1 Short Answer

(1) The three major theories in the Past Tense Debate are the Dual Mechanism, Single Mechanism Storage, and the Single Mechanism Composition accounts. Briefly describe how each different theory believes we can prime regular or irregular words in the past tense.

(2) In the “past tense debate”, aphasic data shows that persons with inferior frontal damage have trouble with “regulars” and persons with temporal lobe damage have problems with “irregulars”. Name one of the theories used to explain this phenomena sighting two of its key components.

(3) What is one theory for why longer SOA priming words tend to be harder to recognize when they are preceded by similar sounding words (like Spin proceeded by Spinach)?

(4) Explain the “Island of Reliability” and provide an example.

(5) In explaining the aphasic data how does the single mechanism storage theory differentiate regulars and irregulars?

(6) Give at least 2 reasons why the Single-Mechanism Storage account via semantics of the past tense probably isn’t the most comprehensive model in comparison to other theories of past tense storage.

(7) What is the “Words and Rules Theory”?

(8) Name a key difference between regular forms and irregular forms of past tense verbs.

(9) Explain why the irregular past tense pair “taught-teach” shows priming, but the irregular past tense pair “gave-give” does not (data from Albright & Hayes, 2003).

(10) In the formation of past tense, the fact that irregular past forms and their stems don’t behave as lexical neighbors in processing is a problem for which composition theories?

(11) An aphasic with damage to the interior frontal lobe damage have an inability to produce what kind of past tense?

(12) What is lexicon, what is grammar and how are they different?

(13) Identify and explain three hypotheses or possibilities that are related to the generation of the past tense.

(14) According to the single mechanism composition theory, what is the qualitative difference between regulars (transparent) and irregulars (opaque) and give example of each?
(15) How would the single mechanism composition theory explain the aphasic data?

(16) In the form and semantic word priming studies discussed in class why is an area that shows reduced activation considered to be showing a priming effect?

(17) What sort of inflections does the words and rules theory presented in the Pinker article predict that subjects apply to novel unusual verbs?

(18) Patients with anomia, an impairment in word finding, show impairment in producing irregular past-tense forms, but at the same time show little trouble in producing regular past-tense forms. How is this evidence in support of a dual mechanism in producing the past tense?

(19) In wug testing, Albright et al found that subjects tend to prefer “chook” over “chaked” as the past tense of the pseudo-word “chake”. What problem does this pose to the dual mechanism theory popularized by Pinker?

(20) What are the two main hypothesis in the past tense debate and what do they entail?

(21) The Words and Rules (WR) theory was created by Steven Pinker and opposed previous generative phonology theories established by linguists such as Chomsky and Halle. Explain WR theory, how it differs from classical theories, and the implications it has on the past-tense debate.

(22) What were the results of Pylkkanen et al’s 2000 priming study comparing examples like teacher and teach? Does this support the Decomposition view, or the emergent morpheme view?

(23) It is harder to recognize a word when it is preceded by a phonologically similar word. Name and describe the two theories that account for the behavioral inhibition that a subject experiences when presented with the prime “spinach” and then the target word “spin”.

(24) According to the words and rules theory why is it that people familiar and experienced in speaking English do not try to create irregular past tense words using the grammatical rules of the regular words.

(25) Describe the three core predictions of the past tense debate.

2 Multiple Choice

(26) In a behavioral task the reaction time to respond to the target “spin” is delayed after being presented with the stimuli “spinach”, (spinach inhibits spin). Which type of priming does this result indicate?
  a. semantic priming
  b. positive priming
  c. morphological priming
  d. phonological priming

(27) In masked priming which of the following would be an example of “transparent priming”?
  a. only- on
  b. brighter- bright
c. TAPE- tap
d. COMPUTER- screen

(28) The priming of the work HUNTER for HUNT is best and most specifically described as:
a. morphological priming  
b. semantic priming  
c. form priming   
d. none of the above

(29) Which of the following statements is true about single mechanism storage theories in explaining the aphasic data?
a. Regulars and their stems relate to each other primarily via phonology.
b. Irregulars and their stems relate to each other primarily via semantics.
c. Both A and B are true.
d. Both A and B are false.

(30) An example of morphological priming is Ė
a. Spinach-spin  
b. idea-notion  
c. teacher-teach  
d. farm-cow

(31) In a fictional language, “blick” is a Noun. In this language, you can add the suffix “fin” to produce “blickfin” meaning “full of blick”. Given this tendency, what type of suffix would “fin” be considered under the rules of English morphology?
a. Derivational, Class 1  
b. Inflectional, Class 1  
c. Derivational, Class 2  
d. Inflectional, Class 2

(32) When testing semantic representations in the brain, if the prime is auditorily simulated and the target is visually simulated the SOA is:
a. longer and inhibition is activated.  
b. longer and inhibition is inactivated.  
c. shorter and inhibition is activated.  
d. shorter and inhibition is inactivated.

(33) Which of the following is NOT true of patients suffering from semantic dementia?
a. Patients with semantic dementia have a progressive loss of semantic knowledge.  
b. Syntax, phonology, and nonsemantic cognitive abilities are relatively preserved.  
c. Patients perform well on picture naming tests.  
d. Patients continue to display semantic priming although their performance shows them to be profoundly impaired.

(34) According to the dual mechanism theories in the past tense debate, what is the relationship between the words in the pair “swim - swam”?
a. They are synonyms.
b. They are allomorphs that populate the same representation in the mental lexicon.
c. They are semantic neighbors with distinct representations in the mental lexicon.
d. They are stored in Broca’s area.

(35) Studies have shown that phonological and semantic relatedness affect what component?
   a. M250
   b. M350
   c. No component
   d. M170

(36) Which of the following in an example of an Allomorph?
   a. sing -sang
   b. walk-walked
   c. lease- grease
   d. spin- spinach

(37) The word “build” is:
   a. a free form
   b. a morpheme
   c. a simple word
   d. a free morpheme
   e. all of the above

(38) Which of the following is an example of allomorphic variation?
   a. dog and canine
   b. a and an
   c. teach and breach
   d. none of the above

(39) Respectfully, what functions are we using to recognize these pairs of primes and targets:
   “spinach-spin” and “teacher-reach”?
   a. inhibitory; inhibitory
   b. primed activation; primed activation
   c. inhibitory;primed activation
   d. primed activation; inhibitory

(40) Which theory believes that past tense words are stored as 2 separate lexical entries?
   a. The dual mechanism theory
   b. The single mechanism theory
   c. The single mechanism composition accounts

(41) In the form and semantic word priming studies discussed in class 3 areas showed a primary
effect through reduced activation. One of these is the fusiform gyrus which logically flows
because this area is also known as:
a. N100
b. the visual word form area
c. Broca’s Area

(42) “walked” has what relation to its root word
   a. phonological transparency
   b. semantic transparency
   c. inflectional morphology
   d. all of the above

(43) The relationship between state - statement is:
   a. phonologically opaque with inflectional morphology
   b. phonologically transparent with inflectional morphology
   c. semantically opaque with derivational morphology
   d. phonologically opaque with derivational morphology

(44) What evidence has been found that would refute the theory of emergent morphology?
   a. Activation seen in reaction to morphologically similar terms are equivalent to the combination of reaction to phonologically similar terms and terms that are semantically related.
   b. As phonological priming is inhibitory and semantic priming is fascilitory, the two effects have been shown to cancel each other out in morphological priming, where both are present.
   c. Pseudo-affixed words such as “Corner” prime “Corn”
   d. Although phonological priming is inhibitory and semantic priming is fascilitory the two effects do not cancel each other out in morphological priming.

(45) Which pairs are not phonologically conditioned and therefore not in competition?
   a. sing...sang
   b. teach...taught
   c. ring...rang
   d. walk...walked

(46) Break down the word “boyishness” into its morphological components.
   a. root-infix-suffix
   b. base-affix-suffix
   c. base-infix-root
   d. prefix-root-affix

(47) Which of the following is NOT true?
   a. the M350 is effected by phonological relatedness
   b. the M350 is effected by semantic relatedness
   c. the N400 is effected by both phonological and semantic relatedness
   d. spinach-spin and idea-notion show the same effect on the M350
Which of the following verb pairs (present tense - past tense) is an example of suppletion?

a. sing - sang  
b. walk - walked  
c. go - went  
d. tie - untied

Dual Mechanism Theory of past tense formation states that irregular past tense words are (blank) and regular past tense words are (blank).

a. stored in lexicon, grammatical  
b. grammatical, grammatical  
c. stored in lexicon, stored in lexicon  
d. grammatical, stored in lexicon

Dual Mechanism Theory accounts for repetition priming in which of the following:

a. sing-sang  
b. talk-talked  
c. bring-brought  
d. go-went

3 Open-ended Research Question

Since lesions to Wernicke’s area are associated with a comprehension deficit would these patients be capable of producing irregulars or regulars but not understand the differences? This interests me because this could be in opposition to Broca’s aphasics who have a production problem and therefore have trouble forming regular words.

-BONUS: In the first part of the study, I would show subjects with Wernicke’s aphasias words such as “walk” and “bring” and ask them to transform them into the past tense. This task would show if they could use rules and if they realized that not all past tense words are formed in the same way. The way the stimuli was presented (visually or out loud) might matter (it might facilitate Wernicke’s aphasics to understand the word better). In the second task I would show the subjects sentences such as “Yesterday I —– my dog” or “I have to —- to dance class every Wednesday”. The subjects would have a choice between walk and walked for the first example and a choice between go and went for the second example. The results of this test would help to further explain how Wernicke’s and Broca’s aphasias differ concerning comprehension and production. It would also help to explain if regular and irregular forms of words in the past tense are really qualitatively different.

Where does the priming of irregularly constructed (phonological inflections) in non-words occur?

This question asks whether or not phonological inflections for non-words will be coded in the same region they are when the stimulus is a word. Will they all be encoded in the temporal region which is where most irregulars activate or will it result in frontal activity where regulars are usually activated?
BONUS: To run this experiment you would need to create a set of non-words that followed specific rules. For example for the word “Boh”, “Bohse” would be the regular past tense, for the word “Hef”, “Hefse” would be the past tense but for the word “Peri”, the phonological inflection would be opaque and the past tense would be “Perirg”. Using a neuroimaging method we could study where this irregular non-word is processed compared to where all the non-words are processed. Does the lexicon absorb them into the system and treat them as new vocabulary or will all the non-words be treated as “irregulars”?

(53) Phonological and semantic relatedness affect the same component of the M350. So what if there was a word that was both phonological and semantically related on the same level? How would this influence the latency and amplitude of the M350? This would provide a window into whether phonological or semantic relatedness has a larger affect on language processing.

BONUS: Use a variety of words to find a correlation between phonological relatedness and M350 latency and amplitude and do the same for semantic relatedness (using the same experimental procedure as Professor Pyllkkanen’s study). This would measure which aspect would influence teh M350 more. Then, find words that have both phonological and semantic relatedness (an example escapes me now, but I’m sure there is one) and see what it’s influence on the M350 is and compare it to the earlier findings.

(54) What effect would the past tense debate have on a patient with pure word deafness?

(55) In the dual mechanism theory it is said that Broca’s area supports rules, and that regulars are derived by rule. On the other hand the temporal lobe houses the lexicon, and irregulars are stored in the lexicon. If a person has a lesion to their Broca’s area, and thus is impaired in deriving rules and thus regulars, then they will still be as fast at identifying irregulars. With this said, will the aphasic person replace regulars with irregulars since these forms of past tense is all he can derive? And if not, what will he/she use to replace the regular words?

(56) Given that the experiment reported on in “Deficits for Semantics and the Irregular Past Tense: A Causal Relationship?” by Tyler, Stamatakis, et al. was performed on only 4 patients with semantic dementia, should we accept its validity? Although I am not aware of the statistics in terms of numbers worldwide of patients with semantic dementia, I feel like there is a possibility that these 4 patients (and actually only 3 because J.T. showed more severe impairments) could be in the exception. Brain injury no doubt varies between patients, so I believe that more neurological research must be conducted before this study can be completely trusted. One study might be to examine the performance of patients with semantic deficits under a MEG machine with priming tasks that compare the different priming. I.e. phonologically related primes should be tested on four levels: phonologically related but semantically unrelated: think/thank, phonologically unrelated and semantically related: jump/leap, jumped/leap, jump/leapt, jumped/leapt, phonologically related and morphologically related: jump/jumped, and phonologically unrelated but morphologically related: (in theory) think/thought.

If we could examine patients i.e. those who have had strokes and we have a finite picture of their brain damage and what it affects, it may be easier to detect locations in the brain in which these associations normally occur and possibly identify them with certain processes
i.e. irregular/regular past tense recovery.

(57) How is past-tense represented in the brain of a Deaf American Sign Language (ASL) signer?

EXTRA CREDIT (maybe)? ASL does not have a past-tense. Instead at the beginning of a sentence there is a word-indicator for “time”. An example of this in ASL is “Yesterday + I + go + shopping” (each word here has an individual sign). In english this would translate to “I went shopping yesterday”. I hypothesize that any word that is an indicator for time is represented differently in the brain of a Deaf ASL signer than of a hearing speaker.

(58) What accounts for semantic dementia patients’ ability to preserve shared properties of concepts? Are specific priming properties stored differently than distinctive priming properties that allows for this preservation?

(59) Are there some phonological characteristics or comparisons that have a greater inhibitory effect in priming tasks?

BONUS The point of this would be to see if there is a sort of spectrum or continuum of phonological relationships that fluctuates the competition in priming depending on degree similarity, or if the effect cleanly drops off at some point. One could go about this by comparing competition/inhibitory effects with pairs that have identical phonological onsets, pairs that have similar onsets (eg. same stress, and one or more of the sounds are not identical but in the same phonological category, like both voiced fricatives, both aspirated stops, both front vowels, etc.), and pairs that are phonological “opposites” across a wide range. There might be a problem finding pairs that are both actual words for some categories, so one might have to do some testing in other languages, or just deal with the limited stimuli, since even pseudo-words would not work for this as they would not be included in the competitive process of lexical access.

(60) Would a subject that had a morphological deficit have a visible impairment in past tense formation? If yes, which would be most affected; regular or irregular formation?

(61) Is the past tense debate, with the localization and correlated problems, still true when other languages that have regular past constructions and irregular are used?

(62) Some so-called irregular (not -ed) inflections in the English language are actually characterized by rules of their own. Do patients with semantic dementia have problems with these irregulars (i.e. weep/wept, sweep/swept) as compared to irregulars that have no particular within-category rules (i.e. seek/sought)?

(63) Is it possible that the affinity non-fluent aphasic patients show toward the irregular past tense be indicative of a more specific phonological deficit?

(64) With damage to Broca’s Area, can the degree of impairment (mild vs. severe) vary so that your phonological ability of relating regular forms with their stems vary as well?

(65) Do grammatical rule formation explain how people make decisions concerning irregular and regular past tense words.

(66) The M350 shows slower reaction time for low probability words, but what is it that helps us to realize which words are most or least probable? I understand that we are able to use the previous words in a sentence or string of words and therefore are able to predict what will come next, or what a word will be once we have processed the first few letters, but how does
our brain go about doing this. In class I believe she said that similar words are considered “neighbors” in our lexicon and that helps with the priming, but it seems impossible that it could all be based on neighbors because words can be attached to numerous strings.

(67) how do semantic priming effects (in a behavioral task) compare between phonologically very different words and their irregular past tenses, e.g. wring - wrought (not sing sang) and closely synonymous words…will the word and irregular past tense pairs show more priming or less?

(68) Are there differences in frequency of producing regular and irregular past-tense forms of novel verbs when these verbs are presented in writing as opposed to aurally? Does orthography play a role (i.e. would pseudo-words, if given irregular opaque spelling, cause subjects to be more likely to create irregular past-tense forms than when these words had a regular spelling or were presented aurally)

(69) As Pinker mentions, AD patients have more trouble inflecting irregular than regular words. Given the proposed “island of reliability theory” as a means to explain a preference for “chake” as a past tense of the pseudo-verb “chook”, do AD patients significantly prefer the accepted regular -ed past forms as compared to controls for pseudo-verbs?

REASONING/BONUS: Answering this question would really address the question of whether -ed can really be considered a non-memory based default for creating the past tense. If not, it helps shed some light on the lexical/grammatical relationship. In order to investigate this, one would employ a task similar to the one used by Albright et al, but would compare selections made by Alzheimer’s patients to those made by Normals. Given the memory impairment which marks AD, one would expect AD patients to rely most heavily on grammar based constructions, whereas Normals would combine a larger amount of lexically-based information.

(70) What sorts of ending sounds are predictive of regular or irregular past tense variations?

(71) There is ongoing research in social psychology that hypothesizes that people describe themselves in more abstract terms when a greater psychological distance is manipulated. It would be interesting to study how linguistics and psychology interact in this regard. More specifically in the linguist realm, a good question to ask is what differentiates abstract versus concrete terms- is it a function of overall semantics or is there something that is occurring at the level of morphology?

(72) Gonnerman’s interesting results comparing ritzy and glitzy in psych undergrads vs. honors students, where the undergrads did not show significant priming for ritsy-glitz, but rather showed inhibition, while the honors students did show significant priming, but it was not to the same degree as the priming for highly sem. no phono. pairs raises interesting questions. Why would these two disparate groups show different priming? Is it a vocabulary issue? Is it an iq issue? I propose to examine this question along the dimension of iq, to see what the correlation is. Perhaps those of higher intelligence store forms more deeply along semantic dimensions than phonological dimensions as compared to those of less intelligence. THis seems like an odd theory, but at any rate more data should be generated to try to explain the bizarre results and perhaps get to the bottom of the semantic/phonologic priming relations as they pertain to transparent/opaque/and repeated morphology.
It has been demonstrated through “wug testing” that adults do not strictly rely on a default method of adding -ed to the end of a word to make it past tense. Young children, on the other hand, tend to make many grammatical mistakes that would suggest they do use default mechanisms (such as adding -ed to change to past tense, and -s to pluralize). Is it due to their inexperience with language and thus a lack of knowledge for the grammar rules that are exception to the obvious, and an undeveloped island of reliability that result in their reliance on default mechanisms. Or is there stage development of language understanding and use, that is dictated by brain maturation? (the areas of the brain responsible for the immgerence of island of reliability are not yet developed).

Brocas Aphasia can be induced using TMS. this disorder consists of there being a deficit to the grammar functions of language. Regular past tense words are formed grammatically while irregular words are stored in the lexicon. To further give evidence for this sort of localization of past tense type TMS can be utilized to induce a brocas aphasia which should disrupt the ability of regular past tense formation. The specific research hypothesis to be verified here is that if induced brocas aphasia only gives rise to deficits of regular past tense formation and leaves irregular formations intact then it further supports the dual mechanism theory. This would be operationalized by giving instructions to the subject before TMS telling her to give the proper past tense form of a present tense word. The subject would then go through alternation blocks of TMS induced brocas aphasia and TMS induced lexicon ’scrambling’ and then finally a condition with no TMS interference at all. If dual mechanism theory is true TMS brocas would induce deficits in regular formation TMS of the lexicon will result in deficits of irregular words and the control should have no formational deficits.

Perhaps the reason that irregurals and their stems do not behave as lexical neighbors in processing has to do with in what category the irregurals are stored under. They may not be stored as relatives of each other. Perhaps the present tense of these verbs is stored separately from the irregular past tense forms. So ’sang’ would be grouped near other irregular past tense verbs. Testing facilitation of processing an irregular when another irregular is presented first may shed some light on how they are represented in the lexicon. If presenting rang makes processing sang faster then perhaps there is a stronger connection between irregurals than between irregurals and their present tense form. This may help to explain the problems faced by the Dual Route and Single Mechanism Storage theories.