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**كلية الآداب**

**مادة نصوص نفسية باللغة الانجليزية**

**قسم علم النفس**

**الفرقة الرابعة زمن الامتحان ساعتان**

**Answer the following questions .**

**الاجابة النموذجية امتحان دور يناير2018 فى مادة نصوص نفسية باللغة الانجليزية**

**تاريخ الامتحان 10/1/2018**

1. **Answer the following question**

**P t s d o. c .d depression- anxiety - neurology - clinical neurology . epilepsy**

**Question number two**

**1-what are the assumptions about neuropsychological tests**

**2-show the relation between medial temporal lobe and schizophrenia.**

**How many stages of memory processing.**

**Question number three**

**Discuss in details the sex differences in brain structure and function.**

**The new concept of cerebral dominance & brain lateralization.**

**Good luck**

**Dr. Mohamed morsy**

**اجابة السؤال الاول :**

**Neurology and psychology share much common ground for they are both concerned with behavior and both rely on behavioral observa­tions and behavioral testing for much of their clinical data. Their differences lie in their focus and their methods. For neurology, the study of behavior is a means to an end: the understanding of the nervous system and the treatment of neurological disease. In psychology, the study of behavior is either an end in itself or a means of enhancing the prediction or control of behavior.**

**In clinical neurology, the full range of behavior, from discrete reflexes to complex acts, is studied extensively for the purpose of drawing or supporting inferences about the condition of the underly­ing neural structures. The neurologist looks for the typical behavior patterns generated by neuroanatomical subsystems, measuring the patient's responses in relatively coarse gradations or noting their**

**posttraumatic stress disorder**

**Posturaumatic stress disorder (PTSD) is a disorder characterized by a mixture of heightened anxiety-related symptoms fol­lowing exposure to a traumatic event. While virtually any severe truamnatic event can lead to development of PTSD symptoms, most research has focused upon combat-related PTSD among veterans. The disorder is quite often intractable as recidivism by high incidence of recidivism. Increasingly, patients have been treated in intensive impatient PTSD programs. One possible reason for the tenacity of this condition is that it is associated with a number of other co morbidities includ­ing substance abuse and increased risk of traumatic head injuries. At least one study found that patients with alcoholism were two to four times more likely to have a previous history of head injury than the general population (Hillbom & Holm, 1986). Assessment of cognitive functioning of PTSD patients can be con­founded by tries factors, and even the astute neuropsychologist may have diffi­culty assessing the relative contributions of anxiety and genuine CNS impairment in these patients.**

**obsessive-compulsive disorder.**

**One of the most debilitating anxiety disor­ders, and one that is highly resistant to treatment, is obsessive-compulsive disorder (OCD). The disorder is characterized by ritualistic recurring behaviors (i.e., com­pulsions) and persistent intrusive thoughts (i.e., obsessions) From a cognitive per­spective, these individuals appear to have difficulty with the brain mechanism responsible for assigning relative importance to environmental stimuli (Gray, 1982; Pitman, 1987). Specifically, they have difficulty filtering out irrelevant stimuli and place excessive meaning and importance to other stimuli such that emotional arousal and behavior are maintained over prolonged periods of time regardless of feedback the organism receives, resulting in a perseverative behavior pattern**

**mood disorders:**

**Affective disorders represent the most common general psychiatric condition for which mental health treatment is sought. It has been estimated that nearly 70%of all persons will experience a major depressive episode sometime during their lifetime. For the individual who is referred for evaluation of a suspected organic condition, affective states can become an important variable ro consider for several reasons. Depression can mimic neurological conditions, responsibly dementia in the elderly (McAllister, 1983; Spar, 1982). While the concept of "pseudodeinentia" may have been overgenerailzed and applied in questionable cases in the 1980s, it remains an interesting.- phenomenon observed particularly in inpatient settings. Il will be of intersest to see how mental health services provided in emerging .near exclusively outpatient/ambulatory environment will copy with such patients.**

**It should also be noted that depression is often the frist reported symptom for it number of medical conditions (Hall. 1980s ) as well as several neurological conditions. For example right-handed patient (who typically have hemisphere dominant language function ) who suffer left frontal hemispheric strokes quite often display symptoms of depression, Obviously, it iS important to have what proportion of the patient's cognitive loss or excess is related to affective disturbance and how much is related organic pathology .**

**Research recording the cognitive effects of affective condition has had to canted with a number of**

**anxiety disorders**

**The only psychiatric condition more prevalent than anxiety disorders is mood disturbance. Consequently, in addition to their cognitive complaints, patients un­dergoing neuropsychological evaluation may also present with anxiety-based concems. There is a large body of laboratory literature concerning the effect of subclinical anxiety on neuropsychological performance. Most of these studies have found slightly decreased performance on tasks requiring focused attention and concentration, as well as motor performance (Hodges & Spielberger, 19691.**

**There are some indications that anxiety may differentially affect neuropsycho­logical performance by males for some tasks. For example, Martin and Franzen (1989) found that among 56 college students exposed to either an anxiety stimulus or neutral condition, males performed more poorly on the S troop test and several**

**Epilepsy, in itself, is not a disorder but a symptom of abnormal brain activity,. It can be operationally defined as the occurrence of two or more unprovoked non-' febrile seizures during one's life, with 45 per 100,000 newly diagnosed cases of epilepsy per year**

**The study of epilepsy may have contributed more to the understanding of human brain-behavior relationships' than the study of any other central nervous system disorder.**

**Hughlings Jackson was among the first scientists to relate clinical or behavioral observations to brain morphology (Reynolds, 1988)**

**Jackson maintained it was possible to ascertain the neuroanatomical location of a focal seizure focus by observing the physical progression of the seizure (Haynes & Bennett, 1992)(His subsequent developed the hypothesis that epilepsy was caused by abnormal discharges from lesions in the brain, establishing a theory of epilepsy) that has led to our contemporary, understanding of epilepsy**

**اجابة السؤال الثانى :**

**assumption 1: Neuropsychological Tests Measure Specific Functions, and Poor Performance on a Single Test Indicates a Specific Neuropsychological Deficit . A frequent conclusion of research reports in psychia­try and psychology is that performance on a particular neuropsychological test (or very small number of tests) in a particular group of patients is worse than normal, indicating impairment in the function that the test measures. This conclusion is drawn even in some of the best research studies**

**Neuropsychological test batteries, when constructed properly, assess a broad range of functions, including, among others, percep­tion in all sensory modalities, attention, learning and memory, motor skills, verbal and nonverbal skills, com­prehension and expression of language, spatial**

**Assumption 2: Abnormal Neuropsychological Test Performance indicates Specific Regional Brain Dysfunction**

**Possibly the most prevalent assumption made about neuropsychological test data is that if psychiatric pa- tients performance on a specific test is equivalent to the performance of patients with discrete lesions in a specific region, this suggests the presence of similar neuroanatomic abnormalities in the psychiatric pa­tients. This assumption is found even in many of the best published papers involving the assessment of neuro­psychological functions in psychiatric patients**

**It is very likely not 10 be true. Poor per­formance may be the result of a broad range of possi­bilities, including damage to one of several areas, the accumulative effect of mild deficits in multiple areas, or factors unrelated to specific brain dysfunction.**

**As I have mentioned, any individual or group of indi­viduals may perform poorly on a neuropsychological test or series of tests for many different reasons. The more complex the measure, the more likely it is that poor performance will result from nonspecific factors The best example of this phenomenon is that psychiat­ric patients with reduced motivation will often demon­strate neuropsychological profiles consistent with frontal lobe disease, since in a battery of standard neuropsychological tests, the most highly complex tasks are generally chosen as measures of frontal lobe function. Thus, the complexity of functions involved in any single neuropsychological test almost always pro­hibits the conclusion, based solely on test performance, that a specific brain region is impaired.**

**Assumption 3: "Hypoactivity" During functional hanging Procedures With Cognitive Activation Tasks Suggests Regional Brain Dysfunction**

**Another frequent assumption about neuropsycho­logical test performance and psychiatric disorders is that less than normal regional activation during a test, as measured by a variety of functional imaging tech­nologies including regional cerebral blood flow, single photon emission computed tomography, and positron emission tomography, is an indication of pathology in that region in the disorder under examination This conclusion is viewed as bolstered by evidence that reduced metabolism is positively correlated with poor performance on the test used for activation. This assumption, although more subtle than assumption discussed above, can also be erroneous. It is likely that patients who perform poorly on a neuropsychological test are not processing the task in the same manner as normal subjects who perform well on the task. There arc enormous differences between patient groups and normal subjects in the manner in which they approach tasks, and these differences arc almost certain to result in different patterns of activation that are correlated with performance, especially since level of difficulty within a single task can greatly affect regional activa­tion (74). Thus, the correlation between poor perform­ance and reduced activation reported in numerous**

**STAGES OF MEMORY PROCESSING: ENCODING, STORAGE AND RETRIEVAL**

**While many of the earlier models have now been discarded, some of the assumptions about stages remain useful. For example, any system for storing information, whether biological or artificial, will needto be able to encode, or register information; (2) to store it, preferably without too much loss or forgetting; and subsequently (3) to access or retrieve that information. While these three stages are closely linked, making it difficult to pin down any phenomenon as exclusively occurring at a single stage, nevertheless this division into processing stages continues to be useful in helping understand the working of memory systems.**

**Encoding**

**The term "encoding" refers to the initial processing of the information that is to be learned or memorised. Immediate memory for arbitrary sequences of verbal material, such as occurs in digit span, typically relics on encoding in terms of the-phonological or sound characteristics of the material. This can be shown by comparing memory span for items that are similar in sound (e.g. *mad, map, can, man, cap)* with dissimilar sequences (e.g. *pit, day, cow, pen, bar).***

**The similar items arc much less likely to be recalled correctly because the system encodes them in terms of sound, a dimension on which they have fewer distinguishing features; hence they are liable to be harder to retrieve accurately. Similarity of meaning (e.g. *large, big, huge, long, tall)* has no such effect, indicating that for this immediate memory task, coding is phonological and not in terms of meaning (Baddcley, 1966a). On the other hand, if long-term learning is demanded, using sequences of 10 items and delayed recall, then the opposite occurs, with similarity of meaning being much more disruptive than phonological similarity (Baddeley, 1966b).**

**Craik & lockhart (1972) generalized these and related findings to produce the level of processing hypothesis. This suggests that the more deeply an item is encoded, then the better it is remembered. They showed that when subjects were required to process words superficially, simply in terms of their visual appearance (Is the word in upper or tower easel—DOG) subjects subsequently were poor at recalling or recognising the word. Retention was somewhat better when a slightly deeper phonological encoding was required (Docs the word rliyrne with hall—HAT), The best subsequent performance, however, came from semantic coding (Does the word PET fit in with the following sentence!—"Many people like lo keep cats as a —")**

**The levels of processing hypothesis proved to be applicable to a wide range of tasks, from memorizing cartoons to learning passages of prose, and there is no doubt that it provides a useful rule of thumb. Opinions remain divided as to how useful it has been as a theoretical framework, since it has proved difficult to measure depth of processing independent of the outcome (Baddeley, 1978). As an empirical finding, however, there is no doubt that *elaborate rehearsal,* encoding material richly in terms of existing knowledge, is likely to lead to better recall than is found with *maintenance rehearsal,* the simple process of repetitive rehearsal. This probably occurs because deep or elaborative rehearsal involves the creation of richer semantic codes that allow material to be encoded along more dimensions than occur with phonological or simple visual codes, hence building in redundancy that will aid retrieval and minimise loss through forget­ting.**

**Storage**

**Forgetting can be regarded as reflecting the loss of information over time. During the middle years of the century, a good deal of attention was devoted to attempting to explain forgetting, and more particularly to deciding whether it resulted from the spontaneous fading of a memory trace over time, or as the active result of interference from other learning.**

**Disruption of memory by subsequent learning is termed retroactive interfer­ence, while interference from prior learning is termed proactive interference.**

**A strong test of the trace decay hypothesis would require the demonstration that, in the absence of interpolated or prior learning, no forgetting occurs. In practice, such conditions are of course difficult if not impossible to produce. Itis, on the other hand, quite possible to vary the nature of prior or subsequent learning, and when this done, there is no doubt that both proactive interference (PI) and retroactive interference (RI) do occur, furthermore, interference increases with greater amounts of prior or subsequent interfering material, and with greater similarity between the interfering and the learned material (see Baddeley, 1990,and Crowder, 1976, for a more detailed account).**

**However, although interference effects certainly occur, their study was lied very closely to a stimulus-response associations! approach to learning that fell from favour during the 1970s when it tried, unsuccessfully, to adapt to the rise of cognitive psychology. There is, however, no doubt that the question of interfer­ence, and how new learning interacts with old, is a fundamental issue for any adequate theory of learning and remembering. New learning models using parallel distributed processing (PDF) or connections! architectures that arc assumed to simulate more closely the parallel processing of the neural networks of the brain, have once again begun to raise the issue of interference effects and how the brain deals with interference (Ratcliffe, 1990; Rumelhart & McClel­land, 1986). It has proved difficult to demonstrate differential rates of foigelling as a function of different types of brain damage (Kopelman, 1985), and hence the study of forgetting has tended not to play a prominent role in the analysis of memory disorders. The one recent exception to this is provided by the growing interest in retrograde amnesia (sec Hodges, Chapter 4), where the impaired capacity of the patient to recollect events from before the onset of brain damage clearly demands a more detailed model of forgetting than is at present available.**

**Retrieval**

**The fact that a patient who has received a blow on the head may remember nothing from the weeks or indeed months preceding the accident docs not, of course, necessarily imply that the memory trace has been destroyed. Failure to recall may just as well represent difficulty in accessing or retrieving the memory trace. Evidence for this interpretation comes from the observation that retro­grade amnesia often tends to "shrink", with memory of more distant events coming back, followed by events closer and closer to the point of insult, although characteristically the last few moments before the head injury are never recov­ered. This pattern of results suggests that more remote memories are made inaccessible by some form of retrieval problem, while the events just preceding the accident may have been lost because the memory trace never consolidated, and hence was never adequately stored (see Chapter 4).**

**The Medial Temporal Lobe in**

**Schizophrenia**

**introduction**

**The temporal lobe has been a region of special interest in schizophrenia ever since the concept of the illness first crystallized. Kraepelin speculated that the thought disorder and hallucinations of dementia praecox were due to irrigative damage of the temporal lobes. As re­search in schizophrenia ensued in the early and middle twentieth century data continued to accumulate in sup­port of the role of the temporal lobe and the strongly interconnected limbic subcortical and frpntal brain re­gionsem as the neuroanatomic substrates of schizophrenia.**

**A number of investigators highlighted the similar clini­cal profiles between schizophrenia and known organic schizophrenia-like psychoses due to temporal lobe le­sions, including those caused by temporal lobe epilepsy, herpetic encephalitides, temporal lobe tumors, tempo­ral lobe cerebrovascular lesions, and neurodegenerative diseases such as Alzheimer's and Pick's diseases, which have a particular predilection for the temporal lobe. Primitive imaging measures also implicated the temporal lobes with pneumoenccphalographic evidence of en­larged temporal horns in schizophrenia and EEC studies described frequent temporal lobe abnormalities.**

**With these early findings setting the stage, advances in cellular and molecular neurobiology, as well as the advent of modem in vivo neuroimaging modalities, ushered in a new era of intensive examination of the temporal lobe in schizophrenia. Indeed the medial tem­poral lobe has been the most frequently studied brain region both clinical and postmortem neurobiological studies of schizophrenia. This review will focus on the medial temporal lobe, including the hippocampus, "amygdala and entorhlrhinal and posterior parahippocampal cortices.**

**These regions are components of a highly integrated neural system with strong connections to other parts of the limbic system as well as association cortices in all four lobes By dint of these extensive connections, medial temporal lobe structures play critical roles in a variety of higher cognitive and emotional functions. The medial temporal lobe is especially closely interconnected with the prefrontal cortices, the diencephalons, and the basal ganglia. There is substantial evidence that these re­gions also show abnormalities in structure and function in schizophrenia, and several recent reviews have high­lighted their involvement in the illness.**

**اجابة السؤال الثالث :**

**Because of sex differences in brain structure and development (Kolb *&* Whishaw, 1990), the possibility that there might be gender differences in the cognitive results of early left-hemisphere damage led Strauss, Wada, and Hunter (1992) to study 24 young adults, who had all suffered early left-hemisphere damage and who had had their language dominance determined by the sodium amytal test, as in the previous study. In brief, they found that men in their sample showed more generalized impairment than the women, particularly in tests of language, learning, and memory, regardless of whether their language dominance was in the left or right hemisphere^ By contrast; the women with left-hemisphere language dominance suffered only linguistic impairment depending on the locus and severity of the left-hemisphere damage (i.e., a lesion effect) and their nonverbal abilities were completely spared. Those with right-hemisphere language dominance showed low scores in both verbal and nonverbal tasks. Luria described this dynamic cerebral function thus: "The dominance of one hemi­sphere in relation to speech functions proved not to be so absolute as was supposed, and research showed that the degree of domi­nance varied considerably from subject to subject and from func­tion to function" (Luria, 1966).**

**Cerebral language dominance has also been studied in a few cases of hemidecortication that was carried out in early infancy. This surgical procedure, which involves removing a complete cerebral hemisphere to terminate or alleviate intractable and frequent seizures, is rarely done, so that these cases are not numerous. Seizure conditions are usually treated with anticonvul-sive drugs, but when these fail in early infancy, sometimes surgical removal of the offending hemisphere is carried but. When these cases are available for study, they provide the opportunity to discover the nature of all cognitive acquisitions, including lan­guage, developed with only one hemisphere instead of two. Dennis and Whitaker (1976) reported on three children, all between 9 and 10 years of age, and who had surgical hemidecortication before the age of five months. Those possessing only a left half-brain were better in syntactic comprehension and association of spoken speech. Those with only a right half-brain were better in under­standing and making associations to visual stimuli (Dennis & Kohn, 1975; Dennis & Whitakcr, 1976). More will be said about the linguistic deficits of these patients in Chapter 8. Here they are useful in providing information to elaborate the normal pattern of hemispheric specialization.**

**Before we look at the functional relationships between the cerebral hemispheres and language and handedness, let us define our terms.**

**Definition of Cerebral Dominance J)**

**We have already commented briefly on the difficulty of explaining cerebral dominance, and if we cannot explain it, it will be difficult to define. Operationally we know *what* happens (at least in gross terms) when one area of the cortex is maximally involved with a contralateral motor function, but we do not know completely *how* all this happens. We know that the pyramidal or motor tracts from one side cross over, mostly at the medullar level (see Fig. 5.2), but the physiological controls that direct the neural energy in the appropriate amounts and to the precise peripheral locations are not yet understood- A. Meyer, drawing on the writings of Hecacn (1969), Subirana (1969), and Clarke and Dewhurst (1972), has written ''The underlying structural and physiological substrates of dominance are so far unknown" (A. Meyer, 1974).**

**Because at this stage in our knowledge we cannot define**

**cerebral Dominance**

**More than 30 years ago a conference was held at Johns Hopkins University School of Medicine at which the topic "Interhemispheric Relations and Cerebral Dominance" was discussed. A number of eminent neurologists and neuropsychologists were invited to present papers on their research, and these papers and their dis­cussions were subsequently published (Mountcastle, 1962). During the 3 days of the conference 11 scholarly presentations were made and valuable discussions followed these papers, but because the members of the group could not agree on a definition of cerebral dominance, none was given. Although this important neurological and behavioral phenomenon was named in the title of the book, nowhere in the subject index did the term appear.**

**Such is the difficulty of describing what happens in the brain tissue when an area of the cerebral structures seems to dominate or control some particular form of behavior. Although unable to explain how the brain provides selective control, we can describe it behaviorally, and some of its neuropsychological relationships.**

**Following discoveries by Dax in France in 1836, Broca in 1861, and others at that time that aphasia was a result of disease of the left hemisphere, the belief developed that the left hemisphere in most people was dominant, because it seemed to influence and direct language functions. So absorbed were neurologists in at­tempting to identify the "leading" or "major" hemisphere that the "minor" hemisphere was considered subordinate and vaguely inferior in function. In fact, only recently has scientific attention been directed to study the "nondoniinant" hemisphere; as a result, evidence has appeared to suggest it possesses its own dominance, particularly for nonverbal functions (Benton, 1965), although it is not exclusively nonverbal (Gazzaniga & Hillyard, 1971; Kinsbourne, 1975a; E. Zaidcl, 1973). We now know that the two hemispheres work together, possessing a reciprocal and interacting variety of hemispheric specialized functions.**

**A child born with a defecrive left temporal lobe, particularly if the defect affects Wcrnicke's area, may have a shift of the language functions to the right hemisphere, and will learn language with the normally "minor" hemisphere. The child may still be right-handed if the left frontal lobe and motor strip arc healthy and operative. This means that the two hemispheres share control of different behavioral functions in different ways, depending on the locus of the healthiest cerebral tissue.**

**When damage to the left hemisphere occurs early in life (e.g., following a severe epileptic seizure during the first year), language dominance may, or may not, shift completely to the right hemi­sphere, or it may shift partially (i.e., represented bilaterally in both hemispheres)- Where it does shift completely, the right hemisphere can adapt to mediate language at a workable level, though not necessarily to complete normality (Dennis, 1980). Teuber (1974) first suggested the hypothesis that in those cases of language shift, it was possible that the nonverbal spatial and constructional skills, normally associated with the right hemisphere, might suffer by being crowded out of their normal space, Teuber did not live to test his'"crowding hypothesis," but more recently it has been tested by Strauss, Satz, & Wada (1990). They studied 27 young adults, all of whom had suffered their first left-hemisphere seizure before the age of 18 months. Of these subjects (18 women, 9 men)**

**carotid amytul testing showed that language dominance in 14 had remained in the left hemisphere even though it had been damaged by the early seizures, 6 in the right hemisphere, and 7 bilateral. On a comprehensive battery of verbal and nonverbal tests (visuospatial, right-left identification of body parts, em­bedded figures, and mental rotation of two-dimensional figures), it was found that the performance of the 14 left-hemisphere dominant subjects on the verbal tests suffered only moderately, and their nonverbal skills were spared- But the performance of the "shifted"' subjects on the nonverbal tests was more severely impaired. There was a tendency for those with a complete shift of language to the right hemisphere to be more impaired on nonverbal tests than those with only partial shift (i.e., bilateral speech). This observation led to the conclusion that "there is a hint in the data suggesting that the degree of deficit on tests of nonverbal ability is related to the extent of language transfer" (Strauss ct al., 1990).**

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