing segment, pairwise analyses between conditions yielded significance forcomparisons betweenpost-verbal and sentence-initial and, pre-verbal and sentence-initial conditions.As for the verb segment, however, there were significance between post-verbal and pre-verbal conditions and, between post-verbal and sentence-initial conditions. These results implicates that prosodic processing occurs during silent readingthat the parser is sensitive to prosodic characteristics of the language by reading the sentences.

We also calculated mean pupil dilation ratio separately for all AOIs. There were no significance for the verb segments, while for the focused segments, the difference in pupil dilation ratio between post-verbal and pre-verbal conditions and, between post-verbal and sentence-initial conditions were significant. This result shows that the pupil dilation provides an objective index of prosodic processing.

Keywords

prosody, ungrammaticality, thematic roles, eye-movements, pupil dilation

Turkish Children's Early Vocabulary Acquisition: An Experimental Study On Lexical Diversity

Yasin Kaygusuz, Deniz Zeyrek Bozşahin

Abstract

The study has two interrelated aims: it investigates spontaneously occurring production data of two Turkish sisters aged 1:4 and 2:3, and quantifies their lexical diversity. Therefore, it has a developmental aim, which in turn is intended to inform the old debate of noun-early/verb-early acquisition from the view of the data. We use the well-known type-token ratio (TTR) as the measure of lexical diversity. It is found that both nouns and verbs are present in the early lexicon, although the ratio of nouns exceeds other lexical categories and that verb acquisition starts to rapidly increase at or towards 2:3.

Keywords

noun-verb debate, Turkish children language acquisition, type-token ratio

Analytic Thinking, Religion and Prejudice: An Experimental Testing of the Dual-Process Model of Mind

Onurcan Yılmaz, Dilay Z. Karadöller, Gamze Sofuoğlu

Abstract

Dual-process models of the mind as well as the relation between analytic thinking and religion have aroused interest in recent years. However, few experimental studies emphasized the causes and consequences of this dual process in experimental settings. We present a three factor model in which analytic thinking might be one of the causes of religious disbelief as well as reduction in the level of prejudice, and also religious belief might be one of the causes of increased level of prejudice. The first experiment confirmed the past research (Gervais & Norenzayan, 2012) that analytic thinking promotes religious disbelief even in a mostly Muslim sample. The second experiment investigated the effect of religious and analytic priming on prejudice and showed a main effect of religious, but not analytic priming. Instead, analytic priming has an effect only on anti-gay prejudice. Although these findings do not directly support our three-factor model, it shows that analytic thinking might be one of the cognitive factors that prevents prejudice whereas religious belief might be the one that leads to an increase in prejudice.

Keywords

dual process model of mind, cognitive science of religion, analytic thinking, implicit priming, prejudice

Motion event expressions in language and gesture: Evidence from Persian

Niloofar Akhavan, Nazbanou Nozari, Tilbe Göksun

Abstract

How do people conceptualize motion events and talk about them? The current study examines how gestural representations of motion events arise from linguistic expressions in Persian, which has characteristics of both Talmy's satellite- and verb-framed languages. We examined native Persian speakers' speech and gestures in describing 20 motion events. We focused on two motion event components: path (trajectory of motion like up) and manner (how the action is performed like jumping). Results indicated that when expressing motion, Persian speakers produced path in both speech and gesture, whereas manner was conveyed only through speech (mostly as adverbs). Additionally, dynamic gestures tended to occur in the same order they were uttered. The difference between path and manner findings asks for further research to examine language-gesture interaction in detail among different languages. Results also suggest refinement in gesture theories that argue for one-to-one correspondence between speech and gesture.

Keywords

motion events, gesture, language and thought, Persian, Farsi

Effects of Anxiety on Executive Functioning (EF): Controlling for the Role of Attachment Anxiety and Avoidance

Gozem Turan, Asli Uzel, Ayse Altan Atalay

Abstract

Executive functions (EF) have critical importance in various aspects of daily life. EF is conceptualized as an umbrella term that is composed of three dimensions as shifting, inhibition, and updating (Miyake, Friedman, Emerson, Witzki, & Howerter, 2000). Previous research also emphasizes that anxiety evoking situations /stimuli interfere with the EF capacity, especially when the EF tasks precede the administration of anxiety provoking stimulus (Eysenck, 1992). It is also mentioned that attachment style plays a very important role in this relationship. Primary attachment strategy is designed to protect an individual from distress and to alleviate anxiety (Mikulincer, Shaver, & Pereg, 2003). In parallel, attachment style has become a significant framework for understanding the changing in people self-regulation capacity. Additionally, poor EF may act as a mediator in the relation between attachment styles and ability to self-regulate (Thorell, Rydell, & Bohlin, 2012). In this ongoing study, effect of different attachment styles on EF will be investigated. It is expected that participants experiencing lower levels of attachment related anxiety and attachment related avoidance will perform better on all EF tasks. Participants will be composed of university students. All participants will be administered Experiences in Close Relationships-Revised (ECR-R) Questionnaire for assessment of attachment anxiety and avoidance. The participants that report both high and low levels of attachment related anxiety and attachment related avoidance will be accepted to the second part of the study. In the second part of the study, inhibition, shifting and updating dimensions will be measured through Go/Nogo task, Flanker task, Backworth Digit-Span tests respectively. EF tasks will be administered to the participants by using E-prime software following exposure to anxious movies that serve the purpose of anxiety induction. After data gathering process, the results will be discussed in the light of available literature.

Keywords

executive functions, anxiety, attachment anxie
ty and attachment avoidance

Adults' Implicit Learning of Phonologic Patterns: Consonant, Speaker and Tone

Elise Michon, Emmanuel Dupoux, Alejandrina Cristia

Abstract

Adults are able to implicitly learn new constraints on sound patterns in artificial languages presented in the laboratory, and generalize them to novel items (Moreton & Pater, 2012). This research aims to shed light on the cognitive biases that may shape natural language acquisition and, in consequence, the kinds of patterns observed cross-linguistically. One recurrent question concerns which dimensions are encoded and which are ignored during phonological learning. Some studies (Onishi et al., 2002) have shown that a phonotactic pattern on consonants and vowels on CVC syllables (among two groups of consonants, if the vowel is high, initial consonant from group 1, final consonant from group 2, and reverse pattern if the vowel is low) is reflected in the listener's latency to repeat heard syllables. However, this is not the case when the pattern is specific to one talker (if the voice is feminine, initial consonant from group 1, final consonant from group 2, and reverse pattern if the voice is masculine, regardless of the vowel). Do the participants ignore the speaker information because it is not linguistically contrastive?

To address this question, we compared these two dimensions, consonant and speaker, to a third dimension that can be linguistically contrastive or not depending on the language: tone or intonation. Through an online interface, participants with a tonal or a non-tonal native language were exposed to stimuli associating vowels and one of the three aforementioned conditions, during a familiarization phase. Then they were presented with pairs of syllables, where only one syllable corresponded to the constraint they had been exposed to, and were asked to discriminate the syllable that was the most familiar to them between the two. Although our results cannot address the question of language experience due to a small N in the tonal group, they show that tone does not operate exactly like speaker cues for the non-tonal group: performance in the tone condition is intermediary between the consonant condition, clearly above chance, and the speaker condition, at chance according to predictions. This suggests that non-tonal participants encode and access the tone information to some extent.

Further work is needed to determine whether this is specific to tones or whether above-chance performance ensues with other characteristics that are non-native but recruited for lexical contrasts in other languages (e.g., lexical stress for French speakers).

Keywords

psycholinguistics, artificial grammar learning, implicit learning, phonologic patterns, phonotactic rules, linguistic contrast, tone

On the Free Recall of Pictures and Words: The role of Age of Acquisition and Frequency on Memory

Ilhan Raman, Simay Ikier Sayar, Evren Raman, Elcin Kilecioglu, Dilek Eroglu, Sebnem Zeyveli

Abstract

The aim of the current experiments was to examine the impact of two psycholinguistic variables, namely age of acquisition (AoA) and frequency, on free recall in Turkish. The advantage of processing early acquired items over late acquired items in lexical and semantic tasks across a number of languages is well documented (see Juhasz, 2005 for a comprehensive review). Interestingly, in English, contradictory evidence has been reported in recall tasks where participants perform better overall on late acquired words compared to early acquired words (Dewhurst, Hitch & Barry, 1998). A recall advantage for high frequency words has also been reported to be modulated not only by frequency but also by list type (Dewhurst, Brandt & Sharp, 2004). This effect either disappears or is reversed when the same items are presented in mixed lists containing both high and low frequency items (Dewhurst et al, 2004). Although similar effects has been reported for naming high and low frequency Turkish words (Raman, Baluch & Besner, 2004), the impact of list effects on memory has not been examined before. The current experiment aims to shed further light on this discrepancy by exploring the influence of AoA and frequency on free recall on standardised pictures and their names (words) in Turkish (Raman, Raman & Mertan, 2014). Eighty participants were recruited from Yeditepe University and were assigned to either a picture (N=40) or a word condition (N=40) in which stimuli were presented in either a mixed or a pure list. Following a distracter task, participants were asked to recall as many pictures or words as they could remember from the list they viewed. The findings lend partial support to the previous findings in English and the implications are discussed within the context of current cognitive frameworks.

Keywords

Age of acquisition, frequency, episodic memory, free recall, picture and word processing in Turkish

The Acquisition of the Turkish Focus Particle Sadece 'Only'

Simge Topaloglu, Mine Nakipoglu

Abstract

The Turkish focus particle sadece 'only' is a restrictive particle focusing on the entity that is in its c-command-domain and prompting a discourse model where the proposition is true of the focus-set and false of the set of alternatives that contrasts with the focus-set. Studies of children's acquisition of only in various other languages have shown that preschoolers err heavily in the interpretation of this particle, particularly when it is in the pre-subject position. There are three prevalent accounts for this tendency. One suggests that young children completely disregard the restrictive meaning and fail to compute a contrast-set so that no differentiation between pre-subject only and pre-object only is possible. The other suggests that children's limited syntactic competence yields a scope misassignment error such that pre-subject only is misinterpreted as pre-object only. Another view is that children are highly sensitive to the focussing property of only so that they associate it with the last NP of the sentence that overlaps with the focus, even though this violates the syntactic constraints of the language.

By implementing a picture-prompted truth-value-judgment-task consisting of adult-true/adult-false test sentences we have investigated whether i. Turkish-speaking preschoolers can correctly dissociate between pre-subject and pre-object sadece. (Condition 1) and ii. how they interpret pre-verbal sadece (Condition 2). If children's asymmetrical error patterns in interpreting pre-subject and pre-object only reflect a preference for the linear order, we expect to find a significant bias towards associating pre-subject sadece with the direct object. The results obtained from 28 children (15 girls, 13 boys; age-range 4;1-6;3; mean 5;5) tested for Condition 1 suggest that this is indeed the case. Overall, the error rate for pre-subject sadece 'only' sentences is 93,5% for child subjects as opposed to an adult control group with an error rate of 0%. Children's performance in the test sentences that contain pre-object sadece 'only', however, is remarkably adult-like with an error rate of 3,6%. This discrepancy shows that pre-subject sadece 'only' is particularly difficult for children to understand.

Children's justifications for their rejections of the test sentences in adult-true conditions also indicate that children wrongly associate pre-subject sadece 'only' with the direct object NP. Out of a total of 84 adult-true pre-subject sadece 'only' sentences, 77 were identified as false by the children. Of these 77 rejections, 66 were justified with statements that conclusively show that children misinterpreted pre-subject sadece 'only' as if it were pre-object sadece 'only'. Thus an error that we tentatively label as scope misassignment appears to have motivated 78,6% of all responses given to the pre-subject sadece 'only' sentences. So far, our findings corroborate the results that previous experiments in the literature have yielded.

In Condition 2 we have explored children's interpretations of pre-verbal sadece and how comprehension interacts with information structure and stress. In half of the test sentences there is a prosodic boundary between the object and the pre-verbal sadece 'only', (i) [Object] [ONLY Verb], so that sadece 'only' takes scope over the verb. In the other half, the object is stressed so that the pre-verbal 'only' takes scope over the preceding element, i.e., the object NP, rather than the verb (ii) [OBJECT only] [Verb]. Preliminary results obtained from 10 children (5 girls, 5 boys; age-range 4;4-6;2; mean 5;6) have shown that children erred with a rate of 67%, i.e. showed a fairly strong bias towards erroneously associating the pre-verbal sadece 'only' with the direct object in (i). In contrast to this, in (ii) when the object NP is stressed and forms a prosodic phrase with the following focus particle sadece 'only' and where the only grammatical interpretation is one where sadece 'only' is associated with the direct object children performed much better, the error rate observed was only 23%. So far the results of our experiments seem to confirm the hypothesis that children have a bias towards associating the focus particle sadece 'only' with the last NP in a sentence.

Keywords

language acquisition, Turkish, focus particles, pragmatic development, syntactic competence

Power Law Distributions and Self-Organizing Music Taste

Duygu Gözde Nasuhbeyoğlu

Abstract

The purpose of this study is to investigate whether there is Power-law Distribution in music tastes that are posted on popular music websites. The hypothesis to be investigated is that a song that is liked or disliked by too many people has the potential to be liked or disliked by other people as well. To investigate this hypothesis, random top songs have been selected and their YouTube (YouTube, 2014) ratings were collected every day for more than one month. Results were expected to show that the frequency of likes or dislikes increase every day and for songs that are liked or disliked more would be liked or disliked more. In order to understand whether this happens or not for each day's data, Power-Law distribution and Lognormal distribution have been compared. As a result, it has been seen that Lognormal distribution is more likely than Power-Law distribution for this set of data. This result shows that Power-Law distributions are not enough to represent people's music tastes. This means that people's music tastes are not only formed by other people's music tastes. However, it would be good to see what happens when all the data in a music sharing website has been collected. This is marked as future work.

Keywords

Music Taste, Power-Law Distributions, Machine Learning, Opinion Mining

The Role of Gestures in Describing Motion in English and Turkish

Esra Nur Catak, Aysenur Karaduman, Sevgi Bahtiyar, Anjan Chatterjee, Tilbe Goksun

Abstract

Previous studies suggest that spontaneous gestures are influenced by the sentence forms of a language; yet, there is little research on how exactly spatial information given in speech relies on the spontaneous gestures produced by speakers. We examine (1) how English and Turkish speakers describe motion and use gestures in line with their speech; (2) how gesture restriction will influence speech for each language group; and (3) whether gesture only information has more similarities across languages than speech only information. Native English and Turkish speakers were presented videos depicting motion events. After watching each video, the participants were asked to describe the action in spontaneous gesture, no gesture, gesture only conditions. The use of path/manner information for speech and gesture were coded. Results indicated that English speakers used more manner + path combinations in speech in both spontaneous and no gesture conditions compared to Turkish speakers. No difference was found in the use of gesture components; both groups mostly produced path only gestures in spontaneous condition and manner + path combinations in gesture only condition indicating that there may not be a tight coupling between speech and gesture in describing motion.

Keywords

language, gesture, motion events, gesture production, gesture restriction

Narratives of Focal Brain Injured Individuals

Aysenur Karaduman, Sevgi Bahtiyar, Anjan Chatterjee, Tilbe Goksun

Abstract

Focal brain injury has detrimental effects on producing narratives. This study examined production of information content and the use of motion event components (verbs and prepositions) in spontaneous narratives of left hemisphere damaged (LHD) and right hemisphere damaged (RHD) patients. Results indicated that LHD patients' narratives involve less informational content than healthy controls (HC). Specifically, they gave more inaccurate information compared to both RHD patients and HC. The information they produced accurately were also less complete compared to HC. LHD patients also uttered significantly fewer motion sentences, talked with lower mean length of utterance, and produced fewer types of verbs and prepositions than HC. These results are in line with the literature that suggests impaired micro-linguistic abilities for LHD patients. However, the findings contradict the previous studies showing impaired macro-linguistic abilities for RHD patients.

Keywords

narrative, focal brain injury, motion events, path-manner

Edebiyat ve Beyin: Edebî Metinlerde Bilişsel Süreçler ve Bilişsel Anlamlandırma

Alemdar Yalçın, Murat Luleci

Abstract

İnsanî bilimler ve bilişsel bilim arasındaki ilişki bugün kurumsal ve kuramsal bir zemini oluşturma yolunda ilerliyor. 1980'lerden bu yana dil/edebiyat ile bilişsel bilim arasında gerçekleşen etkileşim, bilişsel dilbilim ve bilişsel yazınbilim gibi iki önemli disiplini ortaya çıkardı. Geçtiğimiz yüzyılda "dilbilimsel dönüş"ün ardından gerçekleşen "bilişsel dönüş", bilişsel edebiyat çalışmaları için de bir dönüm noktasını im-ledi. Bugün bilişsel ve beşerî bilimleri inceleyen araştırma-cılar, çoğunlukla beşerî bilimlerin araştırma alanı olarak kabul edilen ve insan hayatının temel problemlerini çözmede kritik bir rol oynayan dil, bilinç, sanat, ahlak ve aşk gibi kav-ramlara yeni cevaplar aramaktadır. Bununla birlikte edebî metinlerde halihazırda yer alan bilişsel süreçler, insan biliş-selliğinin işleme mekanizmalarına dair önemli bilgilere ulaşmamızı sağlamaktadır. Çünkü edebî metinlerde kul-lanılan anlatım tekniklerinin anlamlandırılması, okur ta-rafından bir dizi bilişsel işlemin etkinleştirilmesiyle mümkün hale gelmektedir. Metin Dünyası Kuramı bir durumun veya olayın anlatımı sırasında anlatımın kronolojik zamandan sıyrılmasını içeren geriye dönüş tekniğini, anlamın okurun bilişselliğinde tamamlanması için belirleyici bir unsur olarak kabul eder. Farklı boyutlardaki söz gruplarının edebî metin-den eksiltilmesini ifade eden eksilti, okurun bilişselliğinde metnin bütünsel biçimde algılanmasını sağlar. Geriye dönüş ve eksilti özellikle modern metinlerde yaygın biçimde kul-lanılmasına rağmen, bunlar, bilişsel bir süreç olarak Türk edebiyatında bütünsel ve sistemli bir biçimde ortaya kon-madı; bu çalışmanın bu alandaki boşluğu dolduracağı düşü-nülmektedir. Çalışmamızda Adalet Ağaoğlu'nun Ölmeye Yatmak romanında geriye dönüş ve Attila İlhan'ın Sisler Bulvarı'nda eksilti bilişsel birer süreç olarak irdelenecektir.

Keywords

bilişsel bilim, edebiyat, Metin Dünyası Kuramı, geriye dönüş, eksilti

Neural Correlates of Economic Bubble: an fNIR Study

Ferhat Uysal, Baran Kahyaoglu, Kerem Alp Usal

Abstract

Economic bubbles occurred in the last two centuries almost on a regular basis. Since economy is a result of human interaction, it is inevitably affected by human cognition. Moreover, if human cognition plays a role in the economy, and it is safe to say it does, human cognition plays a role in economic bubbles as well. Many studies in cognitive science have been searching for the root of these economic bubbles. Two important examples are Weber et al.'s money illusion and Corricelli and Nagel's Keynesian beauty contest. An important study, Ogawa et al. (2014) Neural basis of economic bubble behavior, has shown that the loss of connectivity between Dorsolateral Prefrontal Cortex (DLPFC) and Ventromedial Prefrontal Cortex (VMPFC) is a key factor in the forming of economical bubbles. In our study, we have used fNIR to examine 5 participants as they played a stock market trading game.

Keywords

functional near-infrared (fNIR), time perspective, prefrontal cortex, functional connectivity

A Developmental View of Evidential Functions in Turkish Child and Child-directed Speech: A Corpus Study

Berna A. Uzundağ, Süleyman S. Taşçı, Aylin C. Küntay, Ayhan Aksu-Koç

Abstract

In evidential languages, utterances consist of an informational content and a specification of the mode of access to that information (Aksu-Koç, 2009). Turkish is an evidential language, where Turkish-speaking children need to learn how to express their mode of access to the presented information via acquiring different functions of evidentials. In this first corpus study investigating the acquisition of Turkish evidentials, we used data of six children, obtained longitudinally between 8 and 36 months of age in the context of child-caregiver interaction. We documented different functions of evidentials in child-directed and child's speech, and investigated the relationship between input and child's developmental trajectory of acquisition. We observed that children could productively use evidentials in their speech before the age of three. In general, the distributions of evidential functions were similar in input and child's speech. We observed that nonfactual uses were very common, and report here, some of the purposes of these uses for the first time. We also observed differences between caregivers with lower and higher socioeconomic status in terms of the purpose of using evidentials in a nonfactual sense.

Keywords

evidentiality, language acquisition, corpus

Turkish Children's Acquisition of Nouns and Verbs: A Developmental Study

Fatma Işkın, Deniz Zeyrek Bozşahin

Abstract

This study is about lexical diversity of Turkish children at three age groups: 40-42 months, 43-49 months and 55-59 months. The data is collected from children at a day-care center while children were depicting their own paintings. The study measures whether there are any relationship between words types (verbs, nouns) and acquisition order. The Type-Token Ratio (TTR) is used for statistical analyses. The TTR value for the youngest age group is 43,97%; for the oldest age group it is 62.4%. These results showed that there is a statistically significant developmental effect among between the youngest and the oldest age group in terms of lexical richness. Furthermore, the noun/verb ratio for the youngest group is 55/15=3,6, it is 220/71=3,09 for the middle age group and 186/105= 1,77 for the oldest group. These results suggest that while the lexicon of the youngest group and the lexicon of the middle group is dominated by nouns, the lexicon of the oldest group is dominated by verbs.

Keywords

Lexical diversity, type-token ratio, noun bias verb bias, acquisition, age effect, syntax, vocabulary development, lexical richness, frequency of words

Is There an Effect of Congruency in Morphology on Recognition Memory?

Ozge Ugurlu, Annette Hohenberger

Abstract

This study examines possible congruency effects in Turkish morphology. Congruency is established in terms of the meaning of the derivational morphemes -li ("with") and -siz ("without") with respect to a frame (çerçeve-li) or no frame (çerçeve-siz) around the study word. To evaluate their effect on recognition memory we used the old- new recognition method. We collected correct responses and response times as dependent variables, and a) congruency in the study phase, b) congruency in the test phase, c) and the presence of the morpheme -li /-siz as independent variables. We expected participants to remember congruent items (e.g., güneş-li with frame; ses-siz without frame) better and to respond to them faster as compared to incongruent items (güneş-li without frame; ses-siz with frame). Results showed that, in terms of correct responses, participants remembered more items correctly when items were congruent in the test phase. The effect of congruency in the study phase depended on the derivational suffix. In terms of response times, the difference between in-/congruency in trials in the test phase depended on the morpheme, as well. Implications of our findings are discussed in respect of morphology, congruency, and recognition memory, taking critically into account two levels of explanation: a higher-level explanation in terms of congruency vs. a lower-level perceptual explanation.

Keywords

Recognition memory, Congruency, Turkish derivational morphology

Decision-Making Behavior for Food Choices from a Construal Level Theory Perspective

Pardis Fallahzadeh

Abstract

Decision-making is one of the fundamental cognitive processes in human being. During the last decades, mechanisms underlying decision-making have been investigated from different points of view. Trope & Liberman (2003) proposed the construals level theory (CLT) by definition of a distinction between high-level and low-level construals of the decision problem. High-level construal represents an abstract schema of the problem with concentration on superordinate goals, in contrast to low-level construal that represents concrete features of the problem with consideration of subordinate goals (Liberman & Trope, 2008). This study investigates the effects of social condition (i.e., individual versus joint) on people's decision-making performance in food-intake domain from a construal level theory perspective. More specifically, in the current paper, we tried to focus on the measures that can be applied to the context of food choice. We used eye- and mouse-tracking technologies as the main methodology of our study. We hypothesized that even the minimal social context can influence people's decisions.

References:
Liberman, N., & Trope, Y. (2008). The psychology of transcending the here and now. Science, 322(5905), 1201-1205.
Trope, Y., & Liberman, N. (2003). Temporal construal. Psychological Review, 110(3), 403-421.

Keywords

Decision making, Construal Level Theory, Social context

Is Semantic Priming in Native Language (L1) Influenced by the Use of a Second Language (L2)? Evidence from Adult Monolingual and Bilingual Russian Speakers

Evgenia Volkovyskaya, Ilhan Raman, Bahman Baluch

Abstract

Semantic priming has been the topic of much psycholinguistic research in the past 40 years and has been demonstrated to be an inherent entity of the cognitive system in which semantically related items (doctor-nurse) are processed faster and more accurately than semantically unrelated items (doctor-butter) (see Neely, 1977 and Hutchison, 2003 for reviews). Although much attention has been paid in understanding semantic priming in monolinguals and bilinguals, this is the first report to examine the extent to which fluency in a second language would impact semantic priming. The aim of the current study was to examine the effect of L2 (English) on the magnitude of semantic priming on L1 (Russian) in a naming task by comparing RTs in monolingual and bilingual adult Russian speakers. In Experiment 1, 20 monolingual native Russian speaking university students were asked to name related and unrelated targets in a list consisting of 21 semantically related pairs [врач (doctor)-медсестра (nurse)] and [собака (dog)-кошка (cat)] and 21 unrelated pairs [врач (doctor) – кошка(cat)] using SuperLab. As predicted, the findings showed a significant semantic priming effect in Russian. In Experiment 2, 20 bilingual Russian-English speaking university students were asked to name targets presented in the same language as the prime. In addition, fluency in L2 was measured objectively using the Schonell test (Schonell, 1971). The list for bilinguals contained 84 trials, including 21 semantically related pairs ("doctor-nurse," "dog-cat") in Russian [врач (doctor)-медсестра (nurse)] and 21 semantically related pairs in English; 21 unrelated pairs formed by re-pairing the stimuli in the related cases (e.g., "doctor-cat", "dog-nurse") in Russian [врач (doctor) – кошка (cat)] and 21 unrelated similar pairs in English. The results from Experiment 2 showed a larger semantic priming effect in Russian (L1) compared to Experiment 1, and a significant semantic priming effect in English (L2). These effects were significantly correlated to the L2 fluency in Russian-English bilinguals. The implications for these findings are discussed within the current bilingual theoretical models.

Keywords

semantic priming, naming task, bilingualism, Russian-English adult bilinguals

Roles of Image Content and Behavioral Relevancy in Fixation Selection

Alper Açık, Selim Onat, Frank Schumann, Peter König

Abstract

How do low-level visual stimulus properties and top-down factors interact during selection of fixation points while we view a natural scene? We have addressed this issue recently by looking at the interaction of local image content and behavioral relevancy in the guidance of overt visual attention (Onat, Açık, Schumann & König, 2014) and summarize here our main findings. We have collected the distributions of 15 image features at the fixations of human participants, who viewed images belonging to different categories. In the same images, a separate group of participants denoted with mouse-clicks those locations that they have found most interesting. A Bayesian analysis revealed the image category-dependence and relative weakness of low-level saliency. The interestingness was clearly more salient than individual features, which also held for the prediction of fixation durations, even though low-level features had some predictive ability too. Overall, our results reveal that whereas both bottom-up and top-down contribute to fixation selection, the latter is significantly more effective.

Keywords

Visual attention, Low-level saliency, Behavioral relevancy, Eye movements

Tool Making and Object Manipulation in Children: Cognitive Factors

Gokhan Gonul, Annette Hohenberger

Abstract

Developmental studies show that human infants and children start to use tools for different problems from early months onwards, notably after 2 years of age. Some researchers claim that this spurt in tool use is related with children's increasing efficiency in hierarchical, sequential structuring. However, pre-school children are not proficient in every aspect of tool-related behaviors, in particular tool innovation. Only few studies have been carried out on the tool innovation ability of preschoolers (3-6 years of age). The general conclusion of these studies is that preschoolers have difficulty in innovating tools (Cutting et al., 2011; Cutting et al., 2014). Based on the literature, the present, ongoing developmental study aims to find cognitive factors involved in tool innovation. In accordance with the literature, it is hypothesized that – besides the effect of age – executive functioning and hierarchical structuring abilities facilitate tool innovation processes in preschoolers.

Keywords

tool making, tool use, tool manipulation, hierarchical sequencing, executive functioning, cognitive development

Contribution of Texture in Feelings Evoked in Abstract Paintings

Andreza Sartori, Berhan Senyazar, Alkim Almila Akdag Salah, Nicu Sebe, Albert Ali Salah

Abstract

In this work, we apply computer vision techniques on abstract paintings to automatically predict emotional valence based on texture. We also propose a method to derive a small set of features (Perlin parameters) from an image to represent its overall texture. Finally, we investigate the saliency distribution in these images, and show that computational models of bottom-up attention can be used to predict emotional valence in a parsimonious manner.

Keywords

Abstract Paintings, Emotion Recognition, Perlin Images, Saliency, Eye-Tracking

Processing GEN-POSS Long Distance Dependencies in Turkish

Seda Akpınar, Mine Nakipoğlu, Barış Kahraman

Abstract

Different hypotheses have been proposed as to how we establish long distance dependencies in on-line sentence processing. The present study compares the predictions of three influential accounts; locality accounts (Gibson, 2000), anti-locality accounts (Konieczny, 2000) and content-addressable retrieval account (McElree, Foraker & Dyer, 2003). We examine Genitive-Possessive long distance dependency constructions in Noun Phrases and embedded clauses in Turkish by conducting four self-paced reading experiments. We hypothesize that the data will not show any locality effect, but the data will rather support content-addressable retrieval account.

Keywords

long distance dependencies, locality effects, anti-locality effects, cue-based retrieval

Frequency Effects in the Processing of Turkish Nouns

Orhan Bilgin, Mine Nakipoglu

Abstract

There exists an extensive literature on the mental representation and processing of isolated words. The basic question of this line of research is whether words are stored and accessed as unanalyzed chunks (the full-form hypothesis), as a group of individual morphemes (the decomposition hypothesis), or as a combination of the two (the dual-route hypothesis). This question becomes especially interesting in the case of Turkish, an agglutinative language with a complex morphology where a single root can have hundreds of inflected and derived forms. The existence of frequency effects is the most robust finding of this line of research, which goes back to as far as the 1950s (for example, see Howes & Solomon, 1951): The more frequently a word occurs in written and/or spoken language, the faster it is recognized by subjects as a valid word. This paper reports the current status of an ongoing project aimed at testing the existence of frequency effects in the online processing of simplex Turkish nouns, through a series of visual recognition experiments. To our knowledge, this will be the first study on frequency effects in Turkish.

Keywords

language processing, lexical decision, response time, morphology, full-form, decomposition, frequency, surface frequency, base frequency, corpus

Do Eye-Movements Provide Information about Decision Processes during Paradoxical Reasoning?

Tuna Cakar, Annette Hohenberger

Abstract

Eye movements have been used as an important indicator of reasoning and decision-making processes. Given a task, people tend to attend more to one of the options among the others or a specific area within the provided context (Glöckner & Herbold, 2010). In the present study, eye-tracking methodology has been used in order to understand the online processing of participants in the context of their decisions in a paradoxical reasoning task known as "Ship of Theseus". In this classical paradox, participants have to decide whether Ship A (whose original parts have been fully exchanged with novel parts over time) or Ship B (which has been re-assembled from its original parts) is the Ship of Theseus. Prior to the paradoxical question the entire story line has been demonstrated in a visual slide show. On the last slide, both Ships A and B are depicted side by side and below them a text asks for participants' final decision on a 5-point Likert Scale, allowing for graded responses (1+2: Ship; 3: undecided; 4+5: Ship B). Participants' eye-movements were monitored via an eye-tracking device during the display of this last slide. Three areas of interest (AOI) were defined: Ship A, Ship B, and text. Results from 23 participants show that strong vs. weak decisions for Ship A or Ship B could be dissociated depending on the Visit Counts and Fixation Durations for the specific AOIs. While all participants tended to focus most on the textual area, weak responders did so more reliably than strong responders, who focused relatively more on the pictures of the ships. Thus, eye-tracking might be successfully used as a supportive tool in understanding online conceptual reasoning and decision processes.

Keywords

decision processes, paradoxical reasoning, Ship of Theseus, eye-tracking

Modelling of Joint Attention for Two Persons Collaborative Tangram Problem Solving Regarding the Role of Color Clue

Sara Razzaghi

Abstract

The Purpose of the study is to investigate two persons joint attention and lag distance while solving Tangram task as a pair. Also, the role of color clue in solving the problems would be scrutinized. One of the participants will direct the other to form the shape of the outline. While the outline is clear for director, it is hidden for operator. Meantime, the instructor cannot use mouse and just leads by verbal descriptions, while the operator can manipulate the pieces of the puzzle. In this study, couples will collaborate with each other in order to solve the problems. After two trials among four, the given roles will be switched between participants. Pairs will face with two kinds of tasks (with color clue and without it). Along the study, eye movements of pairs of participants will be tracked while they do the tasks with and without color. For this purpose, Eye Tribe eye trackers will be used and data will be documented. Gathered data includes the coordination of points which has seen per second. Data will be analyzed by Levenshtein Edit Distance algorithm due to recognize the distance of couple attention points and to quantify the relationship between two gaze plots. Besides, changes over the distribution of referring expression types will be evaluated along the gaze coordination when participants access to color information and no-color information. It is desired to see, if using colors may reduce the distance of joint attention of participants and relatively terminated in successful trials.

Keywords

Tangram, problem solving, eye tracking, dual eye tracking, joint attention, gaze match, Levenshtein Distance, referring expression

The Impact of Modality and Feedback on Reasoning about Base Rate Neglect Problems in Behavioral and Eye Tracking Studies: a Cognitive Science Perspective

Burcu Verim

Abstract

The base-rate fallacy is a type of reasoning error which is rooted in judgments of humans about the likelihood of some state or some event on prior beliefs and intuitions about the representativeness of the problem while neglecting base-rate probabilities of this state or event. So far, base-rate neglect problems have been presented in the verbal modality, in the form of story scripts. The purpose of this study is to investigate to what extent the different modalities (verbal vs. graphical) have an effect on reasoning about these problems via providing random sampling and feedback. Eye-tracking data, reaction times and accuracy rates of judgments will be measured. It is hypothesized that providing the participants feedback for questions about frequency distributions along with the direct experience of random sampling will cause a decrease in the base-rate neglect. The results indicated a significant difference between the three experimental groups. This study has implications for education in terms of multi-modal teaching, learning, and reasoning.

Keywords

judgment under uncertainty, base-rate neglect, feedback, eye-tracking

Ensemble Representations of Facial Expressions in Inter-Group Contexts: Effects of Inter-Group Biases on Statistical Averaging

Pınar Aldan, Semra Avşar, Müge Özvarol, İrem Yıldırım

Abstract

People can extract summary statistics of groups of items and represent them as ensembles. This ability is reported to be helpful in navigating the attention and efficient use of capacity when encountered with multiple stimuli. The present research examined whether inter-group status and valence of emotional expressions on faces affect the process of extracting the summary statistics of a group of female and/or male faces. A number of individual variables including identification with own gender group, stereotypical thinking on both genders and empathy skills were also tested to see whether they affect the accuracy of the summary extraction or any bias shown for in- or out-groups. Results showed that saliency of angry expressions disrupted an accurate averaging and male participants showed a bias towards their in-group. Also, males who see their in-group as less competent are found to be displaying more in-group bias. The results are discussed in consideration of gender differences in emotion reading and gender identity perceptions.

Keywords

ensemble representations, statistical averaging, inter-group biases, gender relations, perceptual biases

Effects of Kind and Amount of Cognitive Load and Durations on Time Estimation

Fatma Biyik Sari, Annette Hohenberger

Abstract

The estimation of temporal intervals as a primary task is influenced by characteristics of a secondary task carried out during those intervals. In the prospective paradigm subjects know that they have to reproduce the experienced intervals afterwards. Different kinds of cognitive load (e.g., memory demand, executive demand) and different amounts of load (low, high) of the secondary tasks modulate time estimation. Increase in the amount of cognitive load decreases time estimation. Furthermore, amount of load may interact with length of the estimated interval such that people underestimate longer durations more than shorter durations under conditions of high but not low load. The present study aims to investigate the effects of different amounts of cognitive loads (low, high) due to different kinds of load (memory load, executive load) for various time durations (short, medium, long) by using the prospective paradigm. It is expected that time estimation varies according to kind of load, amount of load, and duration. It was found that time estimation ratios (between objective durations and subjective, reproduced durations) get smaller with longer durations for high memory and executive loads, i.e., participants underestimate longer durations more than shorter ones and also underestimate intervals more when cognitive load is high as compared to being low; however, these effects are similar for memory as well as for executive demands.

Keywords

attention, memory demand, executive demand, task difficulty

Creativity in Context: Mood Heterogeneity in Groups Enhance Idea Generation Performance

Bedirhan Gültepe, Hamit Coşkun, Ahmet Yasin Şenyurt

Abstract

Although a number of studies investigated mood and creativity link in both individual and group settings, there is no consensus about either positive or negative mood has superiority on creativity tasks. The present experiment aimed to study mood composition in brainwriting groups and dyads. It was hypothesized that mood diversity in brainstorming dyads (Study 1) and groups (Study 2) would enhance creative performance. As expected, findings showed that mood heterogeneity led to greater creativity. Results will be discussed in lights of contemporary creativity theories.

Keywords

creativity, mood heterogeneity, brainstorming

Creativity Stimulating Picture and Problem Relatedness Enhance Individual Brainstorming Performance but with Different Underlying Mechanisms

Hamit Coşkun, Bedirhan Gültepe, Merve Yüksel

Abstract

This experimental research investigated the effect of visual stimulus or picture (creativity stimulating picture vs. non-creative picture) and problem relatedness (related problem vs. unrelated one) on the individual brainstorming performance. The participants in the creative picture condition were seen a picture of swing that resembled a half piece of car, whereas those in the non-creative one were seen a regular swing picture. Those in the related problem condition were asked to generate ideas about how to improve children toys in the kindergarten, whereas those in the unrelated one were asked to generate ideas about how to improve conditions of pets. The findings showed that creative picture enhanced the generation of a higher number of unique and flexible ideas than non-creative one. Related problem also enhanced idea generation performance but this effect was mediated by only persistence. These findings suggest that even though both creative picture and related problem were beneficial to idea generation, underlying mechanisms for the effects of these variables on the idea generation performance were not alike.

Keywords

creative picture, problem relatedness, brainstorming

A Combinatory Categorial Grammar Analysis of Double Nominative in Chinese

Cem Bozşahin, Tzu-Ching Kao

Abstract

The aim of this study is to use a semantically motivated syntactical approach to the double nominative construction in Chinese. This construction has been mainly examined with the framework of generative-transformational grammar in the past. Such an approach often involves NP deletion, movement, copying, or revision on base rule. We work with movement-less, online interpretable, and computationally well worked-out mechanisms to look at the problem, including its subtle quantificational dependencies and their asymmetry.

We suggest that Teng's (1974) insights lead to the right explanation, but without the need of powerful computational mechanisms over and above lexicalized grammars, without empty categories, and with nearly context-free parsing. The constraints on the double nominative construction do not appear to be formal/ordering constraints, but domain/semantic constraints which are syntacticized in the form of S\NP=VP. Unlike generative grammars, categorial grammar sees the domain constraint as arising from lexically specified phonological form/logical form co-determinism.

We also explain why the construction is dubbed double nominative although it is quite distinct from double -ga construction in Japanese and double -ka construction in Korean. A key relevance to cognition in this way of looking at syntactic constructions is that, we can see combinatory hypotheses about possible thoughts and their combination reflecting themselves in language expressions in predictable ways, mainly because logical form is a structural level of representation (perhaps the only structural level of representation). Syntax is reflex-like and semantics-blind, but the categories it operates with are semantically motivated.

Keywords

combinatory categorial grammar, double nominative, Chinese

Does language typology have an impact on Event-related Brain Potentials in sentence processing? Evidence from Turkish

Gulay Cedden, Aykut Eken

Abstract

Kim & Osterhout (2005) have proposed that language comprehension is served by partially independent but highly interactive streams of semantic and syntactic processing machinery. Electrophysiological measures are well suited to shedding light on the neural mechanisms of language processing,

The first aim of this study was to examine ERP responses (N400, LAN, P600) elicited by single morphosyntactic and semantic violations using the Turkish language. Our second aim was to investigate the interaction between syntactic and semantic processes by comparing the ERP responses to single violations with the ERP responses to combined syntactic and semantic violations.

Three hundred sentences consisting of five words were presented visually to 46 right handed, native Turkish speaking volunteer participants. Three hundred sentences served as filler sentences and did not follow any predetermined linguistic pattern. Three hundred sentences following a fixed grammatical pattern [NP + word2 +word3+ word4+V(fin)] served as stimulus sentences.

Four variations of stimulus sentences were used: correct sentences, sentences with a morphosyntactic subject–verb agreement violation, sentences with a semantic expectancy violation and sentences with a combined morphosyntactic and semantic violation. All types of linguistic violations were situated into the high frequent finite verbs (with three suffixes).

Contrary to the standard view, that lexical-semantic conflicts elicit a centro-parietal negativity occurring approximately 400 ms post stimulus onset (Kutas and Hillyard, 1984; DeLong et al., 2005) and morpho-syntactic violations engender later parietal positivity effect, P600, (Hagoort et al., 1993; Osterhout & Holcomb,1992) we obtained a biphasic pattern in reaction to all three conditions — an N400 followed by a P600 effect.

According to the principle of superposition a clear nonlinear summation of LAN, N400 and P600 components in the combined syntactic and semantic violation paradigm would imply that an interaction was going on during the processing.

Furthermore the results show that the centro- parietally-maximum topography in the semantic violation paradigm is much the same as the “syntactic P600. This result was interpreted as follows: When encountering a semantic anomaly in a morpho-syntactically complex language the semantic anomaly might lead to misperception of the well-formed suffixes overwhelming syntactic cues, causing the well-formed syntactic cues to appear ill-formed (Kim & Osterhout, 2005).

On the other hand, Chouhadry et al. (2009) claim that the violation of default rules elicits LANs, whereas the violation of non-default rules may correlate with N400s. Although purely formal rule violations were used in the stimuli, the sentences can be interpreted as correct when the subject is dropped, because the morphemes supply verbs with person, number, tense etc. Our findings support the view that ‘the processing of rule-based linguistic knowledge correlates with an N400 when the consequences of a rule misapplication are interpretive’ (Choudhary et al., 2009:3019). We therefore hypothesize that the N400 effect in syntactically violated sentences might also reflect conflict resolution (inhibiting the subject in this case).

Taking together the findings we conclude that in a morpho-syntactically complex language syntactic and semantic processes are interacting interdependently during sentence processing and that there is a difference in processing the full array of the lexico-syntactic content in verbs with three suffixes and compared to European languages reported in the literature.

Keywords

event-related brain potentials, sentence processing, N400, P600

Circadian Rhythms and Automaticity of Memory Blocks

Simay İkier

Abstract

Circadian rhythms are the biological changes that individuals experience due to daily exposure to light. Circadian rhythms are mediated by the suprachiasmatic nucleus in the brain (Moore & Silver, 1998) and there are individual differences in circadian rhythms (e.g., Tankova et al., 1994). One such individual difference is related to the sleep and wake time preferences. Individuals can be classified as morning type or evening type (or in between) depending on their time of day preferences, and the Morningness-Eveningness Questionnaire (MEQ; Horne & Ostberg, 1976; standardized into Turkish by Pündük et al., 2005) can be used to identify these circadian typologies. Individuals identified as morning versus evening type by this questionnaire also show differences in other factors related to circadian rhythmicity such as body temperature and cortisol levels (e.g., Bailey & Heitkemper, 2001). In general, young adults (Kim et al., 2002) and men (Adan & Natale, 2002) are more inclined to be evening types. Circadian rhythms affect cognition besides other factors (Schmidt et al., 2007). There are circadian variations in working memory (West et al., 2002), fluency and speed of processing (Allen et al., 2008) and inhibitory control (Hasher et al., 2002). In general, there is better performance at times in accordance with time of day preference in explicit memory tasks that require controlled processes (Yang et al., 2007). Automatic processes on the other hand are assumed not to show variation across the day (Yang et al., 2007). In fact, priming effects obtained from implicit memory tasks are sometimes higher at times unsuitable for time of day preference (May et al., 2005), a finding which can possibly be explained by the variation in the domination of controlled processes across the day. These findings indicate that automatic processes can serve as an invariant back-up throughout the day, while controlled processes are strong at times suitable for time of day preference and drop at times that are not, leaving individuals with rather automatic processes. One area in memory research in which automaticity is discussed is related to memory blocks. Memory block is a temporary unavailability of the target information at retrieval. One reason memory blocks are experienced is due to exposure to information similar to the target before attempting to retrieve the target (e.g., Logan & Balota, 2003; Smith & Tindell, 1997). Memory blocks can be revealed in experimental paradigms in which the target needs to be lexically retrieved in response to a single solution cue (e.g., A _ L _ _ GY). Being exposed to the competitor (e.g., ANALOGY) at study decreases the retrieval of the target (e.g., ALLERGY) below baseline in which unrelated items are studied. Exposure to the target at study on the other hand, increases its retrieval above baseline, an effect referred to as facilitation (e.g., Leynes, Rass, & Landau, 2008; Smith & Tindell, 1997). Facilitation effects are commonly referred to as repetition priming in the literature (Smith & Tindell, 1997).

Keywords

circadian rhythms, memory block, facilitation, morningness eveningness, automatic, processing, controlled processing

Turkish Native Speakers' Processing of Notional Subject-Verb and Pronoun-Antecedent Agreement in English

Figen Karaca

Abstract

Subject verb agreement is a common feature of most of the languages. There are a number of factors which affect the agreement phenomena like number, gender etc. in many languages (Bock, Nicol & Cutting, 1999). In terms of number agreement, a subject and verb of a sentence must possess the same numerical properties- if the subject is plural, the verb should also follow the same structure, and if the subject is singular, the verb should also be singular. However, there are two dimensions to consider while determining singularity/plurality of the subject of a sentence, which are notional and grammatical number. According to Humphreys and Bock (2005), "Notional number is the numerosity of the subject's referent in speaker's mental model, and grammatical number is the conventional linguistic number of the subject (head) noun" (p.689). Even if it seems so simple to achieve agreement in English, it requires semantic, syntactic, lexical, morphological and phonological information to work together (Bock, Cutting & Eberhard, 2005). Subject verb agreement becomes very tricky when the subject is a collective noun because they cause disparity between notional and grammatical number.

Keywords

Subject-Verb Agreement, Notional Number Agreement, Pronoun-Antecedent Agreement

Linguistic anticipation cued by verb semantics: Turkish and Dutch

Susanne Brouwer, Deniz Özkan, Aylin Küntay

Abstract

Linguistic anticipation is a key characteristic of spoken language comprehension. It is a crucial ability and a powerful mechanism of language (Chang et al., 2006), optimizing communication (Jaeger and Snider, 2013) by regulating processes such as, but not limited to, speaker alignment and turn-taking (Pickering and Garrod, 2006). It has been observed that both adults (Altmann and Kamide, 1999) and children (Borovsky, Elman, and Fernald, 2012; Mani and Huettig, 2012) can process language predictively. Visual world paradigm utilizing eye-tracking methodology has been extensively used to demonstrate anticipatory eye gaze to visual objects, where adults and children make use of constraints in the visual scene and in the unfolding auditory information to predict the upcoming information. Language users can benefit from various linguistic cues in the input for anticipatory processing such as prosodic structure (Brown, Salverda, Dilley, and Tanenhaus, 2011), morphosyntactic information (Kamide and Mitchell, 1999), and semantic/thematic restrictions imposed by the verb (Trueswell, Tanenhaus, and Kello, 1993; Kamide, Altmann, and Haywood, 2003; Borovksy, Elman, and Fernald, 2012). Additional information gleaned from the context and the presumed real world knowledge of listeners also facilitates anticipatory processing (Kamide, 2008; Rommers et al., 2013).

In the present study, we investigate anticipatory spoken language processing cued by verb semantics, comparing a verb-final (Turkish) and a verb-initial language (Dutch). Eye-gaze behavior of monolingual and bilingual Turkish-Dutch children (aged 4 to 6 years) and of Turkish-speaking and Dutch-speaking adults was assessed in an eye-tracking experiment. For the children, we additionally assessed executive functioning (Flanker task), working memory (Digit span task) and vocabulary skills (Peabody Picture Vocabulary test for Dutch, and the Receptive Vocabulary Subscale of Turkish Expressive and Receptive Language test for Turkish, TIFALDI-RT, Berument and Güven, 2010, 2013).

Currently, we have data from 20 Turkish adults, 20 Dutch adults and 11 monolingual Dutch children. We used a looking-while-listening procedure, which required participants to passively look at the visual scenes while listening to pre-recorded sentences. Turkish participants listened to sentences exemplified in (1a) and (1b), and Dutch participants listened to sentences exemplified in (2a) and (2b). Turkish-Dutch bilinguals listen to both language versions of the experiment, which will be presented in two separate, randomized sessions. The visual scenes comprised of two objects (e.g., a cake and a tree) located at the left-hand side and the right-hand side of the screen. The main question addressed by the experimental design is whether semantically informative verbs (e.g. eat) will yield anticipatory looks to the target object (e.g. cake) in comparison to semantically neutral verbs (e.g. see). We further aim to identify whether Turkish users anticipate the target object cued by verb semantics to a similar extent that Dutch users do, since Subject-Object-Verb (SOV) structures are predominant in Turkish as opposed to the more common Subject-Verb-Object (SVO) word order in Dutch. Sentences were presented in the SVO order to both Dutch and Turkish participants.

(1a) Çocuk yiyor bu büyük keki .
'The boy eats the big cake'
(1b) Çocuk görüyor bu büyük keki.
'The boy sees the big cake'
(2a) De jongen eet de grote taart.
'The boy eats the big cake'
(2b) De jongen ziet de grote taart.
'The boy sees the big cake'

Results show that Dutch adults ($t(19)= -7.66$, $p < 0.0001$), Turkish adults ($t(19) = -5{,}27$, $p < 0.0001$), Dutch children ($t(84) = -9.73$, $p < 0.0001$), and Turkish children ($t(39) = -4$, $p < 0.001$) anticipated the target object (cake) more in the semantic than in the neutral condition. This indicates that linguistic anticipation is present in both verb-final and verb-initial languages. These findings are in line with previous research (Kamide et al., 2003). We think, Turkish sentences, presented in a non-canonical but acceptable SVO word order might have led to an enhancement of anticipation of the sentence-final element. Data collection from monolingual and bilingual children is underway.

Keywords

language, prediction, sentence comprehension, verb semantics, eye-tracking

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Inhibition of Emotional Information Across the Menstrual Cycle

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Abstract

Menstrual cycle is a process that occurs in all fertile women regulated by changes in the degree of ovarian hormones which are estrogen and progesterone (Wu, Zhou, & Huang, 2014). This cycle is formed by two basic phases named as the follicular phase and the luteal phase. The follicular phase, which begins with menstruation, lasts approximately 14 days in a normal 28 days cycle, and ends with ovulation (Sherman & Korenman, 1975). During the follicular phase, estrogen level increases fast and reaches its highest level immediately before ovulation. In pursuit of ovulation, between days 15 and 28 the luteal phase proceeds in which level of progesterone rises and it peaks around 7 days before menses (Muizzuddin, Marenus, & Schnittger et al.,2005). In the follicular phase, endorphins are released while estrogen and testosterone are at their highest levels. Women feel good, think clearly and learn easier, have higher motivation, energy and experience calmer emotions in the follicular phase due to high levels of these hormones. During the luteal phase, level of progesterone impairs the effects of estrogen receptors. Therefore, estrogen decreases to its lowest level in the premenstrual week. Women feel tired, sluggish, nervous and anxious. Many women experience the Pre-Menstrual Syndrome (PMS) because of lowest levels of estrogen (Greenberg, Bruess, & Conklin, 2007). Few studies focused on the effect of emotional change in the phases of menstrual cycle on face recognition. Derntl, Kryspin-Exner, Fernbach, Moser and Habel (2008) demonstrated that women in their follicular phase performed better in emotion recognition when the levels of progesterone were lower. Moreover, Gasbarri et al. (2008) found that women in their follicular phase were impaired at recognizing sad and disgusted faces under the influence of estrogen. On the other hand, women direct their gaze towards fearful faces in the luteal phase in which progesterone levels are high (Conway et al. , 2007).
Number of studies investigating the effects of emotion on inhibitory control are very few as well. Almost all of these studies found that emotional stimuli decrease the efficiency of inhibitory control (e.g., Hartikainen, Ogawa, & Knight, 2000). Previous findings indicate that emotional stimuli catch attention and therefore they disrupt performance in various tasks. This effect is termed as emotional interference. Adolphs, Denberg, and Tranel, (2001) suggested that the amygdala primarily enriches details of emotional events that catch attention. Emotional processing in the amygdala also boosts hippocampal-dependent memory (Phelps, 2004). Due to the secreted stress hormones, emotional events are stored better as well (McGough, 2000). In the attentional blink paradigm, when two target stimuli are presented sequentially, the second target is missed because of limited attentional capacity if the first target was blinked (Raymond, Shapiro, & Arnell, 1992). However, if the second target is a positive or negative emotional stimulus, it can be identified and reduces attentional blink effect (Trippe, Hewig, Heydel, Hecht, & Miltner, 2007). In addiotion, a recent study showed that depressed patients have deficient inhibition of mood congruent emotional information. In other words, depressed patients failed to inhibit negative emotional information due to their negative mood (Goeleven, Raedt, Baert, & Koster, 2006). In the light of these studies, we hypothesize that in the follicular phase, postitively emotional faces will be more likely to be remembered compared to negatively emotional ones and there will be more false alarms for the positively emotional faces since they will be more difficult to inhibit. On the other hand, in the luteal phase, negatively emotional faces will be better remembered and worsely inhibited. Assuming that mood changes across the two phases, positive faces should be easier to remember and more difficult to inhibit in the follicular phase, and negative faces should be easier to remember and more difficult to inhibit in the lutheal phase.

Keywords

menstrual cycle, inhibiton, emotion, face recognition