

ENCODING PROCESSES RELATED TO SPECIFIC AND OVERGENERAL  
RECALL OF THE AUTOBIOGRAPHICAL MEMORIES  
IN NON-CLINICAL DEPRESSION

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## **ABSTRACT**

### **ENCODING PROCESSES RELATED TO SPECIFIC AND OVERGENERAL RECALL OF THE AUTOBIOGRAPHICAL MEMORIES IN NON-CLINICAL DEPRESSION**

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The purpose of the present study was to investigate the overgenerality phenomenon and to draw some inferences on possible encoding problems of autobiographical memories (ABMs) in a non-clinically depressed sample. Eighty-eight university students (25 male, 63 female) participated in the experiment using the Autobiographical Memory Test (AMT; Williams & Broadbent, 1986). The effects of depression level (low or high), cue emotional valences (positive, negative and neutral) and cue number (one or two at each step) on the specificity, overgenerality, and latency of the ABMs recalled were examined. The results showed that the group having high depression scores (Depressed group) was less specific than the group having low depression scores (Non-depressed group) on the specificity levels of the ABMs recalled. Also, the students who were primed with one cue in the AMT were less specific than the students who were primed with two cues simultaneously. The depressed group primed with one cue also recalled less specific ABMs than the non-depressed group primed with two cues; and, the non-depressed group primed with either one cue or two cues in the AMT did not differ in terms of the specificity of the ABMs recalled. Regarding the cue type, the students recalled less specific ABMs as a response to the positive cues than to the neutral cues. However, they did not differ on the specificity of ABMs recalled as a response to the negative and neutral cue words in the AMT. Additionally, the significant interaction between depression level and cue type; cue type and cue number;

and, depression level, cue type, and cue number could be summarized with the overall findings that the depressed subjects had the benefit of the two cues priming in the AMT by being more specific on ABMs. For the overgenerality, as a counterpart of the specificity, the results also indicated that the subjects in the depressed group were more overgeneral on the ABM recall than the non-depressed group; and, the simultaneous two cues priming in the AMT had an effect to decrease the overgenerality seen in one cue conditions. The interactions between depression level and cue number, and cue type and cue number on the overgeneral ABM recalls further indicate that the subjects took the benefit of two cues priming with a decrease on overgeneral recall. This benefit of two cues is also seen on the reaction times of specific ABM recalls. Moreover, the subjects reported that they utilized the cues more consecutively than simultaneously and they reported to utilize the first cues more than the second cue when the paired cues were emotional. However, the preference for sequence was almost equal for the neutral-neutral pairs. Supporting the hypotheses of the study, the results suggested that multiple cues in the AMT had an effect to increase the specificity level of the ABMs recalled in the depressed subjects, which was not seen in one-cue conditions. Findings were discussed on the basis of the literature and some proposals were given on the overgenerality of the ABMs by emphasizing the encoding processes.

Keywords: Autobiographical memory, Autobiographical Memory Test, depression, encoding processes.

## ÖZ

### KLİNİK OLMAYAN DEPRESYONDA OTOBİYOGRAFİK BELLEĞİN ÖZGÜL VE AŞIRIGENEL HATIRLANMASIYLA İLGİLİ KODLAMA SÜREÇLERİ

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Bu çalışmanın amacı, klinik olmayan bir örnekleme depresyon düzeyine bağlı olarak otobiyografik bellekte (OBB) görülen aşırı genelleme olgusunu araştırmak ve bazı olası kodlama problemleriyle ilgili çıkarımlarda bulunmaktır. Otobiyografik Bellek Testi kullanılarak yapılan (OBBT; Williams & Broadbent, 1986) çalışmaya, 88 üniversite öğrencisi katılmıştır (25 erkek, 63 kadın). Depresyon düzeyinin (düşük ya da yüksek) ve ipucunun duygusal niteliğinin (ipucu türü: olumlu, olumsuz ve nötr) ve ipucu sayısının (bir veya iki) hatırlanan OBB'lerin özgüllük, aşırıgenellik düzeyleri ve hatırlanmasındaki gecikme süresi üzerindeki etkileri incelenmiştir. Depresyon puanı yüksek olan grubun (Depresif grup), depresyon puanı düşük olan gruba (Depresif olmayan grup) göre hatırladıkları OBB anıları açısından daha az özgül oldukları bulunmuştur. Ayrıca, OBBT'de bir ipucu verilen deneklerin, aynı anda iki ipucu verilen deneklere göre daha az özgül oldukları gösterilmiştir. Bir ipucu verilen depresif grubun iki ipucu verilen depresif olmayan gruba göre daha az özgül olduğu; ve, bir ipucu veya iki ipucu verilen ve depresif olmayan gruptaki öğrencilerin hatırladıkları OBB anılarının özgüllükleri açısından aralarında fark olmadığı bulunmuştur. İpucu türüyle ilgili olarak, olumlu ipucu kullanıldığında deneklerin OBB anılarının nötr ipucuna göre daha az özgül olduğu gösterilmiştir. Ancak, deneklerin olumsuz ve nötr ipuçları için OBB anıları özgüllük açısından değerlendirildiğinde fark bulunmamıştır. Ayrıca, ipucu türü ve depresyon düzeyi; ipucu türü ve ipucu sayısı; ve ipucu türü, depresyon düzeyi ve ipucu sayısı arasındaki ortak etki istatistiksel olarak anlamlıdır. Bu ortak etkiler kısaca depresif

grubun OBB anılarının, iki ipucu verilmesi koşulunda daha özgül olduğu şeklinde özetlenebilir. Özgüllüğün bir karşıtı olarak ele alınan aşırıgenelleme için elde edilen sonuçlar da şu şekilde özetlenebilir: depresif grubun, depresif olmayan gruba göre, OBB anılarını çağırma da daha fazla aşırıgenelleme yaptığı ve aynı anda iki ipucu sunulmasının, anılarda tek bir ipucu sunulması koşulunda gözlenen aşırıgenellemeyi azalttığı gösterilmiştir. Ayrıca, depresyon düzeyi ve ipucu sayısı ve ipucu türü ve ipucu sayısı arasındaki etkileşim, deneklerin OBB anılarında aşırıgenelleme yaparken aynı zamanda iki ipucu verilmesinden faydalandıklarını da göstermektedir. İki ipucundan faydalanma OBB anılarının çağırılmasındaki süreyi de etkilemektedir. Ayrıca, denekler iki ipucu kelimesi sunulduğunda, kelimeleri daha çok sırayla kullandıklarını ve ikinci eşleşen kelimenin duygu kelimesi olduğu durumlarda, ilk nötr ipucunu ikinciye göre daha çok kullandıklarını belirtmişlerdir. Ancak, sıralama için olan tercih nötr-nötr çiftlerinde hemen hemen aynıdır. Çalışmanın hipotezlerini destekleyen bulgular, OBBT’de çoklu ipucu sunulmasının depresif gruptaki öğrencilerde OBB anılarının özgüllüğünün artmasına katkıda bulunduğunu göstermektedir. Bulgular literatür temelinde tartışılmış ve OBB’lerin aşırıgenelliğiyle ilgili kodlama süreçleri vurgulanarak bazı önerilerde bulunulmuştur.

Anahtar kelimeler: Otobiyografik Bellek, Otobiyografik Bellek Testi, depresyon, kodlama süreçleri.

To my family, Aysel, Şeref and Tahir Şahin Güzel,  
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and  
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## CHAPTER 1

### INTRODUCTION

In the literature of psychology, memory has predominantly taken the interests of great majority of researchers who were endeavoring to understand such a highly intricate subject among many mysterious areas in psychology; and those who wanted to tackle with memory have also mostly laid their studies on the information processing model of Atkinson and Shiffrin (1969). After the proposal of this comprehensive model, it has become a traditional base for many of the researchers (Baddeley, Wilson, Fraser, 1995; Klatzky, R. L., 1980 p.1-5). According to the model, human memory system is divided into several structures and components: the sensory register, short-term store and the long-term store (Shiffrin & Atkinson, 1969). Even though it has evolved and modified through years, the model is hypothesized to work as follows. The incoming sensory information resides in the sensory register whose duration could only be measured in milliseconds and this information is assumed to be transferred to the short-term memory in order to be processed by the subject. In the last process, however, it is stored in the long-term memory structure in which the information processed by the subject resides permanently (Shiffrin & Atkinson, 1969). After many revisions and modifications, the model has continued to defend a multi-level, hierarchical memory structure refusing the notion of a unitary human memory system and it validated itself with various empirical evidences (e.g. see Baddeley et al., 1995). With the endeavors and great efforts of many researchers in the field of cognitive psychology which became a recent trend in the journey of psychology, the long-term memory structure on the basis of a rough classification was divided into two sub-systems; one is the “declarative” and the second is “procedural” memory

(Tulving, 1972) which were more or less lap onto explicit and implicit memory respectively (Schacter, 1987). Whereas under the “declarative memory”, semantic and episodic memories were proposed; “procedural memory” has been proposed to involve skills and habits, priming, simple classical conditioning and non-associative learning (Baddeley et al., 1995). Whereas episodic memory is defined as the memory for personally experienced events or remembering what happened when and where, and semantic memory is defined as the memory for the general facts of the world, objects and events independent of the self (Tulving, 2001).

On top of these divisions under the episodic memory term of long-term memory structure, a new classification proposing the term of “autobiographical memory (ABM)” was added to the field of psychology to understand the representations of personal experiences regarding and involving self (e.g. see Tulving, 2001; Baddeley, 1995, p.25). Autobiographical memory taking its roots from the early psychodynamic approaches (Rubin 1986, p.19-21), has begun to be used interchangeably with the episodic memory as Tulving proposed (1972). However, as the time past, researchers have proposed some distinctions between the episodic and autobiographical memories which retain many features previously associated with episodic memory, but include some novelties (see Conway and Pleydell- Pearce 2000). That is, although the idea of both episodic and autobiographical memories are assumed to be the same thing by some researchers, the autobiographical memories are generally referred to the memories a person has pertaining to his or her life experiences or in short, the representations of the person’s previous experiences (e.g. see Rubin, 1986; 2005; Williams & Broadbent 1986).

Besides all these ideas regarding the human memory proposed and investigated mainly by the researchers on experimental psychology through years, the cognitive approaches have also merged into the field of clinical psychology in order to understand the abnormal or dysfunctional cognitive functions of patients, such as cognitive biases of people with depression (e.g. Williams & Broadbent, 1986; Williams, Watters, MacLeod, Mathews, 1997 p. 136-141). Among the growth of such an interest, the investigation of the match-mismatch of mood and memory was highly eminent (Williams & Broadbent, 1986). As Beck proposed a cognitive triad of perceiving negativity in the self, world and future among depressed patients

(see Beck, 1976), the overgeneral recall of autobiographical memories among depressed people has become an extended area of the literature as a field that deals with the mood and memory matching phenomenon (Conway and Pleydell-Pearce, 2001).

Following the recent trend of juxtaposing the cognitive approaches to the clinical populations –in other terms, understanding the human cognition having psychopathologies such as depression via the tools of cognitive psychology- the current study, in essence, aims to understand the overgeneral recall of the autobiographical memories in non-clinically depressed people. It will, however, try to give much more emphasis onto the encoding processes of these personal memories. That is, the study will try to understand whether the overgeneral retrieval of ABMs result from the processes at encoding.

The chapter presents the issue at hand by narrowing down more at each topic thereby reaches up to the aims and hypotheses of the current study. Therefore, this chapter will begin with the issue of the relationship between mood and memory and will proceed with the theoretical background of the autobiographical memory involving what it mainly is together with a proposed model for its construction, the overgeneral retrieval of these personal memories in emotional disorders, particularly in depression. Then, after some recent explanations for the overgenerality are mentioned, a possible alternative explanation that gives much more emphasis on the encoding processes will be laid out. After all these reviews, the aims and hypotheses of this current study will be proposed.

### **1.1. Mood & Memory Relation**

In order to pave a path to reach and explain the aim of the current study, the endeavor to understand the memory and emotion relation in the literature of psychology deserves to be mentioned herein. On such a relation, theoreticians have proposed three broad models, which are so fruitful in order to graph the issue of the construction and structure of, and processes within the human cognitive system. These models could be gathered under the associative network, strategic processing and the schema models (Barry, Naus and Rehm, 2006).

*Associative network model* took its root from the studies of Dutta and Kanungo (1972) although they did not refer to any specific model, Gordon



Bower and his colleagues followed them and wished to understand the relationship between affect and memory in a network memory model (Bower 1981, 1987; Bower & Cohen 1982 cited in Barry et al. 2006). According to the Bower's model of associative network (1987), affect is assumed to comprise of a collection of nodes among the network in the human mind. Therefore, when the emotion nodes within a *semantic network* activate, this activation could spread throughout the memory system over a hypothetical network and the activation primes certain memories.

The *strategic processing model*, however, was proposed as a “cognitive bias” in certain kinds of psychopathologies. As a result of such a bias particularly in depression, para-suicide and post-traumatic stress disorder have demonstrated overgeneral memory retrieval style of personal memories. In this model “overgeneral encoding processes” are mainly associated with the reduced short-term memory capacity during retrieval –mainly as a result of rumination-, and it results in a well-documented deficit in the long-term memory processes among depressed people (Williams et al., 1997). In essence, according to the model of Williams et al. (1997), depression may be due to the strategic elaboration of the negative information. Hence, the overgenerality phenomenon among depressed people, which will be explained in detail later, proposing to use some cognitive maneuverings mainly takes its perspective from the strategic processing model.

Regarding the last model relying on the mood and memory relationship, Beck's classic *schema model* (1976, 1987) particularly in depression could be proposed (Direnfeld & Roberts, 2006). According to Beck, depressed people have certain cognitive schemas resulting in a filtering for the personal experiences. Then, a depressed individual has a broader depressive schema, which is conducive to interpret the events and experiences in consistent with such schemas. The term of “dysfunctional cognitive triad” of Beck (1976) which suggests a negative view of self, others -world-, and of future among depressed people would be a suitable example for such a consistency. Therefore, this approach assumes that when people have an experience in a particular mood or affect, they have an inclination to initiate some consistent emotional schema accordingly. This schema, then, ends up with the biases in the processing of the information by way of the earlier association with the emotion. This biased processing constitutes the so-called *mood-congruent*

*memory* (Macaulay, Ryan, Eich 1993 cited in Barry et al. 2006). Similar with the notion, Teasdale and his colleagues suggested that an interaction between the cognitive subsystems could explain the mood congruent biases in the memory of depressed people. That is, the way of understanding and accessing the view of self among depressed people is, in a sense, *altered and interacts* with the current depressive mood together with the memory and perception processes (Teasdale, Lloyd, & Hutton, 1998). In summary, the common denominator of all these three models lies under the proposition that they all propose a relationship between the mood and memory in the way that the mood affects memory but not the reverse (Barry et al., 2006).

Although various studies emphasized on and demonstrated the effect of mood on the types of memories a person recalls, it should be kept in mind that the opposite direction is assumed and demonstrated in some studies of research as well (see e.g. Bower 1981; Teasdale et al. 1998). In essence, it was proposed that the relationship between mood and memory could be reciprocal other than being directional; and it seems more reasonable than proposing a one-way direction in the mood and memory relation. That is, the mood of an individual influences the emotional valences of memories and memories with a certain valence could have an effect on the mood of the person (Gillihan, Kessler, Farah, 2006).

Moreover, relying on the studies of research pertaining to the impact of mood on memory investigated by many researchers, most of the research conducted on this area revolved around and tried to test the associative network model of Bower (1981), assuming that the mood of the people influences memory by priming the content of memories semantically which is congruent with the mood. Such a congruency, then, leads to the retrieval of mood-congruent information (Bower, 1981). The model of “mood-congruency recall” has been well supported by several studies. A good example for this phenomenon comes from the studies of research conducted on dysphoria. For instance, the results of some studies show that while nondysphoric individuals tend to recall less negative than positive experimentally presented stimuli, dysphoric and depressed individuals tend to recall either nearly equal proportions of negative and positive stimuli or more negative than positive ones (see e.g. Blaney 1986; Matt, Vasquez & Campell, 1992 for reviews).

As an alternative to this argument, however, a phenomenon known as “mood-incongruent recall” was proposed and several studies supported the notion (e.g. Parrott & Sabini, 1990; Sakaki, 2004; 2007). In this idea, it was founded that people could retrieve positive memories voluntarily even though they are in the state of a negative mood (Parrott & Sabini, 1990). Therefore, such a phenomenon raised an intervening factor which could be utilized as a technique in order to improve negative mood by means of interrupting the vicious circle between negative mood and negative memories, known as “mood regulation” (see e.g. Erber & Erber, 2000; Joormann & Siemer, 2004; Gendolla & Brinkmann, 2005).

With bearing in mind throughout this chapter, this brief background pertaining to the mood and memory relation brings us to the following parts of this chapter. As the core subject matter of the current study is the retrieval problems in autobiographical memory particularly in depression, the following part begins with the theoretical background of the autobiographical memory involving what it mainly is and how it is constructed in the human cognitive system that is followed by the autobiographical memory in emotional disorders.

## **1.2. Theoretical Background of Autobiographical Memory**

### **1.2.1. What is Autobiographical Memory?**

The autobiographical memory could be defined as “the accumulated unique mental narrative, which emerges from our experiences and participation in the flow of events and interpersonal happenings” (Damasio, 1998; DeBree & LeDoux, 2003 cited in Blinder, 2007 p.276). Such a memory plays a crucial role in the development and construction of a personal identity and serves a function of having a coherent and mainly favorable view of present selves. It also yields such conditions that could result in to place individuals in an individual history overtime involving the lived past, the present and the anticipated future. In this sense, mainly developmental, neurobiological and cultural determinants give form, modify, constrict and expand the possibilities of adaptive and creative goals, reactions and behaviors which are conducive to construct our personal identity (Blinder, 2007).

The existence of autobiographical memory system as a *separate memory type* from episodic memory, which was proposed with an objective to distinguish

personally experienced events from the general facts, concepts, world and ourselves (Tulving, 1972, 1983) has also been discussed. Although it is beyond the scope of this study, it is worthwhile considering the notion that whatever happens could be related to the self. Because, whatever information you process, store or register into your memory is a memory and you yourself have done it even if it is within your awareness or not. That is, whatever happens in your life you as an individual constructing a dynamic self; it should be related to you in one or another way. For instance, even if you hear, see or witness an event in a conversation or in a movie that happened to anyone else, “you” hear, see or witness it so that you as a person may register this event as your personal past. In this sense, all the *memory* type you retrieve could be an autobiographical memory as you could always utilize your-self as a reference.

Neuroimaging studies could provide us with a support that could yield some results of having different procedural structures in the brain for both episodic and autobiographical memories to shed light on this distinction. Autobiographical memory mainly seems to grasp a complex set of operations which involve episodic memory, self-reflection, emotions, visual processes, attention, executive functions and semantic knowledge base. Therefore, a heterogeneous involvement of the brain regions in the retrieval of ABMs is something expected (Svoboda, McKinnon, Levine, 2006). Some studies investigating whether human mind could have such a memory type from the perspective of neuroimaging in its own right found some different involvement of the brain regions for the episodic memories versus ABM retrieval. For instance, neuroscientific studies particularly functional neuroimaging have provided extensive evidence linking episodic memory to mainly the functions of frontal lobes (Fletcher, Shallice, Frith, Frackowiak, & Dolan, 1998; Henson, Rugg, Shallice, Josephs, & Dolan, 1999a cited in Gilboa, 2004) and some studies found the absence of activation in the anterior and mid-dorsolateral right prefrontal cortex proposing a different activation type for the ABM retrieval (see e.g. Burgess, Maguire, Spiers, & O’Keefe, 2002; Gilboa, 2004; Roberto & Jacquez, 2007 for review). However, since these comparisons are beyond the scope of the current study, it will take the autobiographical memory into account as it is proposed in the literature which principally assumes ABMs as a different memory type than episodic memory.

### 1.2.2. Models for the Construction of Autobiographical Memories

Although there appears to be some theoretical considerations regarding the construction of ABMs, two major ABM models are noteworthy which could take many assumptions, proposals and empirical supports up to now under the term of a model. One major model is the model of ABM construction proposed by Conway & Pleydell-Pearce (2000) and the other is the seed of an integrative model, which could be named as the Bio-Psycho-Social Model of ABM, proposed by Welzer & Markowitsch (2005).

Pertinent to the first model reflected in this chapter, it could easily be stated that the most cited, recent and probably the most functional model to explain how the autobiographical memories are constructed is the one proposed by Conway and Pleydell-Pearce in 2000. Because of the promising nature of the model that could shed some more light on the nature of autobiographical memories and on the impaired recall phenomenon of them particularly among depression and post-traumatic disorder, it deserves to be explained as hereinafter set forth.

The model of Conway and Pleydell-Pearce on ABM construction (2000) mainly aims to involve all of the continuing areas of research not only in the branch of cognitive psychology but also in social, developmental, clinical and neuropsychology as the model endeavors to form a useful base for these areas. According to the model, autobiographical memories are assumed to involve knowledge at varying specificity levels. They are, according to Conway & Pleydell-Pearce, three in kind: the life-time periods, general events, and event-specific knowledge as increasing in the specificity level from the first base to the last one (see Figure 1).

The *life-time periods* were defined as “the representations of general knowledge of significant others, common locations, actions, characteristics of a period and the representations of time with distinguishable borders of beginnings and endings, even though they could be blurred”. Among the representation of a memory regarding self, the part of “when I was five” could be an example for such a knowledge level. But, the *general events*, are assumed to be more specific and heterogeneous than life-time periods. The *event-specific knowledge* in this structure provides the memories with vividness, that is, they assumed to involve distinctive and thematic details (Conway& Pleydell-Pearce, 2000).

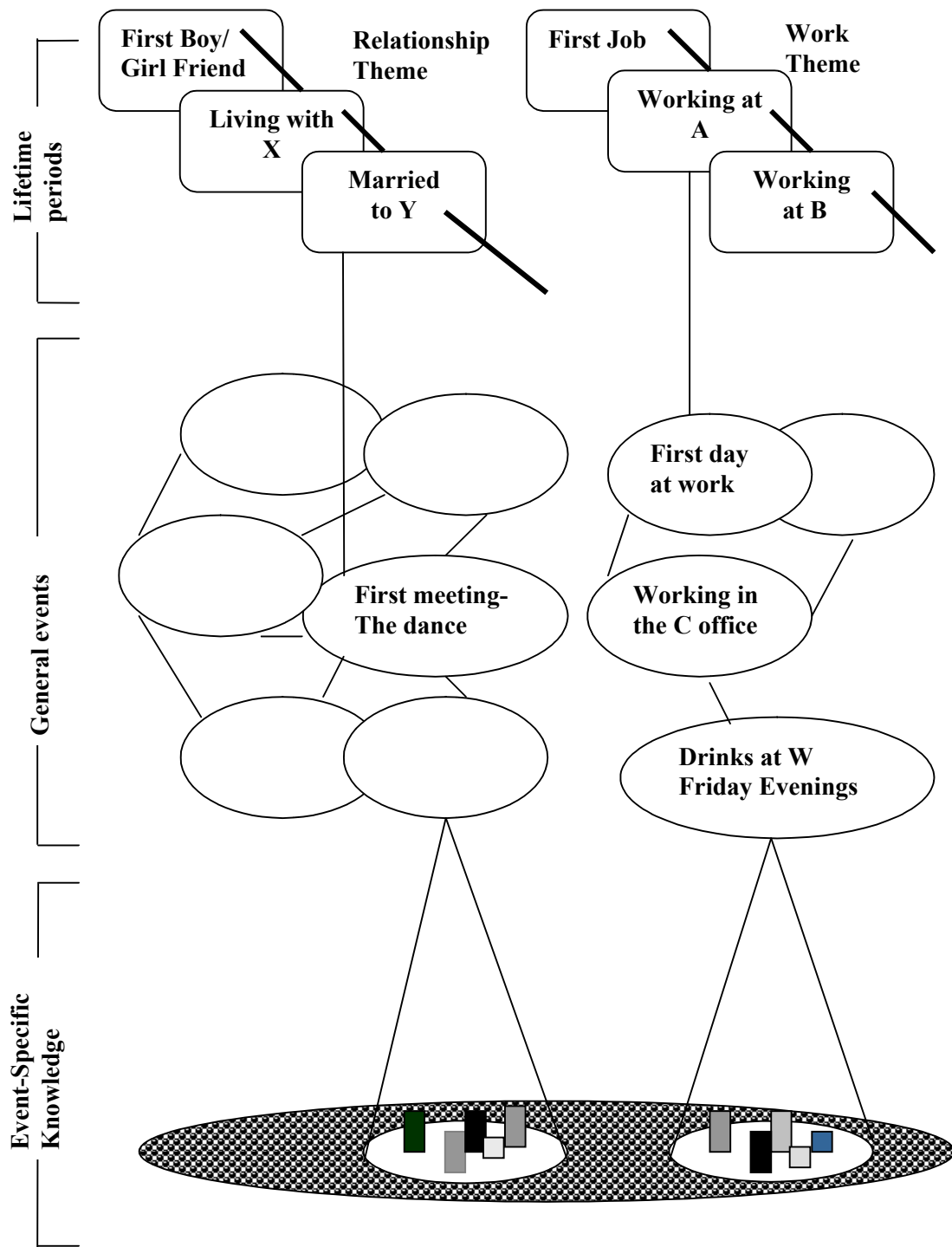


Figure 1: The Construction of Autobiographical Memories Proposed by Conway & Pleydell- Pearce (2002)

Source: Conway, Martin A. & Pleydell-Pearce, Christopher W. (2000). The Construction of Autobiographical Memories in the Self-Memory System. *Psychological Review*, 107(2), 261-288.

Being a hierarchical and multi-level approach, another useful concept proposed in the model of Conway & Pleydell-Pearce (2000), other than the autobiographical knowledge base, consisting of life-time periods, general events and event-specific knowledge, is the “working self”. This concept is assumed to form a subset of working-memory control processes (explicitly similar to the term of working memory) organized into interconnected hierarchies of goals which serve a function of constraining cognitive processes and in turn the behaviors. According to this term, autobiographical knowledge base is hypothesized to be encoded throughout the goal structure of the working self.

The working self term brings to mind the theory of Higgins (1987) proposing separate kinds of selves; the actual self (nearly actual representation of self), the ideal self (what one wishes to be) and the ought self (what one is wished to be by significant others and society) (Higgins 1987 cited in Conway & Pleydell-Pearce, 2000). In summary, this model could converge with the model of the working self proposed by Conway and Pleydell-Pearce with the common notion of having a coherent, organized, goal-directed self. Because, the selves proposed by Higgins (1987) and the working self proposed by Conway & Pleydell-Pearce have a common denominator that there turns out to be a mechanism or a process which has an initiative power to direct the individual towards an improvement.

Another model of ABM comes from Welzer and Markowitsch (2005) who felt a need to have an integrative model. First of all, this model is an endeavor to construct an integrative model in a sense that it proposes a general framework that could involve studies of research coming from both social and developmental psychology as well as neuroscience. As it is presented in the Figure 2., the variables, seen in the upper part of the figure present the idea that they are of relevance during the early development and they enable the memory, particularly ABM, to create such an environment so close to the individual and post natal development. As a result, it provides a base for the construction of ABMs. As the time passes, however, interdependency of the environment and some genetic predispositions in the development of ABMs appears and plays a role in this development (Welzer & Markowitsch, 2005). This could be seen at the lower level of the figure. In summary, it could be inferred that the hint of this endeavor to provide a framework in order to construct such an integrative model mainly takes

the neurological development as a base and the interactions of the external variables such as social or environmental effects onto the development of ABM in brain.

### 1.3. Autobiographical Memory Deficits in Psychopathology

Bearing in mind that autobiographical memory stated the aspects of the memory regarding the recollection of the personally experienced past events (e.g. Williams et al. 2007; Rubin, 1986, p.11), and it is also highly central to the human functioning, contributing and organizing a sense of self, paving a path to perceive the world, future and self (see Beck, 1969) and providing a framework for the problem solving (Goddard, Dritschel, Burton 1997) and orienting the self to the personal goals (Williams et al. 2007).

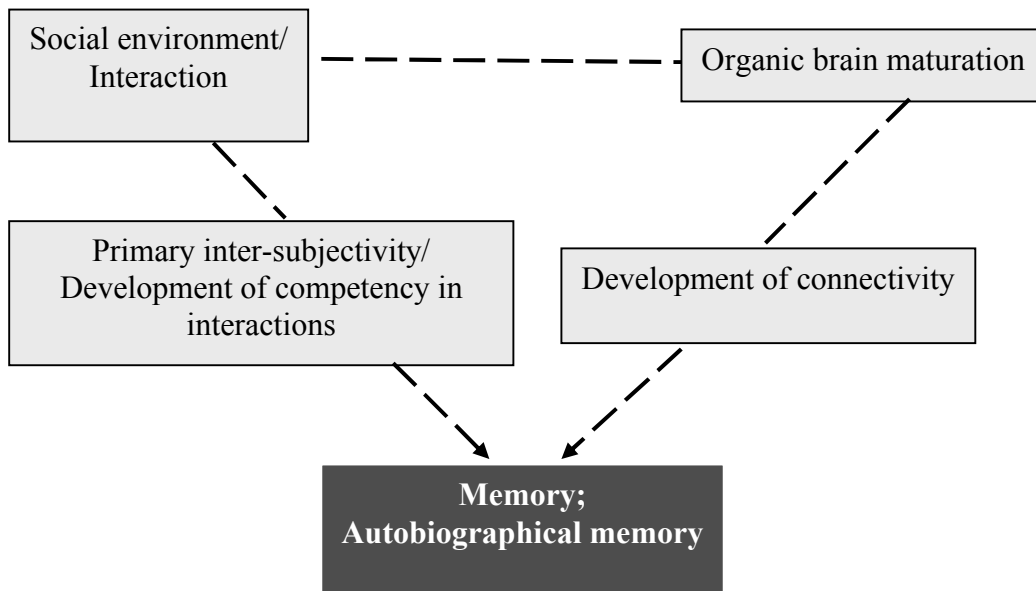


Figure 2. Developmental Model of Autobiographical Memory

Source: Welzer and Makowitsch, (2005). Towards a bio-psycho-social model of autobiographical memory. *Memory*, 13(1), p. 73.

First of all, preceding the issue of overgeneral memory retrieval processes among depression which constitutes the next topic part of this chapter, the studies of research regarding the overgenerality of the personal memories among traumatic experiences are to be reviewed first. Because of the fact that such a retrieval style is being supported empirically in certain psychopathologies particularly among



patients having post-traumatic stress disorder, acute stress disorder and depressive symptomatology (e.g. Williams et al.2007), reviewing these fruitful studies of research deserve a priority to be introduced.

Overgeneral memory could be defined basically as retrieving ABMs as general, common happenings or scripts even when the subjects are asked to retrieve specific memories (Williams & Broadbent, 1986). Regarding the research conducted to investigate the role of the traumatic experiences on the etiology of overgeneral memory, Kuyken and Brewin's study in 1995 could be marked as one of the first studies on this subject (Williams et al. 2007). In their studies, Kuyken and Brewin wished to analyze the role of a history of a childhood sexual abuse among depressed women. They could support the idea that having experienced a childhood sexual abuse could be related to the level of overgeneral memory retrieval in addition to the diagnosis of depression (Kuyken & Brewin 1995). Following this initiative study conducted by Kuyken and Brewin (1995), many other studies involved various kinds of subjects for instance those who are suffering from acute stress disorder after a traffic accident (Harvey, Bryant and Dang, 1998), following a diagnosis of cancer (Kangas, Henry & Bryant, 2005), and patients having post traumatic-stress disorder (e.g. McNally, Lasko, Macklin & Pitman, 1995) etc. Overall, the results of these data suggest that an experience of traumatic event is highly associated with the overgeneral memory; and, the deficit occurs even if the subjects are not being asked to retrieve memories regarding their traumatic experiences (Williams et al. 2007). Although these studies confirmed the presence of an overgeneral retrieval style of ABMs among patients exposed to traumatic events, the presence of a traumatic experience per se is not enough to have such an overgeneral retrieval deficit. That is, the qualitative aspects of the trauma such as how severe the trauma was, how long it lasted etc. seem important as well (see e.g. McNally et al. 1994, 1995; Harvey et al. 1998; Kangas, Henry, Bryant 2005).

On the role of traumatic experiences pertaining to the specificity of the autobiographical memory retrieval as a response to the emotionally valence cue words among adolescents, the study of Deckers, Hermans, Raes and Eelen in 2003 is worth being mentioned as such investigations have been lacked among adolescents (Dockers et al., 2003). The results of the study showed that being

exposed to the higher levels of trauma both in terms of its total number, severity and related distress are associated with the higher level of overgeneral ABM recall. Moreover, none of the other variables taken in the study -such as depression, anxiety, hopelessness, worry or the subjective stress- were found to be significant in relation to the retrieval of specific ABMs. Therefore, on the basis of these findings the implications of the study were in concordance with the suggestion of Williams (1996) postulating the idea that the pattern of overgeneral ABM retrieval takes its root from the childhood trauma as a means of affect regulation (Dockers et al., 2003).

#### **1.4. Autobiographical Memory Deficits in Depression**

Depression as a common, widespread psychiatric disorder in almost all of the countries indicates itself with “a significantly reduced level of interest or pleasure in most of the activities, difficulty in falling or staying asleep or sleeping more than usual, considerable loss or gain of weight, agitated or slowed down behaviors, feeling fatigue, thoughts of worthlessness and guilt, frequent thoughts of death –or attempts to suicide-, and reduced ability to think, concentrate or to make decision” (Psikiyatride Hastalıkların Tanımlanması ve Sınıflandırılması Elkitabı, (DSM-IV-TR), Amerikan Psikiyatri Birliği, 2000, p.151-153). With these major symptoms, depression which is expected to be the second most significant cause of global burden as a disorder by 2020 by World Health Organization (Murray & Lopez, 1996 cited in Clarke, 2006) seems to impact the patients’ lives behaviorally, intellectually, emotionally and socially in an obnoxious way.

Depression, being a highly prevalent disorder, is also thought to indicate its symptoms with nearly 15-20% in the population at any time (Güler, 2006). It is also reported that 9.5% of the population suffers from a depressive illness in a given year (National Institute of Mental Health, 2000). Among the adolescents in Turkey, the prevalence of depression, on the basis of CBDI (Child Beck Depression Inventory) was found 12.55% with a higher depression prevalence among girls than boys who have the age mean of around 15 (Toros, Bilgin, Buğdaycı, Şaşmaz, Kurt and Çamdeviren, 2004). On the prevalence of depression among elderly, several studies also indicated that 10-25% of people over 65 suffer from significant depressive symptoms (Göktaş and Özkan, 2006). Such a high prevalence in the

population and its significant effects on people's life standards, understanding mainly the nature of depression and endeavoring to treat it on the basis of strong, well-established models and data confirming them deserve to be investigated.

The literature regarding the experimental cognitive applications on the populations having certain kinds of clinical disorders provides us with the fact that the information processing system is affected in various kinds of psychopathologies. For instance, although anxious people have an increase in the attentional processes of the cognitive system –mainly involving short-term memory, when the issue comes to the long-term memory processes, depressed people seem to have a reduction in the cognitive processes regarding retrieval from the long term memory (Williams, 1997, p.6-7). Related to depression again the depressed people see themselves, their world and future negatively (Beck, 1976 cited in Moore and Garland, 2004) referring to the dysfunctional cognitive triad of Beck (1976). Taking its roots from the studies of research conducted on the experimental cognitive approaches applied into the clinical conditions, the literature giving so much emphasis to the issue of “self in depression” would be inferred as the literature that deals with the recall of autobiographical memories among depressed people (Williams and Broadbent 1986). In the literature, this phenomenon was generally named as the overgenerality of ABMs (Peeters, Wessel,Merckelbach and Boon-Vermeeren 2001). In other terms, it is to retrieve less specific memories – or more overgeneral ABMs- even when the depressed people are asked to retrieve specific memories.

As it was used in the initiative experiment of Williams & Broadbent (1986) conducted on the ABM retrieval among para-suicide patients, many studies of research predominantly began to use the Autobiographical Memory Test (AMT) of Williams and Broadbent (1986) to understand the role of depression in the specificity of autobiographical memory (Vreeswijk and Wilde, 2004). The test depends on a cued-recall technique in which subjects are primed with some cue words having various emotional valences as positive, negative or neutral. The words were happy, successful, interested, safe, surprised for positively valence words and sad, angry, lonely, sad, (emotionally) hurt and clumsy for emotionally negative cue words. Therefore, subjects are asked to retrieve a specific personal memory which the word reminds them of. Though the words generally varied

across cultures according to their emotional valences, the studies of research on this subject have traditionally utilized these 10 words with basing on the measure of AMT (Williams & Broadbent, 1986).

Based on the meta-analysis of Vreewijk and Wilde (2004), the results of the 14 studies on the recall of specific ABM recall confirm that a relationship between overgenerality and depression exists. That is, groups of psychiatric patients were less specific in the ABM recall and this is true for both memory responses to positive and negative cues. Moreover, the self-reported depressed mood is related to the overgenerality of ABM as well. Therefore, it was concluded that the ABM overgenerality could not only be related to the psychiatric patients but also the depressed mood as well (Vreeswijk and Wilde, 2004).

Besides specificity (or overgenerality) of ABMs, an impairment of ABM in depression was also found regarding the auto-noetic consciousness which is a sense of self in time and ability to relieve subjective experiences from the encoding context by mentally traveling back in time (Gardiner, 2001; Piolino et al., 2003; Tulving, 1985, 2001; Wheeler et al., 1997 cited in Lemogne, Piolino, Friszer, Girault, Roland et al. 2005) and self perspective meaning that they, the depressed people, attribute negative memories to their selves (Lomogne et al. 2005).

Whether this kind of a “cognitive bias” would be a stable marker of clinical depression was also discussed (Yeung, C. A., Dalgleish, T., Golden, A-M., Schartau, P., accepted in August 2005). Yeung et al. (2005) wished to understand such a highly probable bias in normal groups of subjects by inducing either positive or negative moods on them. They could support their viewpoint as concluding that the reduced ABM can be a function of current emotional state as well (Yeung et al. 2005). That is, the depressed mood could be a function of the reduced specificity of ABMs as it is in the case of depressive disorder. In another study, Peeters and his colleagues (2001) wanted to investigate the *stability* of the overgeneral autobiographical memory recall among the depressed patients. As a result, they could find that autobiographical memory test performance was relatively stable over time among depressed group. As an implication drawn from the results of this study, it was proposed that such stability could be a vulnerability factor that affects the prognosis of the depressive disorder (Peeters et al. 2001).

Regarding the stability, parallel with the notion of “cognitive bias”, the fact of overgenerality was seen as a relatively stable marker of vulnerability to depression as well (Brittlebank et al, 1993; Williams 1996 cited in Watkins, E. and Teasdale J. D., 2004). However, recent experimental studies have shown that overgeneral memory is modifiable, at least in the short term. That is, the results of Watkins and Teasdale (2004) showed that the experiential self-focus (the adaptive one) reduced overgeneral memory compared to analytical self-focus (maladaptive one). Therefore, the results of them on the self-focus that is associated with the negative affect, but being stronger for the ruminative self-focus than non-ruminative self-focus (Mor and Winquist, 2002 cited in Teasdale and Hilary, 2004) provide us with a further evidence for the modifiability of overgeneral memories (Watkins & Teasdale, 2004).

As the research progressed in this area, it became clear that the overgeneral memories most often referred to the events that happened repeatedly. These recalled memories were termed with the “categoric events” which were defined as the summaries of events such as the response of “going out with my friends” and less often referred to the events that happened longer than one day which were the “extended memories”. An example for these extended memories could be the response of “being in a holiday with my friends last summer” (Williams, 1996 cited in Vreeswijk et al., 2004). By this analysis, overgenerality was not only referred to the ABMs not recalled as specific, but to the memories recalled as extended or categorical fractioned under the overgeneral autobiographical memory term.

After all, the fact that the depressed people retrieve their autobiographical memories not specifically but more generally than the non-depressed groups provides the researchers with a path to investigate this area. However, inevitably the question arises. Why does such a phenomenon occur? Some of the recent explanations for overgenerality ABM retrieval will be mentioned in the following part.

### **1.5. Explanations for the Overgenerality in Depression**

After the findings of Williams & Broadbent (1986) which explicitly gave a path to the studies of research on the overgeneral ABM retrieval particularly among depression, many of the researchers both from clinical and from cognitive sides

wished to explain this highly intricate phenomenon. Because, such an endeavor could provide us with a clearer picture which could yield such consequences shedding light on how the human mind processes in its own right by understanding the issue from the other way around, by basing the studies on the disturbed way of it, such as depression (Baddeley & Wilson Cp. 13, p.225)

In a broader sense, Conway & Pleydell-Pearce's model for the construction of ABM mentioned before seems applicable to explaining the autobiographical memory retrieval deficits among emotional disorders. Mainly, this model tries to make a distinction between generative and directive retrieval as the former refers to top-down and the latter refers to bottom-up retrieval (Williams, 2007). In the generative retrieval, the human mind involves intentional search staged among various levels and it utilizes the general descriptions in order to help searching activity throughout the memory representations constructed in a hierarchy one above another (Burgess & Shallice, 1996). According to Conway and his colleagues, in the direct retrieval considered as a bottom-up retrieval, however, some cues activate the event-specific knowledge in a direct way so that they set up a stable pattern of activation which are experienced as unexpected and spontaneous recall (Williams, 2006).

Applying the model to various psychopathologies particularly to depression and post-traumatic stress disorder, it also seems to yield some efficient frameworks for the researchers. The top-down generative search in general could be applied to the case of overgeneral retrieval in depression and the bottom-up direct retrieval could be applied to the cases of flashbulbs in post-traumatic stress disorder. For a support for this explanation, the following findings could be suggested. For instance, in the post-traumatic stress disorder, autobiographical memories are reported as highly vivid, intrusive and in the means of flashbulbs, which put these memories in the process of directly recalled referring to the bottom-up process proposed in the model. However, in depression, patients have a difficulty in the recall of their autobiographical memories specifically, which mainly seems to be applied to the process of generative recall, the top-down one (e.g. Williams & Broadbent 1986; Conway and Pleydell-Pearce 2000).

The reason for such an overgeneral retrieval style was proposed by J. M. G. Williams (1996) with the mechanism of "mnemonic interlock". He proposes with

this term that such a mechanism is mainly assumed to terminate the *searching process* of the memories at a higher level of cognition instead of retrieving the emotionally disturbing materials specifically which refers to the “truncated search”. However, a converging notion to this idea comes from the model of Conway and Pleydell-Pearce (2000). That is, they suggest that overgeneral memories indicate an attempt which may even be deliberate in the “inhibitory control of the construction of such autobiographical memories”. While Williams calls this terminated (or truncated) search at a higher level as “mnemonic interlock”, Conway and Pleydell-Pearce (2000) call it as a “dysfacilitation of the retrieval process” (Williams, 2006). That is, despite they name the phenomenon with two different terms; they, in essence, refer to the same or similar mechanism.

In order to explain the reason why overgenerality phenomenon occurs particularly in depressed people with the “truncated search” mechanism (Williams, Chan, Crane, Barnhofer, Eade & Healy, 2006), the mechanism is explained by the three processes proposed recently by Williams as well (2006). According to Williams (2006), these processes were collected under the mechanisms of capture and rumination, functional avoidance, and executive control (CaRFAX) which had been separately found to give rise to the overgenerality and together they were proposed to be almost certain to do so (see Figure 3).

Capture and rumination as a mechanism proposed to explain overgenerality have been well-documented for a close relationship between rumination and overgeneral memory retrieval (see Barnard, et al. and Watkins & Teasdale, 2004). Williams et al. (2006) suggest that the particular mapping or coverage of the cue word onto the concerns of the individual may result in the overgeneral memory retrieval to explain the effects of rumination on this phenomenon. Beside capture and rumination, the reduced executive capacity among depression (see e.g. Hertel, 2000; Hertel and Hardin, 1990) has also been proposed for the problem. Rumination results in a reduction in the executive functioning of the working memory which thereby reduces the possibility of recalling specific memories. Lastly, the functional avoidance was also proposed as another leg to explain the overgenerality which produces a maneuvering in mind to stay at the higher level of representation without touching possible emotional burden of memories particularly the negative ones (Williams, 2006).

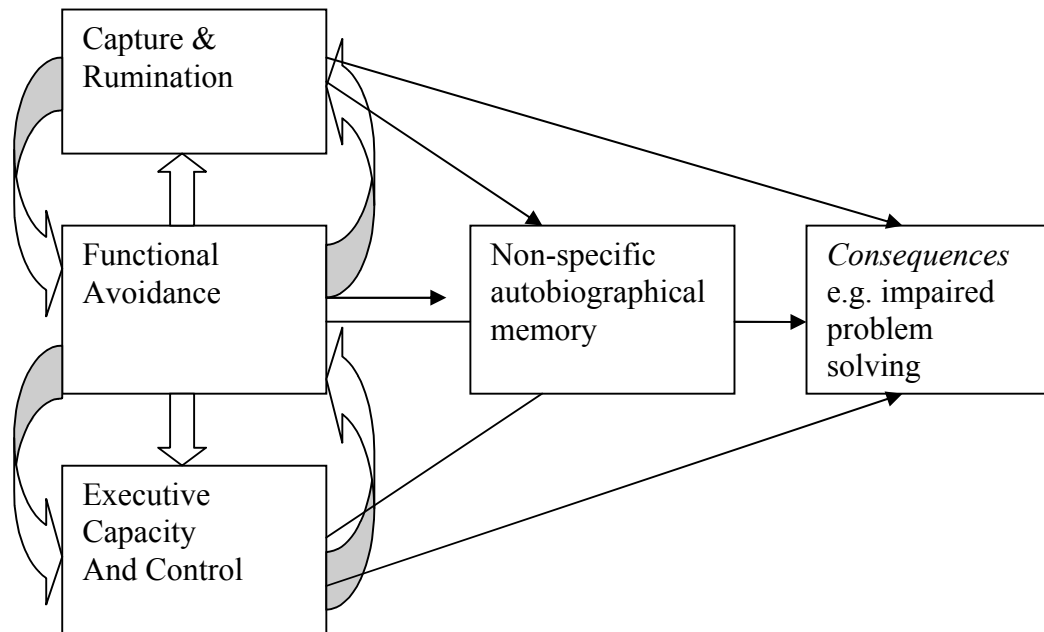


Figure 3. Capture and Rumination, Functional Avoidance and Executive Control:  
The CaRFAX Model

*Source:* Williams, J. Mark.G. (2006). Capture and rumination, functional avoidance, and executive control (CaRFAX): Three processes that underlie overgeneral memory. *Cognition & Emotion*, 20(3/4), 549-568 .

However, the questions arise. Why then are the patients having post-traumatic stress disorder not be able to terminate the intrusion of the negative memories of traumatic events –if there would be an inhibitory mechanism to terminate these negative emotionally laden memories-; and, why do depressed patients have also an overgeneral retrieval style in the case of retrieving ABMs for the “positive emotional words” when they are asked to do so? (Williams, Barnhofer, Crane, Watkins, Hermans et al. 2007; Conway & Pleydell-Pearce, 2000). That is, it could not explain why the positive memories are more overgenerally retrieved by the depressed people than the non-depressed ones as they could not elicit painful events (William et al. 2007).

In an article of Williams and his colleagues (2007), they explain the results showing that depressed people also have a reduction in the specificity level of ABMs recalled for the positive cues as negative ones as follows. *We could have an assumption* that when the cues are presented they should have an emotional laden accordingly such as positive cue words activates positive memories, negative



ones as negative and neutral cues in any kind. Williams et al. (2007) argue the proposal by giving an example that if we prime the subject with a neutral cue such as “summer” and ask the subject to retrieve a specific ABM which the word reminds him/her of, we could not be sure that the cue initiates a positive, negative or a neutral activation in the subject’s mind. For instance, in a summer vacation, the person could live an assault while she was wandering around with her dog. They propose that such a probability could be applied to the other cues, positive or negative ones as well. They explicitly argue their ideas with the following proposition.

*...If one (such as a social phobic) does not want to be confronted with painful social situations, one has to avoid them all. We suggest that the same may hold for painful specific memories: If one wants to be sure not to encounter painful episodic memories about the past, one has to be nonspecific for all memories (Williams et al. 2007, p.135).*

However, this suggestion does not seem quite reasonable. If it is the case, there would not be any reason to prime the subjects particularly in the Autobiographical Memory Test (Williams & Broadbent, 1986) with the emotional words together with the neutral ones as well. That is, any kind of cue word could activate any kind of memory having different emotional content as we could not know the personal experiences, the past of the subject. That is, no one could guess what semantic stimuli provide an access or activate which personal memory. However, the results show that there seems to appear an overgenerality problem for the responses against emotional words both for positive and negative in general, not for the neutral ones (see e.g. Williams & Broadbent, 1986; Williams & Dritschel, 1988; Kuyken & Brewin, 1995). Secondly, in the first instance it seems that the emotional cue words probabistically should activate the associates of them which more or less have the same valence throughout the associative network. Therefore, more or less personal memories having almost the emotional valences –in a broader sense, either under a negative or a positive polar- must be gathered together in a network of association.

As the prime objective of the current study of which theoretical frameworks and related empirical findings for them are to be laid out in the following part of this chapter, the encoding processes involving two seemingly rival hypotheses and how they could be involved in the explanation of the overgeneral ABM retrieval among depression are to be hereinafter set forth. Such an endeavor mainly results from an incentive as Williams himself acknowledges, AMT literature has depended on and observed the deficits at *retrieval* but not on the possible *encoding problems* in psychopathology so far (Williams, 2006).

### **1.6. Encoding Processes for the Overgenerality**

Retrieval from memory –both in terms of recall and recognition- seems to depend on how the information is stored in memory (Thomson & Tulving, 1973). The fact that how well a thing –information- is remembered not solely depends on what is stored but depends on how it is stored in memory is not a new phenomenon. For instance, even ancient orators knew this when they utilized the loci method, gestalt psychologists knew this when they proposed that the properties of an element depended on the element contained in the whole and the studies of research on intentional and incidental learning came up with the conclusion that what is learned depends on what happens at the time of learning (Yates, 1966; Bartlett 1932, p.188; Postman, 1964 cited in Tulving & Thomson, 1973).

On the storage of memory, there are two kinds of encoding processes proposed which were suggested as an alternative to each other, but they –as it is in the main proposal of the current study- could be taken into account as complementing each other rather than contradicting. According to the “encoding specificity principle” proposed by Tulving & Thomson (1971), it is assumed that what is stored regarding the occurrence of a word –in the experimental list- is the information about the specific encoding of that word in that context and situation. That is, the recall performance turns into be a higher incidence when the target is primed with a cue that presents at the time of encoding. Therefore, encoding specificity in terms of cues lays under the fact that the specific way an item is encoded into memory determines which retrieval cues would be effective in the access to the memory trace (Salzberg, 1976).

As an alternative to the encoding specificity hypothesis, the “encoding variability principle” was proposed by many researchers (e.g. see William &Uhl, 1976; Winograd & Geis, 1974; Martin 1968). The basic proposal of encoding variability could be summarized as follows. With other factors being equal, the greater the encoding variability between two presentations of an item -in the list-, the grater the probability of recalling that item will be. That is, when a sampling of the components takes place at recall, which turn into be cues at the time of recall, an increase of the number of components “connected to a particular item” generates an increase in the probability of recalling that item – or information (Yung & Bellezza, 1982).

Then, how the effects of encoding processes are involved in the explanation of the overgenerality deficit deserves to be taken into account. First of all, it should be kept in mind that the overwhelming majority of the studies of research on the ABM retrieval have predominantly laid their perspectives on the retrieval of ABMs, not on the encoding of these memories (Williams, 2006). In short, the overwhelming majority of the studies of research on the ABM retrieval among clinically depressed patients as well as people having depressive mood and symptomatology seems to stuck at the intersection of the encoding processes of these memories which appear to be an underestimated and so that an under-researched area (Shaw, 1987). The fact that all of these personal memories regard the concept of “self” also raises an area which deserves to be investigated on the nature of self-referent encodings of ABMs in depression. For such a reason, parallel to the central aim of the current study as well, Dobson and Shaw (1987) conducted a study which aimed to understand specificity and stability of the self-referent encoding among clinically depressed patients. Its results indicated that depressed people encoded the information which were relevant to the self and were stable with the depressive schema since it shifted with remission. Therefore, it showed that in depression, people encode the information on the basis of their negative views. Moreover, it has already been hypothesized and strongly supported on the basis of its results as well that “the performance in retrieval” highly depends on in what way and how well the information – in this case, the memories- are encoded in the structure of long-term memory (e.g. see Thomson & Tulving, 1975).

To be more specific on such a highly intelligent regard on the value of encodings, the concept of self-schemata (e.g. see Markus, 1977; Kovaks & Beck, 1977) should be introduced first. According to this concept, self-schemata was defined as “a relatively stable aspect of the individual”. Moreover, it serves the function to facilitate the attention which is selective in nature to cues around and it also serves to process the incoming information depending on how much it complies with the preexisting self-schemata (Markus 1977; Tesser & Campell 1983 cited in Dobson & Shaw, 1987). The study of Davis & Unruh (1979a, 1979b) could easily be taken as the first study which applied the self-referent encoding task to depression which requires the subjects to categorize the adjectives according to how much they fit to their sense of self. He found that depressed people, as expected, rated themselves with more negative adjective words and had a stronger inclination to transfer negative adjectives to themselves and such a tendency was associated with the prolonged periods of depression (Dawis & Unruh, 1981).

A recent study of Crane, Barnhofer and Williams (2007) conducted on the effect of cue-self relevance on the specificity of ABMs among previously depressed individuals seems to shed light on the issue of the schema maintenance (Young, 1999) and particularly the way of perceiving the event encoded into memory as ABMs which reminds the encoding specificity hypothesis. In the study, participants were asked to determine the words that identify them very closely and those words were utilized in the AMT as test cues which are tailored for each participant. As a result of the experiment, previously depressed participants had recalled fewer specific memories as the number of AMT cues that reflected self-guide content (cues reflecting them on the basis of the participants’ ratings, desired or feared characteristics) was greater. Therefore, it was suggested that people who had a history of depression have an increased tendency to initiate a shift in order to process the information in the long-term self (Conway, Singer & Tagini cited in Crane et al. 2007). Moreover, on the effects of schemas and attitudes regarding self were also found effective in the retrieval of ABMs. According to the results of a study as well, it was proposed that the impaired retrieval of specific memories referring to the overgeneral ABM retrieval might result from certain cues in AMT relevant to self-schemas which activate higher-order mental representation (Spinhoven, Bockting, Kremers, Schene and Williams, 2007).

## 1.7. Overview

Although proposals of encoding processes which are also thought to be highly related to the aims of the study, such as overgeneral type of recall of autobiographical memory phenomenon (Williams & Broadbent, 1986), it is also so fruitful to understand the storage process in the information processing model of Atkinson & Shiffrin (1968). However, particularly on the encoding specificity principle – in other terms, encoding-retrieval match-, James Nairne (2002) in his theoretical article proposes that such a match seems simply a “myth”. He dissects his ideas which are thought to be fundamental for the current study as follows.

*When we remember, we use the information at hand, in the form of retrieval cues, to make a decision about what occurred in the past. But the decision is unlikely to be based on a passive matching process, at least in the majority of retrieval contexts. Remembering is better characterized “as an active process of discrimination”: We use cues to pick and “choose from among viable retrieval candidates”. Increasing the encoding–retrieval match generally improves performance, but only because it increases the probability that distinctive features....will come into play. Match, by itself, is not the operative factor behind retention.... If a cue is associated to many things, or has been encoded as a part of many traces complexes, then it becomes harder for that cue to elicit any single target trace (e.g., Earhard, 1967; Watkins & Watkins, 1975 cited in Nairne, 2002, p.390).*

From a theoretical perspective, Nairne (2002) proposes that it would be expected that the performance of recall would increase with an increase in the proportion of similarity between the environment during retrieval and the encoding environment. For this proposal, he also proposes the situation with this example. For instance, if an event, let's say  $E_1$ , consists of the encoded features of  $X_1$ ,  $X_2$  and  $X_3$ , then providing the subject with only one or two cues could produce decreased performance than providing the subject with all three of these cues. However, the cue overload term which is the “cue distinctiveness” involves the circumstance, the situation turns into an opposite way by exacerbating the performance of recall. That

is, when we suppose that the feature  $X_1$  –cue- is unique to event  $E_1$ , but  $X_2$  is present in  $E_2, E_3, E_4$  and so on, and when we provide the subject with  $X_1$  and  $X_2$  at test, while the functional encoding-retrieval match is increased, the performance does not necessarily. Because, he proposes that the  $X_2$  is consistent with other target traces of events. In summary, the cue should be, in a sense, distinctive to be effective performance in recall (Naire, 2002).

Being parallel to the notion of distinctiveness of cues in recall performance, the current study bears this following notion. Among the depressed people, autobiographical memories, which might easily not have distinctive features, seem to be gathered together, or in this case do not have distinctive emotional valences, most probably, on the side of negative valence polar which may end up with an overshadowing onto the possibility of encoding the events under the positive emotional valence. This notion appears to be concordant with the proposal of dysfunctional cognitive triad of Beck (1976), perceiving the self, future and others negatively. Mainly based on such a *dysfunctional perspective* and keeping the fact in mind that depressed people have characteristically *ruminative thinking* resulting in a reduction on the working memory capacity; and, *flattened mood* which makes the encoding environment less distinctive at the time of retrieval could result in the overgeneral ABM retrieval deficit among depressed people. In essence, it might be taken into account that depressed people could encode the happenings around them into their mind as their ABMs via seemingly a deficit in encoding processes. That is, when the depressed people who were mainly supported to have a common depressed cognitive style in general or at least fluctuating not with high extends encounters events regarding mainly to self are hypothesized to encode these events in a negative way. The frequency of those memories increases parallel with the notion of schema-maintenance (Young, 1999) and dysfunctional cognitive triad (Beck,1976); and, they turn out to be less distinctive at the time of recall.

### **1.8. Aims and Hypotheses of the Present Study**

The purpose of the present study is to investigate the encoding processes of ABMs among non-clinically depressed people with the utilization the traditional cued-recall technique of AMT (Williams & Broadbent, 1986). Additionally, the current study will utilize AMT as a measurement by adding a paradigm of using

multiple cues for recall which has never been used in the AMT literature with an intention to infer encoding specificity as well as encoding variability processes in depression. In the last chapter, some ideas will be presented about the recall of personal past among depressed people.

In summary, the aims of the present study are;

- a) to understand, in a broader sense, why depressed people retrieve their autobiographical memories overgenerally,
- b) to infer whether autobiographical memories are encoded overgenerally or they are retrieved as overgeneral,
- c) to infer whether depressed people encode their autobiographical memories as overgeneral when they encounter, live or comprehend events that happen to them and carry an emotional valence,
- d) to understand whether the overgeneral retrieval phenomenon could be related to the encoding processes which take into account both encoding specificity and encoding variability hypotheses,

Hypotheses of the present study are as follows;

1. Students having high depression scores would recall less specific ABMs than those who have less depression scores.
  - a) Students having high depression scores would recall less specific ABMs as a response to “*positive cue words*” than those who have less depression scores.
  - b) Students having high depression scores would also recall less specific ABMs as a response to “*negative cue words*” than those who have less depression scores.
  - c) There would be *no difference* between the subjects who have high depression scores and those who have low depression scores as a response to “*neutral cue words*” in AMT.
2. The students primed with one cue in AMT would recall less specific ABMs than those who are primed with two cues in AMT.
  - a) The students primed with one cue in AMT would recall less specific ABMs to positive cues than those who are primed with two cues in AMT.
    - i) The students having high depression scores and primed with one cue would be less specific on ABM for positive cues than those

having high depression and primed with two cues.

ii) There would be no difference between the subjects who have low depression scores and were primed with either one cue or two cues in AMT as a response to positive cues.

b) The students primed with one cue in AMT would recall less specific ABMs to negative cues than those who are primed with two cues in AMT.

i) The students having high depression scores and primed with one cue would be less specific on ABM for negative cues than those having high depression and primed with two cues.

ii) There would be no difference between the subjects who have low depression scores and were primed with either one cue or two cues in AMT as a response to neutral cues.

c) There would be no difference between the subjects who were primed with one cue and those primed with two cues in AMT as a response to neutral cues.

3. Students having high depression scores would recall “more overgeneral” ABMs than those who have less depression scores.

a) Students having high depression scores would recall more overgeneral ABMs as a response to “*positive cue words*” than those who have less depression scores.

b) Students having high depression scores would also recall more overgeneral ABMs as a response to “*negative cue words*” than those who have less depression scores.

c) There would be *no difference* between the subjects who have high depression scores and those who have low depression scores as a response to “*neutral cue words*” in AMT in terms of overgenerality as well.

4. The students primed with one cue in AMT would recall more overgeneral ABMs than those who are primed with two cues in AMT.

a) The students primed with one cue in AMT would recall more overgeneral ABMs to positive cues than those who are primed with two cues in AMT.

i) The students having high depression scores and primed with one cue would be more overgeneral on ABM for positive cues than those having high depression and primed with two cues.



- ii) There would be no difference between the subjects who have low depression scores and were primed with either one cue or two cues in AMT as a response to positive cues in terms of overgeneral recall.
- b) The students primed with one cue in AMT would recall more overgeneral ABMs to negative cues than those who are primed with two cues in AMT.
  - i) The students having high depression scores and primed with one cue would be more overgeneral on ABM for negative cues than those having high depression and primed with two cues.
  - ii) There would be no difference between the subjects who have low depression scores and were primed with either “one cue or two cues” in AMT as a response to neutral cues in terms of overgeneral recall.
- 5a) Subject having high depression scores would have longer reaction times (latencies) on ABM recall than those having low depression scores.
- 5b) They would also have higher reaction times both for positive and negative words than neutral ones.
- 5c) Those primed with one cue and those primed with two cues would not differ from each other in terms of reaction times.
- 6(a). Regarding the utilization of cues, *when subjects were primed with two cues together in AMT*, the subjects would use cues more consecutively than simultaneously. Consecutive utilization would be higher than the simultaneous one regardless of the depression level as well.
- 6(b). The subjects primed with two cues together would utilize the first neutral cue more than the second cue when the valence of the second cues was emotional. If the second cue is again a neutral cue, sequence of utilization would be almost equal. Also, this pattern is not expected to differ regarding the depression level.

## CHAPTER 2

### METHOD

#### 2.1. Study I: Determining Cue Words as Positive, Negative and Neutral

##### 2.1.1. Participants

In the pilot study, 125 students from various departments at the Middle East Technical University rated the emotional valences of the given words on a Likert-type scale. The mean age of the subjects ranging from 19 to 32 is 21,87 ( $SD=2.13$ ). Among the participants, 23 of them (4%) were male and 102 were female (81.6%). The age mean of male participants (range: 19 - 28) is 22,69 ( $SD=2.14$ ) and of female participants (range: 19 - 32) is 21,69 ( $SD=2.10$ ) (See Table 1).

Table 1. Sample Characteristics in Study I

Variables	N	Mean	SD	Min.	Max.
Age (Overall)	125	21.87	2.13	19	32
Age (in Gender Groups)					
Male	23	22.69	2.14	19	28
Female	102	21.69	2.10	19	32

##### 2.1.2. Materials

In order to identify the cue words to be utilized in the experimental phase of the study, a questionnaire was constructed. The questionnaire involved 100 words which are considered to have various emotional valences as positive, negative and neutral. Of 100 words in the questionnaire, 34 words were hypothesized to have a negative valence, 33 positive valence and 33 as neutral. The words in the questionnaire involved the 10 words used in Williams and Broadbent's study (1986)

which have been utilized traditionally until recently and some other words utilized in many previous studies basing their measurements on AMT (e.g. see Williams, Ellis, Tyers & Healy, 1996; and Swales, Williams & Wood, 2001). Besides, some extra words were taken from the studies of Göz (2003) and Er (2004) as well. After the words were translated and a consensus was reached by three English teachers in METU, the words were also checked in terms of their frequencies on the basis of the studies of Göz (2003), determining the word frequency of the printed Turkish, and of Er (2004), constructing a frequency list of positive, negative and neutral words. Therefore, the words translated were also checked for their frequencies in Turkish and the words having the highest frequencies were selected.

### **2.1.3. Procedure & Results**

The questionnaire was delivered to the students at METU in their class-hours and those 125 students who voluntarily participated in this pilot phase of the study filled the questionnaire (See Appendix A for sample items). The questionnaire began with a short demographic information form in which the participants were asked to respond to age, sex, class and department variables. In the questionnaire, the students were asked to rate each word in terms of its emotional valences on an 11-anchored Likert-type scale. The scale ranged between -5 (extremely negative) and +5 (extremely positive). Number zero in between meant that the word was considered as neutral.

In order to identify the words which are intended to be utilized in the experimental phase of the study, 5 words having the highest mean values on the positive side, 5 on the negative side and 15 words revolving around and closest to zero value were identified. As a result of the frequency analysis, the positive, negative and neutral words are decided as follows. The positive words were “mutlu, huzurlu, başarılı, umutlu and neşeli”, the negative words were “mutsuz, çaresiz, umutsuz, berbat and reddedilmiş”; and, the neutral words were “dolap, kül, sabun, perde, kaşık, çorap, toka, çerçeve, piyanist, şişe, poşet, merdiven, anahtar, dükkan and demir.” The words of “süt, tiyatro, gazete, banyo, yağmur, and ekmek” were utilized as the practice items in AMT (See Table 2).

Table 2. Descriptive Statistics of the Words in Study I

WORDS	Mean	Min.	Max.	SD
<b>Huzurlu</b>	4.10	-3	5	1.26
Hayat dolu	4.09	-1	5	1.19
<b>Mutlu</b>	3.94	-3	5	1.16
Sadık	3.84	1	5	1.03
Kahkaha	3.80	-3	5	1.29
Dostça	3.79	0	5	1.10
<b>Neşeli</b>	3.77	-1	5	1.13
Zeki	3.71	0	5	1.21
<b>Umutlu</b>	3.67	-3	5	1.42
<b>Başarılı</b>	3.66	-2	5	1.17
Şefkatli	3.63	0	5	1.01
Güvenli	3.56	-5	5	1.45
Vefalı	3.54	-4	5	1.48
Yardımsaver	3.54	-4	5	1.25
Sevinçli	3.51	1	5	1.10
Şen	3.49	-2	5	1.29
Onurlu	3.46	-1	5	1.48
Sohbet	3.44	-2	5	1.32
Gülümseme	3.43	-2	5	1.30
Hediye	3.36	-5	5	1.59
Memnun	3.27	0	5	1.10
Rahatlamış	3.22	-4	5	1.62
Rahat	3.16	-2	5	1.24
Seyahat	3.10	-5	5	1.80
İstekli	3.07	-5	5	1.54
İlgili	3.06	0	5	1.26
Şanslı	3.04	-5	5	1.69
Hoş	2.98	-1	5	1.23
Hevesli	2.87	-4	5	1.45
Bahçe	2.8	-1	5	1.75
Uzman	2.77	-3	5	1.60
Sakin	2.67	-5	5	1.56
Işıltılı	2.53	-4	5	1.74
İltifat	2.40	-2	5	1.58
İhtişamlı	2.39	-3	5	1.66
<b>Tiyatro</b>	<b>2.32</b>	-5	5	1.98
Çimen	2.29	-5	5	1.79
Ekmek	1.75	-4	5	1.87
Anaokulu	1.70	-4	5	1.82
<b>Piyanist</b>	<b>1.59</b>	-3	5	1.75
<b>Sabun</b>	<b>1.34</b>	-3	5	1.72
Heyecanlı	1.28	-5	5	2.07
<b>Kütüphane</b>	<b>1.15</b>	-5	5	2.25
<b>Paket</b>	<b>1.09</b>	-5	5	1.68
<b>Anahtar</b>	<b>1.02</b>	-2	5	1.51
<b>Çerçeve</b>	<b>0.93</b>	-4	5	1.68
Öğüt	0.86	-5	5	2.14

Table 2. Descriptive Statistics of the Words in Study I (*Continued*)

WORDS	Mean	Min.	Max.	SD
<b>Kaşık</b>	<b>0.66</b>	-2	5	1.27
<b>Toka</b>	<b>0.66</b>	-4	5	1.37
<b>Pantolon</b>	<b>0.65</b>	-4	5	1.51
Ciddi	0.64	-4	5	1.76
<b>Çorap</b>	<b>0.63</b>	-3	5	1.27
<b>Bardak</b>	<b>0.55</b>	0	5	1.07
Moda	0.54	-5	5	2.09
<b>Dükkan</b>	<b>0.48</b>	-3	4	1.11
<b>Perde</b>	<b>0.44</b>	-5	5	1.37
Şaşırmış	0.41	-3	4	1.21
Amca	0.38	-5	5	1.10
<b>Dolap</b>	<b>0.37</b>	-3	5	1.10
<b>Düğme</b>	<b>0.30</b>	-2	5	0.94
<b>Şişe</b>	<b>0.27</b>	-3	5	1.00
<b>Merdiven</b>	<b>0.22</b>	-3	5	1.31
<b>Demir</b>	<b>-0.02</b>	-5	4	1.46
<b>Poşet</b>	<b>-0.15</b>	-5	4	1.20
Hayrete düşmüş	-0.17	-5	4	1.63
Soğan	-0.18	-5	4	1.71
Kül	-0.64	-5	4	1.91
Tartışma	-0.77	-5	5	2.37
Mahçup	-1.04	-5	3	1.64
Sakar	-1.11	-5	5	1.87
Zayıflık	-1.33	-5	5	2.40
Gözyaşı	-1.47	-5	5	2.31
Utanmış	-1.69	-5	4	1.89
Yorgun	-1.77	-2	5	1.58
Çirkin	-1.78	-5	4	1.75
Hata	-1.86	-5	5	1.53
Kusur	-2.02	-5	4	1.50
Yalnız	-2.07	-5	5	2.35
Kızgın	-2.17	-5	3	1.78
Üzgün	-2.42	-5	4	1.54
Acıklı	-2.42	-5	1	1.64
Kederli	-2.43	-5	4	1.77
Mezar	-2.56	-5	4	2.09
Gergin	-2.58	-5	4	1.59
Tehlike	-2.63	-5	4	1.9
Kötü	-2.94	-5	3	1.5
Sıkıntılı	-2.98	-5	3	1.37
İncinmiş	-3.10	-5	2	1.36
Başarısız	-3.10	-5	4	1.54
Umudu kırılmış	-3.30	-5	2	1.3
<b>Berbat</b>	<b>-3.31</b>	-5	5	1.94
<b>Umutsuz</b>	<b>-3.33</b>	-5	4	1.48
<b>Reddedilmiş</b>	<b>-3.42</b>	-5	5	1.49

Table 2. Descriptive Statistics of the Words in Study I (*Continued*)

WORDS	Mean	Min.	Max.	SD
<b>Çaresiz</b>	<b>-3.44</b>	-5	2	1.42
<b>Mutsuz</b>	<b>-3.47</b>	-5	3	1.35
Yas	-3.52	-5	4	1.55
Sefalet	-3.62	-5	5	1.77

Note: The words indicated with bold style are identified as the cue words which are to be utilized in the AMT application. Except the neutral ones, these words were taken because they have the highest rating in terms of their emotional valences; and, they are both emotional words and self-referent adjectives.

## 2.2. Study II: Identifying Groups of the Experiment

### 2.2.1. Participants

In this phase, the aim was to define the groups to be invited into the experiment of the study on the basis of their depression scores. Totally 282 students from various departments at METU participated in the screening phase. After 9 of the subjects who reported a treatment with psychiatric medication such as antidepressant, antipsychotic or anxiolytic kinds of drugs were excluded from the analysis. Because this group is out of the target population for the current phase, as it dealt with non-clinical depression as well as there seems to exist a possibility of not being able predict or control the effects of these medications. One case detected as being both a univariate and multivariate outlier was also deleted. The analysis was done with 272 cases.

On the demographic characteristics of the students, the mean age of totally 272 students were 20.94 ( $SD= 2.51$ ) and the ages ranged between 17 and 34. Of the students, 88 (32.4%) were male and 184 students (67.6%) were female. The age mean of the male students was 21.14 ( $SD=3.08$ ) and their ages ranged between 19 and 34. Among females, the ages of them had a mean of 20.88 ( $SD= 2.20$ ) and ranged between 17 and 32 (See Table 3).

Table 3. Sample Characteristics in Study II

Variables		Mean	SD	Min.	Max.
Age (Overall)	(N=272)	20.94	2.51	19	34
Age (in Gender Groups)					
Male	(n=88)	21.14	3.08	19	34
Female	(n=184)	20.88	2.20	17	32

### 2.2.2. Materials

In this stage of the study, having the aim of identifying the groups on depression scores Beck Depression Inventory (See Appendix B for sample items) and Hospital Anxiety, Depression Scale (See Appendix C for sample items) together with a demographic information form (See Appendix B) were used.

#### 2.2.2.1. Beck Depression Inventory (Beck, 1961)

The Beck Depression Inventory (BDI) developed by Beck (1961) is a 21-item multiple-choice test and utilized to measure the presence and the degree of depression among adolescents and adults. The 21 sets of 4 statements represent varying levels of depressive symptoms. The items measure the depressive symptoms as in the order of sadness, pessimism, sense of failure, dissatisfaction, guilt, expectation or punishment, self-dislike, self-accusations, suicidal ideas, crying, social withdrawal, indecisiveness, body image change, work retardation, insomnia, fatigability, anorexia, weight loss, somatic preoccupation and loss of libido. Regarding its scoring, each item has a corresponding category of depressive symptoms or attitudes. Each of them also describes a behavioral manifestation of depression and each consists of 4 statements, which are ranked in an order and weighed gradually increasing from neutral to the maximum severity. Each of the items gets a score between 0 assigned to the lowest, neutral statement to 3 assigned to the statement describing the maximum severity. Therefore, the total score of the inventory ranges between 0 and 63. Pertinent to its psychometric characteristics, 1978 version of BDI was found to have high internal consistency of .86 (Beck and Steer, 1984). The current study utilized the 1978 revised version of BDI which mainly depends on the time-frame involving the past week before the

administration and now at the time of administration, rather than the day of administration, right now per se.

Turkish adaptation of the BDI was developed by Hisli (1988; cited in Şahin & Savaşır, 1997). The split-half reliability of the Turkish version the inventory was .74 and the test-retest reliability coefficient was between .74 and .86, which were found highly satisfactory. In the present study, test-retest reliability was .89.

#### **2.2.2.2. Hospital Anxiety and Depression Scale (Zigmond and Snaith, 1983)**

Hospital Anxiety and Depression Scale (HADS) which is a 14-item self-report inventory was developed by Zigmond and Snaith in 1983. HADS basically consists of two sub-scales: anxiety measured by the 7 items and depression sub-scales measured by another 7 items as well. The responses are assessed on the basis of a 4-level Likert-type scale; and each of the items gets a score ranging from 0 to 3. Therefore, the total score ranges between 0 to 21 for each sub-scale.

The aim of the scale is not to diagnose patients but to identify the risk groups by screening out the anxiety and depression levels among those who have a bodily deficit or disorder. Regarding its psychometric qualities, Cronbach alpha coefficients for the anxiety sub-scale and depression-scale were found .85 and .78 respectively in the study of determining its validity. Item-total correlations for anxiety and depression sub-scales were found .82 to .85 and .73 to .78 respectively. The split-half reliability for the anxiety sub-scale was  $r = .85$  and for the depression sub-scale was  $r = .81$  (Zigmond and Snaith, 1983).

Aydemir, Güvenir, Küey and Kültür did the Turkish adaptation study of HADS in 2005. According to this study, Cronbach alpha coefficient for the anxiety sub-scale was found .85 and for the depression sub-scale it was found .78. The item-total correlation coefficients for the anxiety sub-scale ranged between .82 and .85, for the depression sub-scale it was between .74 and .78. Split-half reliability coefficient for the anxiety-subscale was  $r = .85$  and for the depression-subscale it was  $r = .72$ . On the basis of ROC analysis, cut-off score for the anxiety sub-scale was found 10 and for the depression sub-scale it was found 7 (Aydemir et al. 2005).

The results of Aydemir et al. (2005) also showed that the correlations between the depression sub-scale of HADS and BDI was found .72 and between anxiety sub-scale of HADS and Trait Anxiety Scale was found .75, indicating a



high correlation between them. Therefore, in the current study BDI and HADS were utilized together to measure the depression levels of the subjects in order to avoid depending on only one scale. In the present study, the test-retest reliability of HADS-anxiety subscale was found .79 and HADS-depression subscale was .80.

### **2.2.3. Procedure and Results**

In order to define the groups of participants on the basis of their depression scores, the students from various departments in METU voluntarily filled the Beck Depression Inventory together with the Hospital Anxiety and Depression Scale. Together with BDI, only the depression sub-scale of HADS was intended to be involved in the identification process, as the aim was to define the groups in terms of their depression scores. These scales were preceded with a demographic questionnaire form at the beginning. In order to have a probable contact to be invited to the participation in the experiment, AMT, in a few weeks after the administration of the scales, the subjects were also asked for their frequently used e-mail addresses and METU-IDs. The questionnaire had an informed consent at the beginning together with a Pre-Study Information Form and all the students signed the consent form reflecting the voluntary participation. After the questionnaires were filled, the students were provided with Post-Study Information Form that describes the aim and nature the study (See Appendix B).

As a result of the analysis, the mean of the Beck Depression Inventory score was 7.68 ( $SD= 6.18$ ) and the mean of the depression sub-scale in HADS was 4.62 ( $SD= 3.36$ ). In order to identify the groups as “depressed” and “non-depressed” the mean values of the depression scores were taken as a base. One standard deviation around the mean was intended to be partialled out which thereby thought to differentiate the groups in an acceptable amount. Therefore, half standard deviation above and half standard deviation below the mean of the depression scores remained for the differentiation.

As a result of the partialling out 1 SD around the mean on the basis of the BDI score, among 272 students filling the depression scales, 77 (28.3%) students were identified as probable non-depressed group having BDI scores below 4; and 70 (25.7%) students were identified as probable depressed group by having BDI scores above 10. However, on the basis of partialling out 1 SD around the mean on

the basis of HADS-Depression sub-scale, 115 (42.3%) cases would be the prospective non-depressed group having HADS-depression scores below 2; and 81 (29.8%) cases would be the depressed group by having HADS-depression scores above 6. When both BDI and HADS-Depression sub-scales were considered, 57 (20.9%) cases were the prospective non-depressed and 53 (19.5%) cases were the prospective depressed group.

In order to identify the groups as depressed and non-depressed, the differentiation was preferred to be conducted on the basis of Beck Depression Scores. As the percentages revealed that identifying on the basis of only BDI scores and both BDI and HADS-Depression scale were close; only HADS-Depression scores have lower discrimination power between groups; and, the “traditional utilization of BDI” to identify the groups in the AMT literature, the groups were identified as depressive and non-depressive on the basis of BDI scores. For this preference on only BDI scores, correlations were also considered. There was a significant correlation between BDI and HADS-Depression sub-scales ( $r=.82, p<.01$ ) for the whole sample. Additionally, the high correlation between these scores was found significant if the cases would be identified only by depending on the BDI scores ( $r=.75, p<.01$ ) and if the differentiation would depend on only HADS-depression score ( $r=.74, p<.01$ ). Therefore, depending on the finding that there remains a high correlation of .75, the traditional way of identifying groups for the experimental phase of the study with the BDI scores were considered.

### **2.3. Study III: Experimental Phase**

#### **2.3.1. Participants**

Totally 88 subjects, who were invited to the experiment in terms of their previous depression scores, participated in the experimental phase of the study. Of the participants, 25 (28.7%) students were male and 62 (71.3%) students were female. The mean age of the participants, ranging between 17 and 30, was 21.24 ( $SD= 2.44$ ). All of the subjects were the students in various departments of the Middle East Technical University. After controlling the accuracy of data file on the basis of the outliers and the normality and linearity assumptions, one case was determined as both a univariate outlier because of having the z-score above 3.29 and a multivariate outlier according to its Mahalanobis distance basing on the value

of  $p < .001$  and it was excluded from the study. The analysis was done with the 87 subjects. The sample characteristics in each group are presented in Table 4.

Table 4. Sample Characteristics in Study III

Variables	(n)	Mean	SD
D (n=43)		20.18	1.18
D-1 (n=22)			
Age		20.18	1.17
Sex			
Male	5		
Female	17		
D-2 (n=21)			
Age		20.19	1.49
Sex			
Male	11		
Female	10		
ND (n=44)		22.27	2.56
ND-1 (n=22)			
Age		21.77	1.91
Sex			
Male	3		
Female	19		
ND-2 (n=22)			
Age		22.86	1.81
Sex			
Male	4		
Female	18		

*Note:*

*D* “overall depressed group”

*D-1* “depressed primed with 1 cue ”

*D-2* “depressed primed with 2 cues ”

*ND* “overall non-depressed group”

*ND-1* “non-depressed primed with 1 cue ”

*ND-2* “non-depressed primed with 2 cues ”

In order to ensure that the groups maintained to differ according to their depression scores, independent t-test analyses were conducted among both the depressed and non-depresses groups. The results showed that depressed and non-depressed group differed from each other on pre-BDI scores ( $t(83) = 21.135$ ,

$p < .001$ ). Moreover, the depressed and non-depressed groups were also different in terms of post-BDI scores as well ( $t(85) = 8.816, p < .001$ ) (See Table 5.).

Table 5. T-Test Analysis for Pre-BDI and Post-BDI scores among Depressed and Non-Depressed Groups

		N	Mean	SD	t	df
Pre-BDI	Depressed	43	15.83	4.23	21.67*	85
	Non-depressed	44	1.52	1.19		
Post-BDI	Depressed	43	12.14	5.90	8.82*	85
	Non-depressed	44	3.09	3.37		

\*  $p < .001$

### 2.3.2. Materials

For the experimental procedure of the current study, Autobiographical Memory Test was used (See Appendix D for instructions and sample items).

#### 2.3.2.1. Autobiographical Memory Test (Williams & Broadbent, 1986)

The Autobiographical Memory Test, which was developed by Williams & Broadbent in 1986, is a cued-recall technique. The test was mainly invented to measure the specificity levels of autobiographical memories of the subjects. Basically, being a cued-recall technique, subjects are primed with a cue word and asked to retrieve a specific autobiographical (personal) memory, which the cue word reminds him/her of.

Although it varies in some studies, it traditionally consists of 5 positively valence emotional cue words (happy, successful, interested, safe, surprised); and, 5 negatively valence emotional cue words (sad, angry, lonely, sad, (emotionally) hurt and clumsy). Therefore, the words involved in the test are mainly proposed to be the words that describe an emotion and are self-referent. As a comparison for the emotionally valence words either as positive or negative, some words which are fundamentally neutral in their emotional valences are suggested to be involved in the test as well. These neutral words greatly vary from one study to another, however, as an example the words “milk”, “newspaper” or “rain” could be given.

Since Autobiographical Memory Test has been used in so many cross cultural studies, it seems that words expressing positive and negative emotions might easily show differences from one culture to another. Therefore, in the present study, the Study I was conducted to ensure that the Turkish cue words to be utilized in the experiment reflect an emotion either towards positive or negative side. The words defined in Study I so that used in the experiment of the present study were as follows. The positive cue words were “mutlu, huzurlu, başarılı, umutlu and neşeli”; negative cue words were “mutsuz, çaresiz, umutsuz, berbat and reddedilmiş”; and neutral ones were “dolap, kül, sabun, perde, kaşık, çorap, toka, çerçeve, piyanist, şişe, poşet, merdiven, anahtar, dükkan and demir” as well as the neutral words of “süt, tiyatro, gazete, banyo, yağmur, and ekmek” which were utilized as the practice items in AMT.

### **2.3.3. Procedure**

In the experimental phase of the study a phase after the screening of the subjects in terms of their depression scores, subjects who had an appointment with the experimenter after an e-mail contact inviting the subject to the experiment came to the experiment laboratory to be tested on AMT. The subjects were tested one-by-one in a laboratory room which located in the Social Sciences Building of METU. The room was dimly lit, was sound attenuated and had a table and two chairs facing each other. The subjects were randomly assigned to the conditions.

Prior to the Autobiographical Memory Test, a standard instruction was read to the subject according to his/her condition. Following the instruction, subjects were given three practice cue-words and it was ensured that the subject understood the task. Then, the subjects were tested on the task. In AMT, subjects were asked to retrieve a specific autobiographical memory which the word (or 2 words together in two-words condition) reminds him/her of. The order of the valences of cue words was in the order of positive, neutral and negative so as to get rid of the juxtaposing the same valences and ensuring to alternate between the valences. The specific memory is instructed to the subject with the following definition. “The memory that you are asked to remember should be a specific one, that is, this event should last less than a day and should happen at a particular time and place.” On this request, each subject was presented with totally 15 cue words (or 2 words together, totally

30 words) one by one on a 15 x 21 cm cards and they were read to the subjects at the same time. By utilizing these cue-words, subjects were asked to recall a specific ABM which he/her reminds.

During the test, the subjects were given maximum 60 seconds for each cue-word to recall an ABM, however, they were free to report the memory regardless of time restriction. The response time was measured with a chronometer (stop-watch). While the experimenter jotted down the memories reported by the subject, the voices of the subjects were also recorded on a type recorder after each of the subjects' permission for the recording was taken. Just following the presentation of each of the cue word, the chronometer was worked and it was stopped just the subject began to report his/her memory. This time was taken as the reaction time and was measured as the latency passed from the presentation of the word(s) and beginning to report the memory recalled. Whenever the experimenter decided that the memory reported is not a specific one on the basis of the instructed criteria, he asked the subjects the prompt of "Could you think of a specific, single event?" Then, the chronometer was started again from the second where it stopped. If the subject gave another response (or responses) within the time limit of 60 seconds, it was reported as well. If it was not so, it was reported as omission. Therefore, the dependent variables in the test were the "reaction time, the percentage of the memory reported was specific" or "if it is not specific, the percentage of the other types of ABMs" (extended or categorical meaning an overgeneral memory, or other kinds). All of these variables were depended on the first response given by the subject to each cue-word.

After the experiment, subjects who were primed with two-cues were asked how they utilized the cues. Then, each subject reported whether he/she utilized two cues simultaneously or consecutively and if consecutively, which cue he/she began to search the memory either first or the second one (See Appendix D). In order to help the subjects remind the memories they had just recalled, they were allowed to see the recorded memories by the experimenter. After the administration of the test, each subject was also asked to fill the BDI and HADS to ensure that they could still be supposed to stay in their intended groups either depressed or non-depressed. Following the scales, subjects were orally informed about the experiment and were provided with responses for their all questions on the experiment.

### 2.3.4. Design of the Experiment

The experimental design of the present study is a 2 (groups: students with low depression score and students with high depression scores) x 2 (number of the cue words: one vs. two) x 3 (emotional valence of the cue words: positive, negative and neutral) factorial design with the repeated measure on the last factor. The experimental design of the study is presented in Figure 4.

Therefore, for the statistical analysis, a 2 X 2 X 3 factorial ANOVA with the repeated measures in the last factor were conducted for each dependent variable (e.g., response time, specificity or overgenerality of memories separately) and if necessary, post-hoc tests were conducted after ANOVA analysis to find out group differences.

GROUPS (N=87)			
Depressed (n=43)		Non-Depressed (n=44)	
Primed with 1 Cue (n=22)	Primed with 2 Cues (n=21)	Primed with 1 Cue (n=22)	Primed with 2 Cues (n=22)
Practice Items	Practice Items	Practice Items	Practice Items
0	0 and 0	0	0 and 0
0	0 and 0	0	0 and 0
0	0 and 0	0	0 and 0
Experiment	Experiment	Experiment	Experiment
+	0 and +	+	0 and +
0	0 and 0	0	0 and 0
-	0 and -	-	0 and -
+	0 and +	+	0 and +
0	0 and 0	0	0 and 0
-	0 and -	-	0 and -
+	0 and +	+	0 and +
0	0 and 0	0	0 and 0
-	0 and -	-	0 and -
+	0 and +	+	0 and +
0	0 and 0	0	0 and 0
-	0 and -	-	0 and -

Figure 4. Experimental Design of Study III

Note:

(0) = Neutral cue-word; (+) = Positive valence cue word; (-) = Negative valence cue word

0 and 0 = The step where the subject is primed with 2 neutral cues

0 and + = The step where the subject is primed with 1 neutral cue with 1 positive cue word

0 and - = The step where the subject is primed with 1 neutral cue with 1 negative cue word

## CHAPTER 3

### RESULTS

Before the statistical analysis, each ABM recalled by the subjects was coded in terms of its category. In the statistical analysis, a 2 (groups: students with low depression score and students with high depression scores) X 2 (number of the cue words: one vs. two) X 3 factorial ANOVA with the repeated measures in the last factor were conducted for each dependent variable (e.g., specificity of memories, overgenerality of memories; and response time) and if necessary, Tukey's post-hoc tests were conducted after ANOVA analysis to find out group differences.

#### 3.1. Coding of ABMs

The ABMs recalled by each subject was coded as its nature whether it was specific or not, if not what the type of it could be. The categories of coding were "specific", "extended", "categoric", "other kind" or "no response". All of the memories recalled by each subject were coded by two blind raters. The Cohen's Kappa indicating the inter-rater reliability was highly significant (.83). With another indication of agreement, two raters coded 95.5% of the memories recalled same. Table 6. shows the number of ABMs recalled and coded according to their categories following the agreement among raters.

#### 3.2. ANOVA Results

##### 3.2.1. Analysis on the Specificity of ABMs

It was hypothesized that the students having high depression scores would recall less specific ABMs as a response to both positively and negatively valence



cue words but not to the neutral cue words than those who have less depression scores. The students primed with one cue in AMT were also hypothesized to recall less specific ABMs for the positive and negative emotional words but not to the neutral cues than those primed with two cues in AMT. That is, there would be the main effects of both depression level and number of cues. An interaction effect of these variables was also expected on the specificity levels of ABMs recalled as a response to the cue words.

Table 6. Number of ABM Categories Recalled in Each Group

		<u>Depressed</u>		<i>Total</i>	<u>Non-depressed</u>		<i>Total</i>	<i>Total</i>
		<u>1 Cue</u>	<u>2 Cues</u>		<u>1 Cue</u>	<u>2 Cues</u>		
Positives	Specific	61	97	158	91	95	186	344
	Extended	6	5	11	2	2	4	15
	Categoric	20	5	25	6	7	13	38
	Other	18	2	20	1	1	2	22
	No reply	5	1	6	5	5	10	16
								435
Negatives	Specific	68	93	161	94	93	187	348
	Extended	13	4	17	0	1	1	18
	Categoric	7	3	10	5	5	10	20
	Other	10	5	15	3	3	6	21
	No reply	12	4	16	3	8	11	27
								434
Neutrals	Specific	89	90	179	96	101	197	376
	Extended	2	0	2	2	0	2	4
	Categoric	6	7	13	5	5	10	23
	Other	1	0	1	6	2	8	9
	No reply	6	11	17	1	2	3	20
								432
								<i>Grand Total</i> 1301

First, the means of specific ABMs recalled in all conditions are indicated in Table 7. and an ANOVA table for all effects is presented in Table 8. in order to present the whole picture depicting all significance tests in the analysis.

Table 7. Descriptive Statistics for the Specificity of the ABM recalls According to Cue Type, Depression Level and Cue Number

<i>Cue Type</i>	<i>Depression Level</i>	<i>Cue Number</i>	<i>Mean</i>	<i>SD</i>	<i>N</i>
<i>Specificity Levels for Positive Cues</i>	Depressed	Primed with 1 Cue	55.45	19.45	22
		Primed with 2 cues	86.67	18.26	21
		Total	70.70	24.44	43
	Non-depressed	Primed with 1 Cue	88.18	13.32	22
		Primed with 2 cues	86.36	14.32	22
		Total	87.27	13.70	44
	Total	Primed with 1 Cue	71.82	23.36	44
		Primed with 2 cues	86.51	16.17	43
		Total	79.08	21.33	87
<i>Specificity Levels for Negative Cue</i>	Depressed	Primed with 1 Cue	61.82	26.84	22
		Primed with 2 cues	89.52	16.27	21
		Total	75.35	26.13	43
	Non-depressed	Primed with 1 Cue	84.55	16.25	22
		Primed with 2 cues	84.55	15.03	22
		Total	84.55	15.47	44
	Total	Primed with 1 Cue	73.18	24.76	44
		Primed with 2 cues	86.98	15.67	43
		Total	80.00	21.78	87
<i>Specificity Levels for Neutral Cues</i>	Depressed	Primed with 1 Cue	87.27	15.79	22
		Primed with 2 cues	84.76	18.87	21
		Total	86.05	17.20	43
	Non-depressed	Primed with 1 Cue	91.82	11.81	22
		Primed with 2 cues	81.82	20.39	22
		Total	86.82	17.22	44
	Total	Primed with 1 Cue	89.55	13.97	44
		Primed with 2 cues	83.26	19.48	43
		Total	86.44	17.12	87

Table 8. ANOVA Table for the Specificity of ABM Recalls

Source	df	MS	F	Sig.	$\eta^2$
Dep. Level	1	4856.69	13.16	.000	.14
Cue Number	1	3602.07	9.76	.002	.11
Dep. level X Cue Number	1	8433.16	22.85	.000	.22
Error	83	369.11			
Cue Type	2	1351.94	4.80	.010	.06
Cue Type X Dep. Level	2	1291.90	4.59	.011	.05
Cue Type X Cue Number	2	3058.46	10.86	.000	.12
Cue Type X Dep. Level X Cue Number	2	986.87	3.05	.034	.04
Error	166	281.57			

The results of the analysis showed that there was a main effect of depression level ( $F(1, 83) = 13.16, p < .001, \eta^2 = .14$ ). The depressed group was found to be

less specific ( $M=77.58$ ) than the non-depressed group ( $M=86.21$ ) on the specificity levels of the ABMs recalled. There was also a main effect of cue number on the specificity levels ( $F(1, 83) = 9.76, p < .01, \eta^2 = .11$ ). The students who were primed with one cue in AMT were less specific than the students who were primed with two cues ( $M=78.18, M=85.61$  respectively). The results also indicated that on the specificity of ABMs recalled, there was a main effect of cue type ( $F(2,166) = 4.80, p < .05, \eta^2 = .06$ ). Overall, Tukey post-hoc analysis showed that the subjects recalled less specific ABMs as a response to the positive ( $M= 79.17$ ) emotional cues than to the neutral cue words ( $M=86.42$ ),  $p < .05$ . However, they did not differ from each other on the specificity of the ABMs recalled as a response to the negative ( $M=80.11$ ) and neutral ( $M=86.42$ ) cue words in AMT; and, as a response to the positive ( $M=79.17$ ) and negative cues ( $M=80.11$ ).

An interaction effect of depression level and cue number was also found ( $F(1, 83) = 22.85, p < .01, \eta^2 = .22$ ) (See Figure 5). According to Tukey's analysis, although the depressed group primed with one cue recalled less specific ABMs ( $M=68.18$ ) than the depressed group primed with two cues ( $M=86.98$ ),  $p < .05$ , non-depressed group primed with one cue ( $M=88.18$ ) and two cues in AMT ( $M= 84.24$ ) did not differ in terms of specificity of ABMs recalled. For those primed with two cues, specificity level of ABM recall did not change with the depression level; however, for those primed with a single cue, the depressed participants ( $M = 68.18$ ) recalled less specific ABMs as compared to the non-depressed participants ( $M = 84.24$ ),  $p < .05$  (see Figure 5).

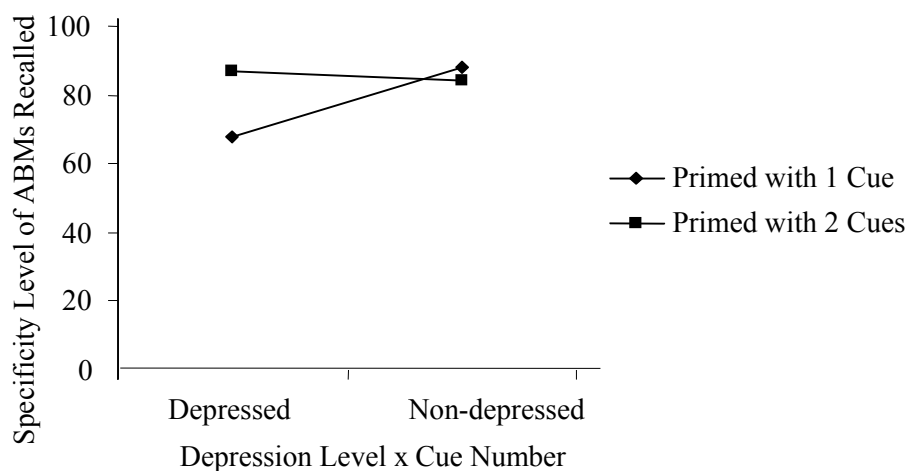


Figure 5. Specificity of the ABM Recalls for Depression Level and Cue Number

As it is seen in Figure 6, the interaction effect of cue type and depression level was also significant ( $F(2, 166) = 4.59, p < .05, \eta^2 = .52$ ). Tukey's post-hoc analysis revealed that the depressed group recalled less specific ABMs for positive cues ( $M=71.06$ ) than for neutral cues ( $M=86.03$ ),  $p < .05$ . But, for the depressed participants specificity of ABMs did not change when they were primed with positive ( $M=71.06$ ) or negative cues ( $M=75.67$ ); similarly, this difference was not observed when they were primed with negative ( $M=75.67$ ) or neutral cues ( $M=86.02$ ). For the non-depressed participants, specificity level of ABMs did not change when they were primed with either positive ( $M=87.27$ ) or negative ( $M=84.55$ ) or neutral cues ( $M=86.82$ ). Additionally, the depressed participants who were primed with positive cues recalled less specific ABMs ( $M=71.06$ ) as compared to the non-depressed participants ( $M=87.27$ ),  $p < .05$ ; however, for negative and neutral cues, the depressed and non-depressed participants did not differ on the specificity of ABM recalls ( $M=75.67, M=84.55$ ; and,  $M=86.02, M=86.82$  respectively). (See Table 9).

Table 9. Descriptive Statistics for the Specificity of ABM Recalls Depression Level and Cue Type

Depression Level	Cue Type	M	SD
Depressed	Positive Cues	71.06	24.44
	Negative Cues	75.67	26.13
	Neutral Cues	86.02	17.20
Non-depressed	Positive Cues	87.27	13.70
	Negative Cues	84.55	15.42
	Neutral Cues	86.82	17.22

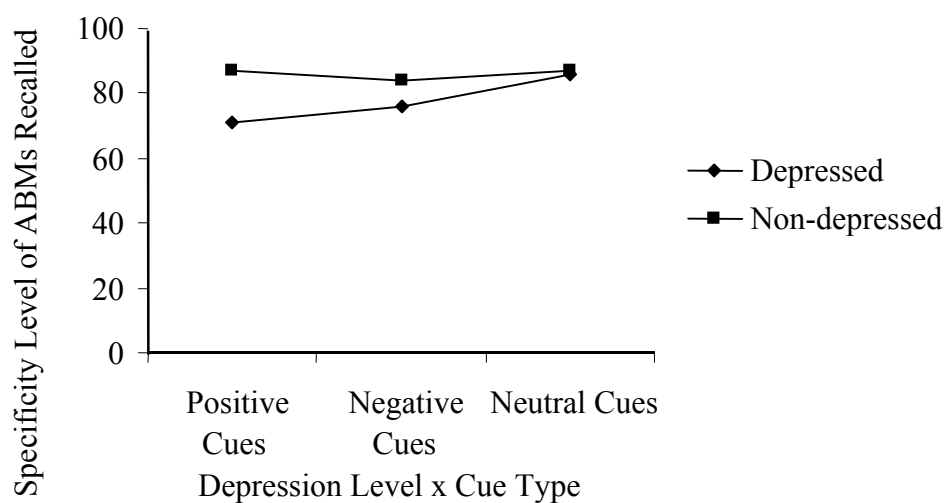


Figure 6. Specificity of the ABM Recalls for Depression Level and Cue Type

Moreover, as it is seen in the Figure 7., the interaction between cue type and cue number was found significant ( $F(2, 166) = 10.86, p < .001, \eta^2 = .17$ ) as well. Tukey's post hoc comparisons showed that when subjects primed with one cue, they recalled less specific ABMs as a response to positive cues ( $M=71.82$ ) than neutral cues ( $M=89.55$ ),  $p < .05$ ; similarly, they were less specific for negative cues ( $M=73.18$ ) as compared to neutral cues ( $M=89.55$ ),  $p < .05$ . However, for those primed with two cues, specificity level of ABM did not change as a response to positive ( $M=86.52$ ), negative ( $M=87.04$ ) and neutral cues ( $M=89.55$ ). Furthermore, subjects were also less specific for positive cues when they were primed with one cue than those primed with two cues ( $M=71.82, M=86.52$  respectively),  $p < .05$ . For the negative cues, subjects were also less specific on ABM recall when they were primed with one cue than those primed with two cues ( $M=73.18, M=87.04$  respectively),  $p < .05$ . For the neutral cues, however, this difference was not influenced by the cue number (See Table 10).

Table 10. Descriptive Statistics for the Specificity of ABM Recalls According to Cue Type and Cue Number

<i>Cue Number</i>	<i>Cue Type</i>	<i>M</i>	<i>SD</i>
Primed with 1 Cue	Positive Cues	71.82	23.35
	Negative Cues	73.18	24.76
	Neutral Cues	89.55	13.97
Primed with 2 Cue	Positive Cues	86.52	16.17
	Negative Cues	87.04	15.67
	Neutral Cues	83.29	19.48

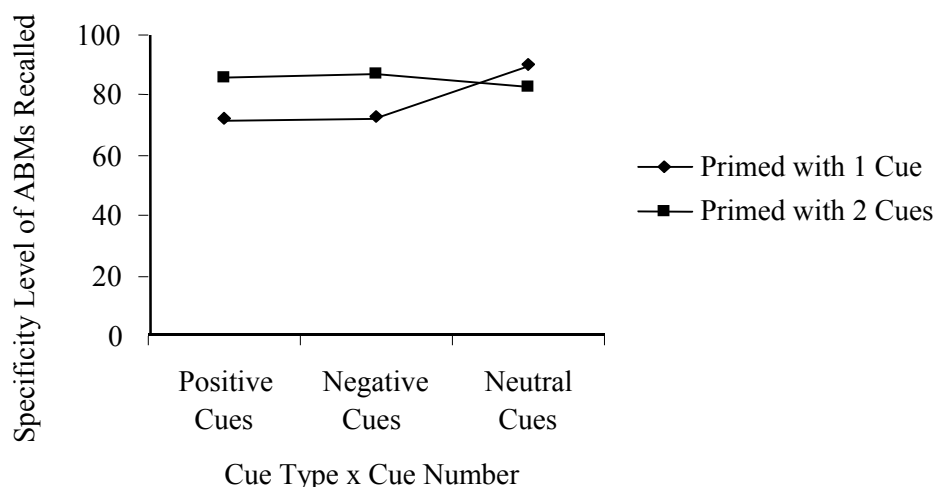


Figure 7. Specificity of the ABM Recalls for Cue Type and Cue Number

The results showed that there was an interaction between cue type, cue number and depression level ( $F(2, 166) = 986.87, p < .05, \eta^2 = .04$ ) (See Figure 8). Tukey's post-hoc analysis revealed that when depressed participants primed with one cue, they were found to be less specific on ABM recall for positive ( $M=55.46$ ) or negative cues ( $M=61.82$ ) than neutral cues ( $M=87.27$ ),  $p < .05$ . However, they did not differ as a response to positive or negative cues ( $M=55.46, M=61.82$  respectively). When the depressed participants primed with one cue in AMT, they recalled less specific ABMs than the depressed participants primed with two cues as a response to positive cues ( $M=55.46, M=86.67$  respectively),  $p < .05$ . Same pattern was also found as a response to negative cues ( $M=71.82, M=89.52$  respectively),  $p < .05$ , but they did not differ as a response to neutral cue words ( $M=87.27, M=84.76$  respectively). However, when the depressed group was primed with two cues, cue type did not have an influence on the specificity of ABMs. Also, the depressed participants who were primed with one cue were also less specific for the positive cues ( $M=55.46$ ) than the non-depressed subjects for positive cues ( $M=84.55$ ); similarly, they were also less specific for negative cues ( $M=61.82$ ) than the non-depressed subjects primed with two cues and recalled ABMs as a response to negative cues as well ( $M=84.55$ ),  $p < .05$ . When they were primed with one cue, however, depressed and non-depressed subjects did not differ in terms of specificity of ABM recalls for neutral cues ( $M=87.27, M=91.82$  respectively). Lastly, the results also showed that the non-depressed group primed with one or two cues did not differ in terms of cue type. (See Table 11).

Table 11. Descriptive Statistics for the Specificity of the ABM recalls According to Depression Level and Cue Number

Depression Level	Cue Number	Cue Type	M	SD
Depressed (n=43)	Primed with 1 Cue (n=22)	Positive Cues	55.46	19.45
		Negative Cues	61.82	26.84
		Neutral Cues	87.27	15.79
	Primed with 2 Cue (n=21)	Positive Cues	86.67	18.26
		Negative Cues	89.52	16.27
		Neutral Cues	84.76	18.87
Non-depressed (n=44)	Primed with 1 Cue (n=22)	Positive Cues	88.18	13.32
		Negative Cues	84.55	16.25
		Neutral Cues	91.82	11.81
	Primed with 2 Cues (n=22)	Positive Cues	86.36	14.32
		Negative Cues	84.55	15.03
		Neutral Cues	81.82	20.38

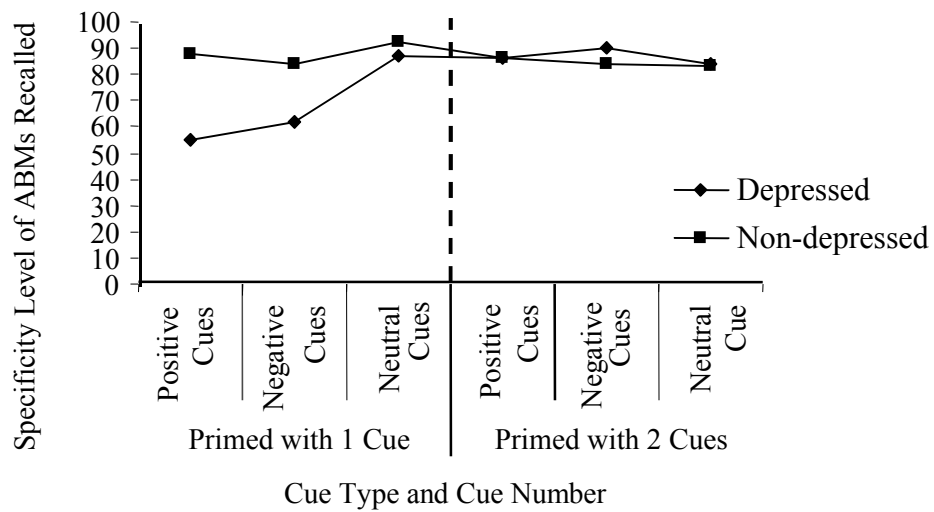


Figure 8. Specificity of ABM Recalls for Cue Type, Depression Level and Cue Number

### 3.2.2. Analysis on the Overgenerality of ABMs

According to the 3<sup>rd</sup> and 4<sup>th</sup> hypotheses, the specificity level of the ABMs was analyzed in terms of overgeneral recall as well. For the analysis, a 2 (group: students with low depression scores and students with high depression scores) X 2 (number of cue words: one vs. two) X 3 (overgeneral recall: for positives, negatives and neutral cues) factorial ANOVA with the repeated measure on the last factor was conducted. For the dependent variable of overgeneral recall, extended and categoric ABM coding types were reduced into one score of overgeneral ABMs. The overall means of the overgeneral ABM recall in each group is indicated in Table 12. and an ANOVA table was presented in Table 13.

Table 12. Descriptive Statistics for the Overgenerality of ABM Recalls According to Cue Type, Depression Level and Cue Number

<i>Cue Type</i>	<i>Depression Level</i>	<i>Cue Number</i>	<i>M</i>	<i>SD</i>	<i>N</i>
<i>O.generality For Positive Cues</i>	Depressed	Primed with 1 Cue	11.82	11.40	22
		Primed with 2 cues	3.81	5.90	21
		Total	7.91	9.89	43
	Non-depressed	Primed with 1 Cue	4.55	5.96	22
		Primed with 2 cues	4.09	5.03	22
		Total	4.32	5.45	44
	Total	Primed with 1 Cue	8.18	9.71	44
		Primed with 2 cues	3.95	5.41	43
		Total	6.09	8.12	87

Table 12: Descriptive Statistics for the Overgenerality of ABM Recalls According to Cue Type, Depression Level and Cue Number (*Continued*).

<i>Cue Type</i>	<i>Depression Level</i>	<i>Cue Number</i>	<i>M</i>	<i>SD</i>	<i>N</i>
<i>O.generality For Negative Cues</i>	Depressed	Primed with 1 Cue	9.09	10.19	22
		Primed with 2 cues	2.38	5.39	21
		Total	5.81	8.79	43
	Non-depressed	Primed with 1 Cue	3.18	5.68	22
		Primed with 2 cues	2.73	4.56	22
		Total	2.95	5.09	44
	Total	Primed with 1 Cue	6.14	8.68	44
		Primed with 2 cues	2.56	4.92	43
		Total	4.37	7.27	87
<i>O.generality For Neutral Cues</i>	Depressed	Primed with 1 Cue	3.18	5.68	22
		Primed with 2 cues	3.81	7.40	21
		Total	3.49	6.50	43
	Non-depressed	Primed with 1 Cue	2.27	5.28	22
		Primed with 2 cues	3.18	6.46	22
		Total	2.73	5.85	44
	Total	Primed with 1 Cue	2.73	5.44	44
		Primed with 2 cues	3.49	6.86	43
		Total	3.10	6.16	87

Table 13. ANOVA Table for the Overgenerality of ABM Recalls

Source	df	MS	F	Sig.	$\eta^2$
Dep. Level	1	359.73	6.16	.015	.07
Cue Number	1	359.73	6.16	.015	.07
Dep. level X Cue Number	1	359.73	6.16	.015	.07
Error	83	58.73			
Cue Type	2	191.51	4.56	.012	.05
Cue Type X Dep. Level	2	43.48	1.04	.357	.01
Cue Type X Cue Number	2	160.70	3.83	.024	.04
Cue Type X Dep. Level X Cue Number	2	81.77	1.95	.146	.02
Error	166	41.98			

The results showed that there was a main effect of depression level on the overgeneral recall of ABMs ( $F(1, 83) = 6.16, p < .05, \eta^2 = .07$ ). The depressed subjects were found to be more overgeneral ( $M = 5.68$ ) on ABM recall than the non-



depressed subjects ( $M=3.33$ ). It was also found that there was a main effect of cue number on overgenerality ( $F(1, 83) = 6.16, p < .05, \eta^2 = .07$ ). According to this, those who were primed with one cue were more overgeneral than the subjects primed with two cues ( $M=5.68, M=3.33$  respectively). Moreover, it was found that there was a main effect of cue type on the overgeneral recall ( $F(2, 166) = 4.56, p < .05, \eta^2 = .05$ ). Tukey's post-hoc results indicated that subjects did not differ on the overgenerality level between positive ( $M=6.09$ ) and negative cues ( $M=4.37$ ) as well as between negative ( $M=4.37$ ) and neutral cues ( $M=3.10$ ). However, subjects were found more overgeneral as a response to positive cues ( $M=6.09$ ) than neutral ones ( $M=3.10$ ),  $p < .05$ .

The results also indicated that there was an interaction effect between depression level and cue number ( $F(1, 83) = 6.16, p < .05, \eta^2 = .07$ ). Tukey's post-hoc mean comparisons revealed that depressed subjects primed with one cue were more overgeneral ( $M=8.03$ ) than depressed subjects primed with two cues ( $M=3.33$ ). However, for non-depressed subjects, number of cues did not influence the overgenerality of the ABM recalls. Moreover, depressed subjects when they were primed with one cue recalled more overgeneral ABMs than non-depressed subjects ( $M=8.03, M=3.33$  respectively),  $p < .05$ ; though when they were primed with one two cues, depression level did not influence the overgenerality of ABM recalls (See Figure 9).

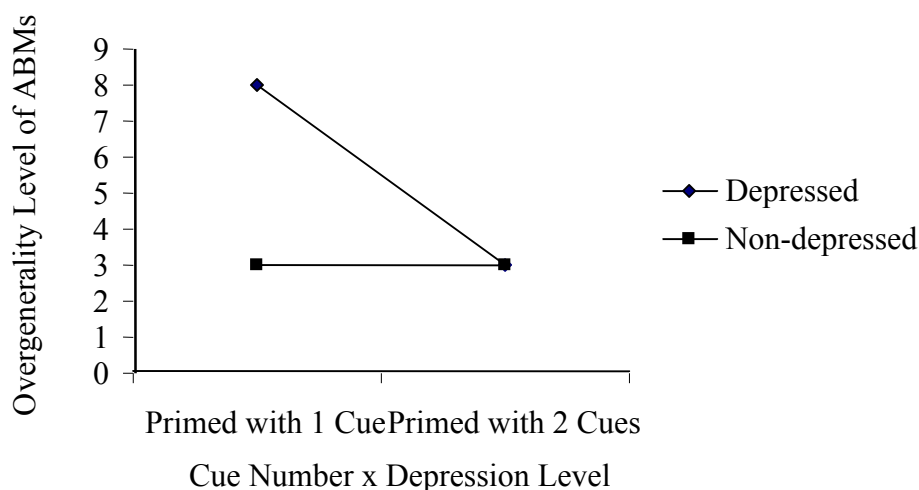


Figure 9. Overgenerality of ABM Recalls for Cue Number and Depression Level

The interaction between cue type and cue number was also found significant ( $F(2,166) = 3.83, p < .05, \eta^2 = .04$ ). Tukey's post-hoc analysis revealed that when subjects were primed with one cue, they were more overgeneral as a response to positive cues ( $M = 8.18$ ) than neutral ones ( $M = 3.50$ ); and, they were also more overgeneral as a response to negative cues ( $M = 6.14$ ) than neutral cues ( $M = 3.50$ ) as well,  $p < .05$ . However, subjects did not differ in terms of overgeneral ABM recall as a response to positive and negative cues ( $M = 8.18, M = 6.14$  respectively). Moreover, when subjects were primed with two cues, cue type did not change the overgenerality level. However, the results showed that those primed with one cue were more overgeneral than those primed with two cues as a response to positive as well as negative cues ( $M = 8.18, M = 3.95$ ; and,  $M = 6.14, M = 2.54$  respectively);  $p < .05$ . Such a difference between the groups primed with one or two cues was not found for the responses given to neutral cues (See Figure 10).

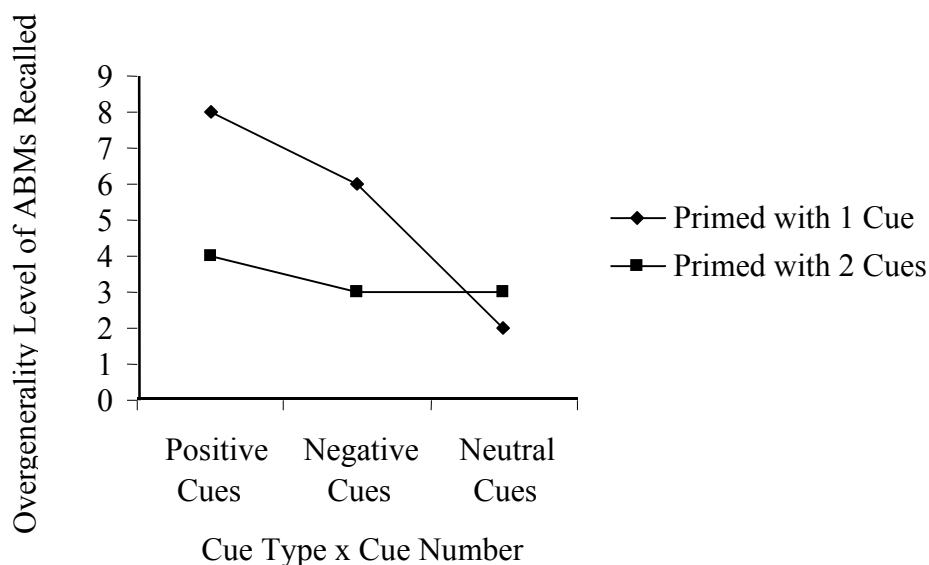


Figure 10. Overgenerality of ABM Recalls for Cue Number and Cue Type

In this analysis, however, the results showed that the interaction between cue type and depression level and the interaction between cue type, depression level and cue number were not significant ( $F(2, 166) = 1.07, p > .05, \eta^2 = .01$ ;  $F(2, 166) = 1.95, p > .05, \eta^2 = .02$  respectively).

### 3.2.3. Analysis on the Reaction Times for ABM Recall

For testing the 5<sup>th</sup> hypothesis, a further ANOVA was conducted to investigate the reaction times measured as latencies for ABM recall. For this analysis, a 2 (group: students having high depression scores vs. students having low depression scores) X 2 (cue number: one vs. two) X 3 (reaction time: on positive, negative and neutral cues) factorial ANOVA with repeated measures on the last factor was conducted. The overall means of the reactions times in ABM recall in each group according to cue type, depression level and cue number is indicated in Table 14 and an ANOVA table is presented in Table 15 below.

Table 14. Descriptive Statistics for the Reaction Times of ABM Recalls According to Cue Type, Depression Level and Cue Number

<i>Cue Type</i>	<i>Depression Level</i>	<i>Cue Number</i>	<i>M</i>	<i>SD</i>	<i>N</i>
<i>Reaction Time Passed For Positive Cues</i>	Depressed	Primed with 1 Cue	14.60	6.83	22
		Primed with 2 cues	16.83	6.32	21
		<b>Total</b>	<b>15.69</b>	<b>6.60</b>	<b>43</b>
	Non-depressed	Primed with 1 Cue	13.33	6.98	22
		Primed with 2 cues	15.77	6.75	22
		<b>Total</b>	<b>14.55</b>	<b>6.90</b>	<b>44</b>
	Total	Primed with 1 Cue	13.96	6.85	44
		Primed with 2 cues	16.29	6.49	43
		<b>Total</b>	<b>15.11</b>	<b>6.74</b>	<b>87</b>
<i>Reaction Time Passed For Negative Cues</i>	Depressed	Primed with 1 Cue	18.20	9.25	22
		Primed with 2 cues	17.34	5.86	21
		<b>Total</b>	<b>17.78</b>	<b>7.70</b>	<b>43</b>
	Non-depressed	Primed with 1 Cue	14.94	6.84	22
		Primed with 2 cues	15.70	7.62	22
		<b>Total</b>	<b>15.32</b>	<b>7.17</b>	<b>44</b>
	Total	Primed with 1 Cue	16.57	8.21	44
		Primed with 2 cues	16.50	6.79	43
		<b>Total</b>	<b>16.54</b>	<b>7.50</b>	<b>87</b>
<i>Reaction Time Passed For Neutral Cues</i>	Depressed	Primed with 1 Cue	1.73	6.19	22
		Primed with 2 cues	19.52	7.53	21
		<b>Total</b>	<b>15.53</b>	<b>7.85</b>	<b>43</b>
	Non-depressed	Primed with 1 Cue	8.11	4.31	22
		Primed with 2 cues	17.92	8.24	22
		<b>Total</b>	<b>13.01</b>	<b>8.18</b>	<b>44</b>
	Total	Primed with 1 Cue	9.92	5.58	44
		Primed with 2 cues	18.70	7.84	43
		<b>Total</b>	<b>14.26</b>	<b>8.07</b>	<b>87</b>

Table 15. ANOVA Table for the Reaction Times of ABM Recalls

Source	df	MS	F	Sig.	$\eta^2$
Dep. Level	1	280.69	2.71	.103	.03
Cue Number	1	892.42	8.62	.004	.09
Dep. level X Cue Number	1	26.60	.26	.614	.003
Error	83	103.50			
Cue Type	2	110.38	5.08	.007	.06
Cue Type X Dep. Level	2	13.65	.63	.535	.01
Cue Type X Cue Number	2	456.42	21.01	.000	.20
Cue Type X Dep. Level X Cue Number	2	4.96	.23	.796	.003
Error	166	21.73			

According to the ANOVA results on reaction time of recalling ABMs, no main effect of depression on reaction time of ABMs was found ( $F(1, 83) = 2.71, p > .05$ ). However, it was found that there was a main effect of cue number on the reaction time ( $F(1, 83) = 8.62, p < .01, \eta^2 = .09$ ). The students had lower reaction times for recalling ABMs when they were primed with one cue ( $M = 13.48$ ) as compared to two cues in AMT ( $M = 17.18$ ). The results also revealed that the cue type had a main effect on reaction time of ABM recall ( $F(2, 166) = 5.08, p < .01, \eta^2 = .06$ ). Pair-wise comparison of means indicated that the subjects did not differ in terms of reaction time of ABM recall between positive and negative cues ( $M = 15.11, M = 16.54$  respectively); and, between positive ( $M = 15.11$ ) and neutral cues ( $M = 14.26$ ). However, subjects had higher reaction times of ABM recall on negative cues ( $M = 16.54$ ) than neutral ones ( $M = 14.26$ ),  $p < .05$ .

The interaction effect between depression level and cue number was not significant ( $F(1, 83) = .26, p > .05$ ). Additionally, the interaction between cue type and depression level; and, the interaction between cue type, depression level and cue number were not found significant ( $F(2, 166) = .63, p > .05$  and  $F(2, 166) = .23, p > .05$  respectively). However, the interaction between cue type and cue number on the reaction time was found significant ( $F(2, 166) = 21.008, p < .001, \eta^2 = .202$ ). Tukey's post-hoc mean comparison resulted that when subjects primed with one cue they had lower reaction time on ABM recall for neutral cues ( $M = 9.92$ ) than those primed also with one cue and recalled ABMs for positive ( $M = 13.96$ ) and negative cues ( $M = 16.57$ ) (See Table 16). Also, subjects primed with one cue had

lower reaction time for positive cues ( $M=13.96$ ) than those primed with one cue and recalled ABMs for negative cues ( $M=16.57$ ). The results also indicated that although those who were primed with one cue or two cues did not differ on reaction time as a response to positive and negative cues ( $M=13.96$ ,  $M=16.30$ ;  $M=16.57$ ,  $M=16.52$  respectively), the subjects primed with two cues were faster on ABM recall ( $M=9.92$ ) than those who were primed with two cues ( $M=18.72$ ) as a response to neutral cues;  $p < .05$ . For the subjects who were primed with two cues, cue type did not influence the reaction time of ABM recall (See Figure 11).

Table 16. Descriptive Statistics for the Reaction Times of ABM Recalls According to Cue Number and Cue Type

<i>Cue Number</i>	<i>Cue Type</i>	<i>M</i>	<i>SD</i>
Primed with 1 cue	Positive Cues	13.96	6.85
	Negative Cue	16.57	8.21
	Neutral Cue	9.92	5.58
Primed with 2 cues	Positive Cues	16.30	6.49
	Negative Cue	16.52	6.79
	Neutral Cue	18.72	7.84

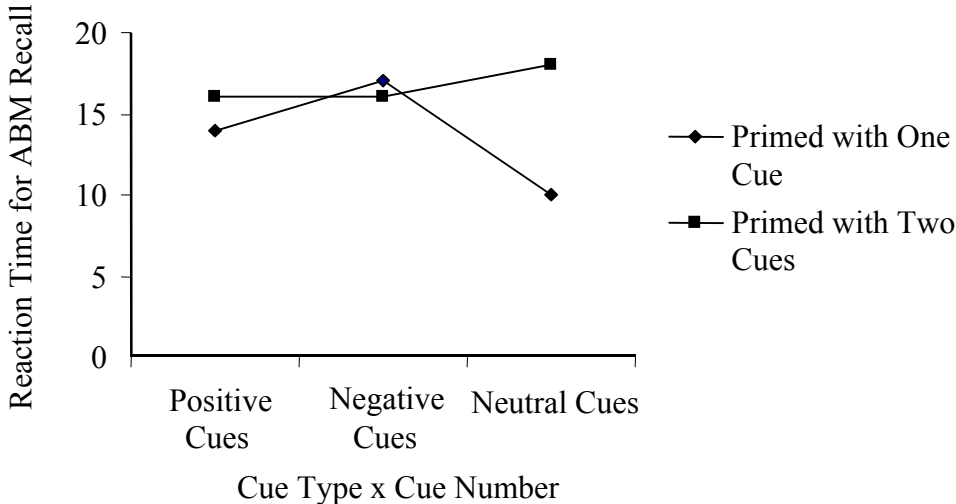


Figure 11. Reaction Times of ABM Recalls for Cue Type and Cue Number

### 3.3. Chi Square Analyses

#### 3.3.1. Analyses on the Cue Utilization

Regarding the utilization of cues, it was hypothesized in the 6<sup>th</sup> hypothesis that the subjects would use cues more consecutively than simultaneously when the subjects were primed with two cues together in AMT.

In order to obtain results, a chi-square test of independence was conducted to investigate the way of utilizing cues. As a result of the analysis, it was found that the subjects reported to utilize two cues in AMT more consecutively than simultaneously ( $\chi^2 (1, N=584) = 101.95, p < .001$ ). Whereas 71.9% of the memories were reported to be utilized as consecutively, only 29.1% of the memories were reported to be utilized as simultaneously (See lower part of Table 17.). To examine whether the cue utilization differs with regards to depression level, a chi square analysis revealed that relationship is marginally significant ( $\chi^2 (1, N=584) = 3.54, p = .06$ ). As it is presented in the upper part of the Table 17, both depressed and non-depressed people had an inclination to utilize the cues consecutively.

Table 17. Crosstabulation Between Depression Level and Way of Cue Utilization

<i>Depression Level</i>	<i>Way of Cue Utilization</i>		
	<i>Simultaneously</i>	<i>Consecutively</i>	<i>Row Total</i>
<i>Depressed</i>	93 (32.7%)	191 (67.3%)	284
<i>Non-depressed</i>	77 (25.7%)	223 (74.3%)	300
<i>Whole Sample</i>	170 (29.1%)	414 (71.9%)	584

A further chi square analysis conducted to examine how subjects utilized the cues either simultaneously or consecutively with regards to cue types (positive, negative or neutral cue valence) revealed that the difference is not significant ( $\chi^2 (2, N=584) = 2.56, p > .05$ ).

Related to the 6<sup>th</sup> hypothesis, it was also hypothesized that the subjects primed with two cues together in AMT would utilize the “first neutral cue more than” the second cue; and they would also utilize the first cue more than the second one when the valence of the second cue was emotional. If the second cue is again a neutral cue, choice of the utilization would be almost the same.

For testing this hypothesis, a further chi-square analysis was conducted. It was found that the relation between cue valences and preference of utilizing first or second cue was significant ( $\chi^2 (2, N=463) = 16.38, p < .001$ ). The subjects utilized the first cues more than (68.3%) the second one (31.7%) if they reported that they utilized them consecutively (See the lower part of Table 18.). Further chi square analyses conducted to investigate the frequency differences between groups showed that when subjects were primed with two cues together they utilized the first neutral cues more (73.8%) than the paired “positive cue” (26.2%) ( $\chi^2 (1, N=164) = 37.10, p < .001$ ). It was also found that the subjects also utilized the first neutral cue (74.1%) more than the paired “negative cue” (25.9%) ( $\chi^2 (1, N=162) = 37.56, p < .001$ ). However, as expected, subjects were found to utilize the first neutral cue (54.7%) and paired neutral cue to it almost equally (45.3%) ( $\chi^2 (1, N=137) = 1.23, p > .05$ ). The upper part of the Table 18. shows the percentages of preferences of sequence with regards to cue type.

Table 18. Crosstabulation Between Cue Types and Preferences for Sequence

<i>Cue Type</i>	<i>Preferences for Sequence</i>		<i>Row Total</i>
	<i>First Cue</i>	<i>Second Cue</i>	
<i>Positive paired cue</i>	121 (73.8%)	43 (26.2%)	164
<i>Negative paired cue</i>	120 (74.1%)	42 (25.9%)	162
<i>Neutral paired cue</i>	75 (54.7%)	42 (45.3%)	137
<i>Regardless of the</i>	316 (68.3%)	147 (31.7%)	463
<i>Cue Valence</i>			

The way of subjects in utilizing the cues either as consecutively or simultaneously; and, their preferences of sequence either the first neutral cue or the second paired one were also analyzed among the group of depressed vs. non-depressed subjects as well.

A chi square analysis conducted to investigate the preferences of sequence among depressed vs. non-depressed group excluding the neutral-neutral pairs revealed that the relationship between these variables was significant ( $\chi^2 (1, N=326) = 7.32, p < .01$ ). The depressed subjects were found to prefer first utilizing the first neutral cue in searching ABMs more (66.7%) than the second paired

cue (38.3%) in sequence ( $\chi^2 (1, N=147) =16.33, p<. 001$ ). The non-depressed group was also found to prefer more the first cue in sequence first (79.9%) than the second paired cue (20.1%) ( $\chi^2 (1, N=179)= 63.96, p<. 001$ ). Table 19 shows the percentages of preferences for sequences among depressed and non-depressed groups.

Table 19. Crosstabulation Between Depression Level and Preferences for Sequence

<i>Depression Level</i>	<i>Preferences for Sequence</i>		<i>Row Total</i>
	<i>First Cue</i>	<i>Second Cue</i>	
<i>Depressed</i>	98 (66.7%)	49 (38.3%)	147
<i>Non-depressed</i>	143 (79.9%)	36 (20.1%)	179
	241 (73.9%)	85 (26.1%)	326



## CHAPTER 4

### DISCUSSION

In this chapter, the main findings of the current study were discussed on the basis of the theoretical propositions speculated so as to shed some more light onto the overgenerality phenomenon among depressed people. Therefore, the aim of the study was to investigate the overgenerality phenomenon and mainly to draw some inferences with regards to the possible encoding problems of the autobiographical memories at the time of storage. In the following sections, the main findings of the current study are discussed which are preceded with the considerations the study take. Hence, the hypotheses proposed and the main findings of the current study are discussed particularly in a holistic way after the proposals of the study that give rise to the hypotheses are laid down.

#### **4.1. The Considerations and Proposals of the Current Study on Overgenerality**

The essence of the current study lies under the notion that the overgenerality problem among depressed people may reflect itself with the problems in the encoding processes as well. This consideration takes its place from the recent reflection of Williams (2006) stating that what we have observed (in overgenerality) is the deficits at *recall* rather than at *encoding*. Because of the neglect on encoding processes in ABMs, the current study intended to investigate some possible problems at the time of encoding via some experimental maneuverings at recall.

First of all, the current study takes particularly the theoretical assumptions of Nairne (2002) seriously. He mainly proposes that the performance of recall enhances not because of the match and mismatch of the cues at the time of encoding and at the time of retrieval. On the other hand, if a cue should be helpful in the searching process of information –or a memory-, the cue should be “distinctive” in

essence. That is, if we assume the cues as the barcodes stack onto the information, whenever the cues are provided to the subject –or the cues are generated in mind such as at free recall-, cognitive system could read these cues that could pave a path to find the memory or information stored among “possibly infinite number of memories in mind”. However, if the cue –again think them as barcodes- is attached by the system to so many memories, then the cue turns out to be less distinctive one so that less helpful in the searching process. Nairne (2002) calls this phenomenon as “cue overload”. As a result of this cue overload, the cue becoming less distinctive as it has been attached to many memories does not have a power to facilitate the searching activity rather it loses the power. In short, it could be proposed that the cue is effective as its distinctive value (Nairne, 2002).

When it is to turn to the main topic of the current study pertinent to the overgenerality problem among depressed people, the cue distinctiveness issue inevitably emerges again. In order to mention and lay down the overgenerality problem from the perspective of encoding processes, the followings are speculated.

First, when the depressed people encounter personal kinds of events they should encode those events particularly in a negative mood as the nature of depression necessitates this. This fact could not be so surprising providing the fact that depressed people have some characteristic symptoms of such as feeling depressed or flattened mood throughout the day (Psikiyatride Hastalıkların Tanımlanması ve Sınıflandırılması Elkitabı, (DSM-IV-TR), Amerikan Psikiyatri Birliği, 2000, p.151-153). It should also be kept in mind that those events could be in any sense such as an event that happened to anyone else, one has witnessed, heard, seen, watched etc. However, it should be considered that it is still a debate whether there is something which we could call autobiographical memory or it is just the artifact of the episodic memory (see e.g. Burgess, Maguire, Spiers, & O’Keefe, 2002; Gilboa, 2004; Roberto & Jacquez, 2007 for review). I should personally admit that all the memories we have could be easily called as autobiographical even the films (*we watched*), the news (*we heard*) or the lists (*we studied*) learned in the experiments. Therefore, whenever a depressed person stores an event regarding the self, which could be termed as autobiographical, turns out to be probabistically a negative one concordant with Beck (1976) proposing a dysfunctional negative triad, a negative view of self, others and world (future), -

thereby, what else remains to evaluate in one's life. Such a negative, dysfunctional view could easily make the past of a depressed individual full of negative personal event collection. Therefore, the depressive mood, schema maintenance processes (Young, 1999), state-dependent learning, mood-congruent recall (Bower, 1981), rumination (e.g. Williams, 2006), self-relevant encoding (Davis & Unruh, 1979a, 1979b) and a vicious circle in these mechanisms could end up with an event collection among the depressed people not distinguishable from each other and being predominantly on the negative side. This would then result in the phenomenon of overgenerality –or in other terms not being able to recall a specific event as a response to emotional cues- which has been well-documented among depressed people so far (see Vreewijk & Wilde, 2004 for review) and in this study as well.

Secondly, the cues used in the Autobiographical Memory Test of Williams & Broadbent (1986) could partially be a reason for the overgenerality. As they are utilized in AMT, when the depressed subjects are provided with negative emotional cue words and asked to recall a specific memory which the cue words reminds them of, these words could easily have no or could only have fewer distinctiveness for the searching activity to be performed. Such as, consider the cue words “sad” “rejected” or “hopeless” used in AMT. They are in nature could easily activate much more memories as they have much more power to conglomerate many memories being higher in the network than the neutral cue words could such as “curtain”, “soup” or “frame”. That is, there easily might be many candidates of personal events having a negative valence in a depressed person as a response to particularly negative emotional ones so that the searching activity could end up with the reporting of summaries of events. If so many memories having almost same emotional valences are gathered together, then if it is not easy enough to find a specific ABM among the crowd, you could report the summaries of these events.

Moreover, the issue of cue words, being in their nature more abstract than the neutral ones which are generally the object names, could be taken from the perspective of linguistics as well. The emotional words utilized in AMT are (self-referent) adjectives. Adjectives, as their functions necessitate, describe the things so that they took the names after them. On the other hand, names do not describe things; they are utilized in any language to make the things concrete,

understandable and referable. Therefore, these self-referent adjectives in AMT could take and describe so many things or events that could thereby increase the number of eligible candidates than the neutral, concrete words. From the perspective of linguistics, the cues being adjectives could also partially play a role in the overgenerality especially in the summarization of personal events.

An evidence for the summarization comes from the study of Williams & Dritschel (1992) who investigated the overgeneral ABMs and tried to classify them. Williams and Dritschel (1992) found that depressed people recall more categoric events (e.g. a response given to cue word of happy “I feel happy when I wander around with my dog”) than non-depressed people. Moreover, the categoric events were mainly found to be the *characteristics* of the depressed people classified under the term of overgeneral ABMs rather than the extended memories. It may not be surprising to obtain such a finding as the extended memory referred by Williams (1996) to “*an event*” that lasted longer than a day (e.g. “My last holiday in France” or “the last Spring Festival at METU”) were rarely reported among depressed than the categoric *events*. This kind of an extended memory could actually be accepted by the depressed individual just a single event –because it is not a summary of events, like my *holidays* in France rather my *last holiday* in France. Therefore, the extended ABMs as they more or less look like a single event or a specific kind of event could inevitably be recalled less than the categoric ABM, the summaries of events.

As a result of these proposals, encoding processes involving both encoding specificity and variability hypotheses are emphasized in the current study to investigate the overgeneral ABM recall. First of all, it seems that encoding specificity perspective (Tulving & Thumson, 1971) has been well-documented and defended in the literature more than the encoding variability frame (Martin, 1968). Therefore, it seems that encoding variability hypothesis has somehow been favored less. In the literature of ABM recall, the emphasis on encoding specificity could also be seen. However, I personally began to consider that these two seemingly opponent processes could be *compromised* as Talaslı (personal communication, 14<sup>th</sup> May 2004) proposed in one of his lectures. That is, whereas encoding variability process gives rise to find the place of the memory stored in mind, encoding specificity can play a role to read the memory off in the searching activity. Beside

this proposal, I also personally think that there could be no such retrieval process utilizing purely encoding specific paradigm. To be more specific, no one could be one hundred percent sure that what other cue(s) the subject used in the experiment(s) other than the cue provided at the time of recall and being the same with the cue at time of encoding. For instance, the subject could easily utilize some internal cues in the retrieval such as the time passed, mood he/she is in, list structure, printing of the word or any other uncontrolled or uncontrollable cues (e.g. see Higham, 2002; 2005). This eventually means that whatever we see could not be an encoding specific process rather it may be the involvement of some possible other cues in the process reminding the encoding variability hypothesis, which also implies the distinctiveness of the material (Nairne, 2002).

When these two encoding processes are involved in the explanation of the overgeneral recall of ABMs among depressed people, it seems that depressed people seem to have a problem to encode the personal memories *variable*. That is, they could have a reduced activity to find and utilize alternative cue(s) –or routes in mind- to find a specific ABM as a response to an emotionally valence cue word. Throughout the process of encoding the personal memories into memory, depressed people could encode them in a biased way particularly with the help of the schema maintenance process (Young, 1999) of the dysfunctional cognitive triad. As a result of the process that they most probably encode the events they encounter as more negatively and less positively particularly with the help of the schema maintenance (Young, 1999), the ABMs encoded could turn out to be less distinctive from each other. This process, then, could end up with the cues in AMT which are less helpful to recall a specific, particular kind of an ABM.

In summary, in order to test these proposals above, in the current study depressed people were primed with multiple cues in some conditions of the AMT experiment to have them utilize alternative cues at the time of recall which is considered to be lacked or problematic among depressed individual. Therefore, besides some related hypotheses, the current study hypothesized that when depressed people are provided with an extra cue being a neutral word together with the emotional cue word, they would have a better performance of specific ABM recall which could make the autobiographical memories more distinctive so that more easily reportable as specific. However, they would not take a benefit of

emotional cue words provided in the conditions of AMT one by one basis as they would be presented together with a neutral word.

## **4.2. Evaluation of the Main Findings**

### **4.2.1. Overgeneral Recall of ABMs**

The literature of ABM has used the AMT measurement “only with one at each step” until the current study so that the results of the current study regarding one cue AMT conditions are compared first with the findings of the literature. Related to this aspect, it was found that the results of the current study are concordant with the findings of the AMT literature (see e.g. Vreewijk & Wilde, 2004 for a review). That is, depressed people are found to be less specific in AMT as a response to emotional cues both positively and negatively valence cue words than non-depressed subjects. Therefore, the overgenerality phenomenon in the non-clinical depression was confirmed in this study as well. Moreover, regarding the neutral words which are again presented one by one at each time, as expected and consistent with the literature, depressed people did not differ from the non-depressed people as a response to neutral cue words. When the neutral cues are used in the AMT experiments somehow as the control for the emotional cues, the expected result of more specific ABM recall as a response to neutral cues than emotional cues seems to explain the problems of ABM recall for the emotional content.

Beside these findings, a new technique in the AMT utilizing multiple cues in the current study are discussed on the basis of the considerations for the overgenerality laid out before (see Section 4.1) as well. Other than the finding of depression main effect on specific ABM recall, the results of the current study also showed that there were the main effect of number of cues and the interaction effect of depression level and cue number on the recall of ABMs specifically and overgenerally. As expected, it was found that when subjects were primed with two cues, they recalled more specific ABMs than when they were primed with one cue in AMT. Moreover, when depressed people were primed with two cues they were found to be more specific on ABM recall than when they were primed with one cue combined with the finding that they were almost equal on the specific ABM recall as non-depressed subjects primed with one and two cues. Therefore, the results

confirmed the theoretical considerations of the current study. That is, when depressed people are supported with a more concrete, neutral word together with the emotional cue word, they should take the benefit of these extra cues that could presumably be generated by the non-depressed more easily. With the help of the neutral cues paving alternative routes in the searching process, the less distinct autobiographical memories of the depressed could become more distinct, more accessible so that more specifically recalled in AMT. In short, neutral cues paired to the emotional cues were found to play a role in making presumably the less distinctive memories in depressed more easily accessible with the help of encoding variability process that the cues varies and multiplies and becomes available at the time of recall.

Regarding the cue type (as positive, negative and neutral) effect on the specificity level of ABMs, the results also supported the hypothesis that subjects were equally specific on positive and negative cues (on emotional ones) and they together were also less specific on ABM recall than the subjects recalled ABMs for neutral cues. Such a result even regardless of the depression level could provide us with the understanding that the emotional words seem to be less helpful to remind an ABM than the neutral ones. Because, the emotional words are more abstract than the neutral cues, the subjects must have paid much effort on the working memory capacity for emotional words than the neutral cues as the neutral cues are, in their nature, more concrete so that have more power to invoke a scene associated to an ABM.

Moreover, the results showed that there were both the interaction effects between the depression level and cue type; the cue number and cue type; and, the depression level, cue number and cue type. In these interactions, first the relationship between depression level and cue type deserves a special attention. It was found that the depressed subjects were less specific on ABM recall on positive and negative cues than the neutral ones. Additionally, depressed subjects were less specific for emotional cues than the non-depressed subjects both for positive, negative and neutral cues. These findings as expected exactly comparing the performances of the depressed and the non-depressed groups on each cue types confirm the idea that depressed people were less specific on emotional cues than the neutral ones and than the non-depressed for all types of cues via thinking the neutral

cues as controls for the emotional cues. Therefore, as expected and found in the ABM literature as well (e.g. Vreewijk & Wilde, 2004 for a review) depressed subjects could be stated that they have deficits on ABM recall for emotional cues. Additionally, although it was not significant, depressed subjects were slightly less specific on ABM recall for positive than the negative cues. This reduction on specificity for positive cues would be the mechanism in the depressed people which could make the performance weakened for the contradictory information to the situation at hand. One of the most probable evidence for this process could come from the “schema maintenance process” of Young (1999).

Moreover, in the cue number and cue type interaction, it was found that when the subjects were primed with one cue, they recalled less specific ABMs for positive and negative emotional cue words than the neutral cues; and they also recalled less specific ABMs for emotional words than the subjects primed with two cues. This finding further supports the hypothesis that the subjects take the benefit of multiple cues which are assumed to render the encoding variability effect rather than just depending on one cue. The finding that the subjects primed with one cue and recalled ABMs for negative cues did not differ from the subjects primed with two cues and recalled specific ABMs for neutral cues. This fact seems to result from the finding that when two neutral cues were presented, recalling a specific ABM for this pair would be more difficult than the presentation of single neutral cue.

The interaction between depression level, cue type and cue number on the specificity level of ABMs mainly takes somehow the x-ray of what has happened between the conditions and manipulations. The finding, in a general sense, indicates that when depressed subjects primed with two cues in AMT they take significantly the benefit of multiple cues for specific ABM recall. This finding also suggests that ABMs are not forgotten by the depressed but their accessibility level reduces, and with extra help by multiple cues which assumed to render the ABMs more distinct they become accessible in the meaning of specificity as it is the case in the non-depressed.

Looking the phenomenon of ABM recall from the other side of overgeneral recall which could be the counter fact of specific ABM recall also yielded converging evidences. It was found that the depressed subjects were found to be



more overgeneral on ABM recall than the non-depressed subjects. This appears to be a converging evidence to the overgenerality among the depressed and provides a further support to the overgenerality phenomenon. Moreover, those who were primed with one cue were more overgeneral than the subjects primed with two cues. It mainly indicates that the multiple cues worked better than the single cue presentation.

The results also indicated an interaction effect between depression level and cue number that the depressed subjects primed with one cue were more overgeneral than depressed subjects primed with two cues and non-depressed subjects primed with one cue and two cues. The interaction between cue type and cue number further supports the hypothesis that depressed people primed with one cue become less overgeneral on ABM recall for emotional cues as the presentation of cues increases.

Lastly, for the sake of interest, the study also analyzed the reaction times of ABM recall. Some studies also investigated the reaction times of ABM recall among the depressed as compared to the non-depressed people; however, they found some contradictory results (see e.g. Vreewijk & Wilde, 2004). In this study, depression level did not have an effect on reaction times. However, the results showed that when subjects were primed with two cues together they were slower on recall than when they were primed with one cue. This finding could be understandable from the suggestion that when people were primed with two cues together, this could most probably take much more effort in the working memory than using only single cue. For the cue type effect, the finding that subjects were almost equal on reaction times for positive and negative cues, but being slower for negative cues than neutral cues could also suggest that neutral cues appear to be easier to comprehend or elaborate; however, for the subjects reporting particularly a negative memory could be slowed or refrained as a reporting bias. Moreover, the interaction between cue type and cue number on reaction time also seems to take another x-ray in the process. In this interaction, the general finding that subjects were faster for neutral cues in both one or two cues presentations, and subjects become faster on recall for positive and negative cues. From the reaction time (latency) perspective, subjects did not have an increase in the recall performance when they were provided with multiple cues, it rather became a challenging task.

#### **4.2.2. Utilization of the Cues**

Under the conditions where two cues were given together, it was crucial to investigate how the subjects utilized them, whether consecutively or simultaneously and whether the first neutral cue or the second emotional cue or the neutral cue. This way of utilization was important so as to understand whether depressed people had a generative or a direct recall for the ABMs and whether the emotional valence of the cue paired to the neutral cue was important for depressed. Therefore, it was hypothesized in the study that when the cues are provided together (two cues at each step), depressed or non-depressed subjects would utilize these cues more consecutively than simultaneously and they would begin to search ABMs beginning with the neutral cue word first, then continue with the emotional word. However, if the two words together were both neutral, it was also hypothesized that both groups would utilize these cues almost equally.

The results confirmed the hypotheses. Both groups reported that they utilized the cues more consecutively than simultaneously. Moreover, they reported to begin the searching activity with the neutral cue word first more than the emotional one. However, in the presentation of the two neutral cue words together, both groups reported almost equal preference for utilizing them.

The finding of the current study that the subjects either depressed or non-depressed reported the utilization of the cues more consecutively than simultaneously in AMT could be discussed as it is hereinafter set forth. The main understanding of the processing of information, the functioning of the cognitive system is serial rather than being parallel (Atkinson and Shiffrin, 1969). Therefore, when the depressed people primed with two cues together they as expected utilized the cue more consecutively than simultaneously, as it was the case in non-depressed subjects as well. Such an explanation of serial process in mind for the consecutive utilization of cues could also be understood in the Conway & Pleydell-Pearce model (2000). The model mainly tries to make a distinction between generative and directive retrieval (Williams, 2007). In the current study, consecutive utilization of the cue words could be referred to generative retrieval whereas simultaneous utilization refers to directive one. It was well-documented and supported that generative retrieval could be seen in depression when the directive retrieval could be seen in traumatic experiences (Williams, 2006). Therefore, one of the main

results of the current study which found a more consecutive utilization of the cue words than simultaneous utilization could converge with the literature. However, the consecutive utilization was not found to be a hundred percent over simultaneous one. Because there is a possibility that some word pairs could easily have a high association value for some subjects that could result from learning processes either classical or operant or both as it would be the case seen in the directive recall of traumatic events in the form of flashbulbs (Williams, 2006).

On the preference for neutral cue word to begin the searching activity whether with the first cue or the second one when they reported that they recalled the memory consecutively than simultaneously. It was found that both depressed and non-depressed subjects reported to use the first cue if the paired one is emotional but not a neutral cue again. Mainly, Bower's associative network model (1981) could shed light on the inclination for this finding. Actually, in his model it does not turn out to be preference. Because, more concrete words could have more spread of activation in the network than abstract words as it is in the situation of presenting the neutral word and an emotional word together. The neutral, concrete words in their nature could more easily activate vivid, lively and more detailed scenes than the emotional words could. Therefore, this actually forced choice to begin with the concrete word first is understandable.

Additionally, the concreteness effect of the neutral cues could take its place from the dual code proposition of Paivio (1970, 1991). From this perspective providing that the cognitive system has mainly two codes as imagery and propositional, neutral words being high in imagery could more easily activate memories than the emotional cue words so that they would be preferred to begin the searching activity first in order to facilitate the recall performance.

An evidence for this activation power of the neutral cue word comes from the model of Conway & Pleydell-Pearce (2000) as well. In the model of Conway & Pleydell-Pearce (2000) regarding the construction of autobiographical memories, *event-specific knowledge* (ESK) was proposed as the lowest level of ABM representation in the hierarchical model. Above the ESK, there proposed to be the *general events* level over which *life-time periods* were proposed. The ESK was proposed to be such a structure providing the memories more vividness thereby involving more distinctive and thematic details (Conway & Pleydell-Pearce, 2000).

Therefore, the neutral words could easily activate this event-specific knowledge and together with the emotional word utilized just after these neutral words could have easily helped the depressed subjects to find a specific ABM involving this emotional valence among the possible crowd of these personal events which have more or less this same valence of emotion.

It should also be noted that this finding provides us with the fact that depressed subjects did not refrain from the disturbing nature of the negative cues by utilizing them as second over the first neutral cues. Because the findings revealed that depressed people also utilized the positive pair secondly over the neutral cue. Most importantly, non-depressed people also showed the same pattern. Therefore, if the utilization of the paired emotional cue either positive or negative secondly would be resulted from the high depression scores of subjects, then non-depressed subjects must have showed a mixed result such as an equal preference. However, the equality was only seen in the neutral-neutral pairs both in the depressed and non-depressed. Then, the result confirms the suggestion that the sequence was because of the emotional valence of the cue paired to the neutral one.

#### **4.3. Conclusions and Contributions of the Current Study**

Being one of the formers, the current study tried to understand the overgenerality phenomenon seen among depressed people from the perspective of possible encoding problems of ABMs which has been neglected in the literature of overgeneral ABM recall among depressed people. Therefore, with its considerations and proposals for the overgeneral recall of ABM among depressed people, the current study takes a new perspective with its emphasis on encoding processes and it could play a role to direct the attention of the researchers from the deficits of recall to the possible encoding problems which could result in the observed deficit at recall.

The proposals which are mainly revolving around the distinctiveness (equal to the “cue overload” term proposed by Nairne in 2002) seem to be applicable to the ABMs recalled as a response to negatively valence cue words. However, the current study would like to provide some answers for the following finding question in the literature. Why are the depressed people also overgeneral for the positively valence cues? For this consideration the followings are proposed.

Untill recently, it has already been documented that in AMT, depressed people recall more overgeneral ABMs not only as a response to negative cue words but also to positive cues as well (see e.g. Williams & Broadbent, 1986; Williams & Dritschel, 1988; Kuyken & Brewin, 1995). Williams proposed that (1996) there could be a process called “mnemonic interlock (truncated search)” for the negative words. In this proposal, as the negative personal events, because of their nature carry negative feelings so that depressed individuals could have a mechanism which terminate the searching activity at a higher level in order to refrain from the negative, disturbing nature of the negative personal events which could emerge when they are activated. However, such a proposal raises a question that it does not seem to be applicable to explain overgenerality for the positive cue words. Why, then, are ABMs also overgeneral as a response to positive cues among the depressed as they do not carry a disturbing nature as negative events? And, the proposal of the current study about distinctiveness could only be applied to the negative cues, but not the positives as it proposes that the depressed could be more overgeneral because of the less distinctive negative events among many candidates which resulted from encoding them with almost same valences but not distinctively or variably.

For this contradiction, Williams and his colleagues (2007) mainly proposed that this could result from the “mood-congruency” which suggests a better performance of recall if the material has same valence as the mood of the individual is in (Williams et al. 2007). This seems plausible. However, mood-congruency proposal should necessitate that the negative ABMs should be recalled better or less overgeneral in AMT because of the congruency between the negative mood of the depressed is in and the same emotional valences of the events. If the depressive cognitive system divides itself into two processes to use the mechanism of truncated search for negative events and mood-congruency for positive events, then it seems well. However, as a last remark for this proposal, how the system utilizes the “mood-congruency only for positive cues” remains to be explained. As a contribution, an explanation for the overgeneral recall for positive emotional cues, the followings are proposed.

In order to find a sound answer for the overgenerality as a response to positive cues in AMT, the depression as a psychopathology should be investigated

first in a holistic way. The fact that coming across anyone who is depressed and who is also cheerful, lively, considering his/her past, present or future in a positive way or hopeful is almost impossible could shed a light on this finding. In a general sense, depressed people are proposed to discard the positive sides of events. Therefore, there may not be a good reason for a depressed to recall and report a positive event from his/her past so as not to be contradictory. When the depressed have many memories which are positive in their pasts and they are ready to be recalled at any time even in AMT, then what kind of a past put you in a condition to be depressed and maintain it. Hence, one reason for not being specific on positive cues could be the fact that it does not seem functional for the depression itself to maintain. An evidence for this could come from Young's (1999) proposal of "schema maintenance". Another reason, as a speculation, could come from the distinctiveness issue as well. If the past of a depressed is full of a personal event collection which have been evaluated and stored under negative labels, then, it would not be so easy to find a specific positive event among the crowd of negative ABMs together with the mechanism of schema maintenance not allowing to store and recall the contradictories.

In summary, it could easily be stated that the autobiographical memories we have are highly important for the construction of our-selves as they define what and who we are and who we will probably be in the future (e.g. see Vreewijk & Wilde, 2004 for review). Also, they were found to be highly important in the social problem solving (Goddard, Dritschel, Burton 1998; 2001). Therefore, the speculations and the findings of the current study could also have some therapy practice implications. For the depression cases, the findings could imply that the therapists should provide the depressed patients with more cues such as by being more concrete in order let them to take many specific memories having various emotional valences without fixation on only generalizations. Related to this, the therapy could try to begin with a "neutral atmosphere" which could make the past more lively and accessible. Perhaps, the success of cognitive-behavioral therapies on depression could come from the beginning for the therapy with more concrete, less emotional burdens such as dealing with behaviors rather than thoughts first.

#### **4.4. Limitations and Directions for Future Research**

There exist some limitations of the study. First, the target population in the current study was non-clinically depressed students. Therefore, the results can not be generalized into clinical depression and to the population other than students. Moreover, the subjects were allocated into the groups of the AMT experiment on the basis of their previous depression scores measured before the experiment. Although previous depression scores and the scores taken at-the-time of test was highly correlated, the way of involving much more subjects to the experiment and conducting the analysis between the groups with regards to their depression scores taken at the test day would be much more valuable.

Secondly, understanding the encoding processes solely depending on the measurements at recall would yield some artifacts. Despite the fact that encoding processes are checked at the time of recall as how they affect the recall performance, purely experimental designs involving the encoding time appear to yield more dependable results. However, in the subject matter of the autobiographical memories, the idea that there seems to be many varieties and presumable infinite number of memories results in a highly complex and almost uncontrollable situation.

Therefore, the current study had to depend on some controls on recall and had to draw some inferences on the possible encoding processes as the subject necessitated this. On this sense, the effects and associations of cue words particularly for the neutral ones could never be predicted in one's life. Why neutrals? Because, emotional words have their norms on two sides as positive or negative. Although they could easily vary from some subjects to another, it could not fluctuate as the neutral cues. Hence, when the neutral ones, neutral-emotional pairs and neutral-neutral pairs in the AMT could be highly inter-connected for some, for some subjects they could be even irrelevant. Then, this would mean a randomization.

There also exist some suggestions for the future studies. First, more than two cues conditions or emotional-emotional pairs (e.g., positive-positive, positive-negative or negative-negative) could be added into AMT experiment in order to test the proposals further. For instance, adding emotional pairs having almost the same and opposite valences could be checked as well. This would yield some

consequences to understand how the ABMs are constructed and organized under emotional sides. Moreover, as also Williams suggested (2007), taking the time of the ABMs recalled could shed some more light on the encoding processes as well as the organization of ABMs. However, these measurements of time seem to be much more applicable for the diagnosed patients. Additionally, the contents of the ABMs recalled can be evaluated by investigating the transcripts of memories in order to understand such as whether the depressed have a tendency to conglomerate the memories on a certain emotional valence. Lastly, a forced-recall technique in the AMT that asks the subjects to report at least one specific memory as soon as possible could be measured with the reaction time of reporting particularly to eliminate the reporting bias.

As a last remark, it is worthwhile stating that the autobiographical memory in one's life is a highly vital memory system and it seems that the evaluation of your past defines who you were so that who you are now and predicts who you will be in the future. Perhaps more notably, the hint of autobiographical memories could be summarized with the following statement took part in one of the novel's of the famous writer, Chuck Palahniuk (2001, p.171): "he who does not remember his past is subject to repeat (the same faults!)".



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## APPENDICES

### APPENDIX A

#### Questionnaire in Study I

Bu çalışma Orta Doğu Teknik Üniversitesi (ODTÜ) Psikoloji Bölümü Öğretim Üyesi Doç. Dr. Belgin Ayvaşık ve ODTÜ Klinik Psikoloji Yüksek Lisans öğrencisi Mehmet Akif Güzel tarafından hazırlanmıştır. Çalışmanın amacı, verilen kelimelerin bir duyguyu ne derece ifade ettiğini belirlemektir. Sizden istenen; her bir kelimenin **“olumlu”, “olumsuz” ya da “nötr (ne olumlu ne olumsuz)”** olarak bir duyguyu ne derece ifade ettiğini, her kelimenin yanında verilen sayılardan “size en uygun olanını seçerek” belirtmenizdir.

Katılımlarınızdan dolayı teşekkür ederiz.

- |                             |             |                            |
|-----------------------------|-------------|----------------------------|
| - 5 = Çok fazla olumsuz     |             | + 1 = Çok az olumlu        |
| - 4 = Çok Olumsuz           |             | + 2 = Biraz olumlu         |
| - 3 = Orta derecede olumsuz | 0 = Nötr    | + 3 = Orta derecede olumlu |
| - 2 = Biraz olumsuz         | (ne olumlu  | + 4 = Çok olumlu           |
| - 1 = Çok az olumsuz        | ne olumsuz) | + 5 = Çok fazla olumlu     |

#### ÖRNEK:

Kavga.....: -5 -4 **-3** -2 -1 0 +1 +2 +3 +4 +5

Arkadaşlık.....: -5 -4 -3 -2 -1 0 +1 +2 +3 **+4** +5

Yastık.....: -5 -4 -3 -2 -1 **0** +1 +2 +3 +4 +5

Yaşınız : \_\_\_\_\_

Cinsiyetiniz : E  K

Bölümünüz : \_\_\_\_\_



Sample Items in the Questionnaire Constructed for the Study I

		Çok fazla olumsuz	Çok olumsuz	Orta derecede olumsuz	Biraz olumsuz	Çok az olumsuz	Nötr	Çok az olumlu	Biraz olumlu	Orta derecede olumlu	Çok olumlu	Çok fazla olumlu
1	Üzgün	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
2	Şefkatli	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
3	Haber	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
4	Heyecanlı	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
5	Okul	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
6	Güvensiz	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
7	Durum	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
8	Tembel	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
9	Berbat	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
10	Televizyon	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
11	Mutsuz	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
12	İhtişamlı	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
13	Yokluk	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
14	Kitap	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
15	Sefalet	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
16	İlgili	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
17	Müzik	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
18	Aramak	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
19	Fedakar	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
20	Zayıflık	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
21	Memnun	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
22	Hızlı	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
23	Yorgun	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
24	Rahatlamış	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
25	Acıklı	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
26	Zevkli	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
27	Radyo	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
28	Çaresiz	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
29	Zeki	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
30	Anaokulu	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
31	Şaşkın	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
32	Efkar	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
33	Gazete	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5
34	Eğlenceli	-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5

## APPENDIX B

### Beck Depression Inventory (Beck, 1974)

#### (Beck Depresyon Envanteri)

#### ÇALIŞMA ÖNCESİ KATILIMCI BİLGİ FORMU

Az sonra katılacağınız çalışma, Doç. Dr. Belgin Ayvaşık ve Psk. Mehmet Akif Güzel tarafından yürütülmektedir. Çalışmanın amacı, katılımcıların genel duygu durumları ile ilgili olarak bilgi toplamaktır. Bu çalışmadan elde edilecek olan veriler temelinde araştırmanın 2. aşaması olarak deneysel bir çalışma yürütülecektir. Sizleri çalışmanın deneysel bölümüne davet edebilmemiz için kişisel bilgi olarak **en sık kullandığınız e-posta adresiniz ve okul numaranız istenmektedir.** Vereceğiniz bu bilgiler tamamıyla gizli tutulacak ve sadece araştırmacılar tarafından bilinecektir. Ayrıca anketlere verdiğiniz cevaplarda tamamıyla gizli tutulacak ve sadece araştırmacılar tarafından değerlendirilecektir; elde edilecek bilgiler ise sadece bilimsel yayınlarda kullanılacaktır.

Çalışmaya katılım tamamıyla gönüllük temelinde olmalıdır. Anket, genel olarak kişisel rahatsızlık verecek soruları içermemektedir. Ancak katılım sırasında sorulardan ya da herhangi bir başka nedenden ötürü kendinizi rahatsız hissederseniz cevaplama işini yarıda bırakmak konusunda serbestsiniz. Böyle bir durumda anketi uygulayan kişiye, anketi tamamlamadığınızı söylemeniz yeterli olacaktır. Anket sonunda, bu çalışmayla ilgili sorularınız cevaplanacaktır. Bu çalışmaya katıldığınız için şimdiden teşekkür ederiz. Şimdi lütfen, eğer bu çalışmaya tamamen gönüllü olarak katılıyorsanız aşağıdaki formu doldurunuz.

Bu çalışmaya tamamen gönüllü olarak katılıyorum ve istediğim zaman yarıda kesipçıkabileceğimi biliyorum. Verdiğim bilgilerin bilimsel amaçlı yayınlarda kullanılmasını kabul ediyorum.

İsim Soyad

Tarih

İmza

Alınan Ders

## **GENEL DUYGU DURUMU DEĞERLENDİRME ANKETİ**

**Orta Doğu Teknik Üniversitesi – 2007**

### **Yönerge:**

Bu araştırmanın amacı, sizlerin genel duygu durumunuza ilişkin olarak bilgi toplamaktır. Cevaplarınız tamamıyla gizli tutulacak ve sadece araştırmacılar tarafından değerlendirilecektir. Anketi doldurmadan önce lütfen gönüllü katılım formunu imzalayınız. Anket sonunda ise çalışmaya yönelik sorularınızı ankete uygulayan kişiye sorabilirsiniz.

Bu anket iki farklı ölçekten oluşmaktadır. **Lütfen her bir ölçeğin başındaki yönergeyi çok dikkatli okuyunuz ve her bir soruya sizin genel duygu durumunuzu yansıtan en doğru cevabı vermeye çalışınız. Lütfen hiç bir soruyu atlamadan cevaplayınız.**

Çalışmaya yönelik sorularınızı Klinik Psikoloji yüksek lisans öğrencisi Mehmet Akif Güzel'e iletebilirsiniz. (İletişim için: Ofis B32–Tel: 210 5943; E-posta: [mehmetakif82@yahoo.co.uk](mailto:mehmetakif82@yahoo.co.uk))

**Bu çalışmaya katıldığınız için çok teşekkür ederiz!**

**Anketi doldurmadan önce lütfen aşağıdaki boşlukları doldurunuz.**

Okul numaranız : \_\_\_\_\_

En sık kullandığınız e-posta adresiniz

: \_\_\_\_\_

*(Araştırmanın 2. aşamasındaki deneye çağrılabilmeniz için okul numaranız ve en sık kullandığınız e-posta adresiniz bizim için çok önemlidir)*

Yaşınız.....: \_\_\_\_\_

Cinsiyetiniz.....: Erkek  Kadın

Bölümünüz / Sınıfınız.....: \_\_\_\_\_ / \_\_\_\_\_

Herhangi bir psikiyatrik ilaç kullanıyor musunuz? Evet \_\_\_\_\_ Hayır \_\_\_\_\_

Cevabınız “Evet” ise, hangi tür psikiyatrik ilaç kullanıyorsunuz? Lütfen işaretleyiniz ve ilacın adını yanındaki boşluğa yazınız. (Birden fazla kullandığınız ilaç var ise bir den fazla işaretleyebilirsiniz.)

Antidepresant: \_\_\_\_\_

Anksiyolitik: \_\_\_\_\_

Antipsikotik: \_\_\_\_\_

Diğer: \_\_\_\_\_

Cevabınız “Evet” ise ne kadar süredir kullanıyorsunuz? \_\_\_\_\_

## Sample Items in BDI

Aşağıda kişilerin ruh durumlarının ifade ederken kullandıkları bazı cümleler verilmiştir. Her madde, bir çeşit ruh durumunu anlatmaktadır. Her maddede o ruh durumunun derecesini belirleyen 4 seçenek vardır. Lütfen bu seçenekleri dikkatle okuyunuz. Son bir hafta içindeki (şu an dahil) kendi ruh durumunuzu göz önünde bulundurarak, size en uygun olan ifadeyi bulunuz. Daha sonra, o maddenin yanındaki harfin üzerine (x) işareti koyunuz.

1. (a) Kendimi üzgün hissetmiyorum.  
(b) Kendimi üzgün hissediyorum.  
(c) Her zaman için üzgünüm ve kendimi bu duygudan kurtaramıyorum.  
(d) Öylesine üzgün ve mutsuzum ki dayanamıyorum.

2. (a) Gelecekte umutsuz değilim.  
(b) Geleceğe biraz umutsuz bakıyorum.  
(c) Gelecekte beklediğim hiçbir şey yok.  
(d) Benim için bir gelecek yok ve bu durum düzelmeyecek.

3. (a) Kendimi başarısız görmüyorum.  
(b) Çevremdeki bir çok kişiden daha fazla başarısızlıklarım oldu sayılır.  
(c) Geriye dönüp baktığımda, çok fazla başarısızlığımın olduğunu görüyorum.  
(d) Kendimi tümüyle başarısız bir insan olarak görüyorum.

4. (a) Her şeyden eskisi kadar zevk alabiliyorum.  
(b) Her şeyden eskisi kadar zevk alamıyorum.  
(c) Artık hiçbir şeyden gerçek bir zevk alamıyorum.  
(d) Bana zevk veren hiçbir şey yok. Her şey çok sıkıcı.

5. (a) Kendimi suçlu hissetmiyorum.  
(b) Arada bir kendimi suçlu hissettiğim oluyor.  
(c) Kendimi çoğunlukla suçlu hissediyorum.  
(d) Kendimi her an için suçlu hissediyorum.

6. (a) Cezalandırılacağımı düşünmüyorum.  
(b) Bazı şeyler için cezalandırılabileceğimi hissediyorum.  
(c) Cezalandırılmayı bekliyorum.  
(d) Cezalandırılacağımı hissediyorum.

## APPENDIX C

### Hospital Anxiety and Depression Scale (Zigmond & Snaith, 1983) (Hastane Anksiyete ve Depresyon Ölçeği)

#### Sample Items in HADS

Bu anket sizi daha iyi anlamamıza yardımcı olacak. Her maddeyi okuyun ve “son birkaç gününüzü” göz önünde bulundurarak nasıl hissettiğinizi en iyi ifade eden yanıtın yanındaki kutuyu işaretleyin. Yanıtınız için çok düşünmeyin, aklınıza ilk gelen yanıt en doğrusu olacaktır.

1. **Kendimi gergin, “patlayacak gibi” hissediyorum.**
  - Çoğu zaman
  - Birçok zaman
  - Zaman zaman, bazen
  - Hiçbir zaman
2. **Eskiden zevk aldığım şeylerden hala zevk alıyorum.**
  - Aynı eskisi kadar
  - Pek eskisi kadar değil
  - Yalnızca biraz eskisi kadar
  - Neredeyse hiç eskisi kadar değil
3. **Sanki kötü bir şey olacakmış gibi bir korkuya kapılıyorum.**
  - Kesinlikle öyle ve oldukça da şiddetli
  - Evet, ama çok da şiddetli değil
  - Biraz, ama beni endişelendirmiyor
  - Hayır hiç öyle değil
4. **Gülebiliyorum ve olayların komik tarafını görebiliyorum.**
  - Her zaman olduğu kadar
  - Şimdi pek de o kadar değil
  - Şimdi kesinlikle o kadar değil
  - Artık hiç değil
5. **Aklımdan endişe verici düşünceler geçiyor.**
  - Çoğu zaman
  - Birçok zaman
  - Zaman zaman, ama çok sık değil
  - Yalnızca bazen

## KATILIM SONRASI BİLGİ FORMU

Bu çalışma daha önce de belirtildiği gibi Doç. Dr. Belgin Ayvaşık ve Psk. Mehmet Akif Güzel tarafından yürütülmektedir. Araştırmanın temel amacı daha sonraki aşamada planlanan deneye çağırmak için, katılımcıları depresif semptomatoloji bakımından belirlemektir. Bu amaçla, doldurduğunuz ankette geçerlik ve güvenilirlik çalışmaları Türk popülasyonunda da yapılmış olan “Beck Depresyon Envanteri” ve “Hastane Anksiyete ve Depresyon Ölçeği” kullanılmıştır.

Bu çalışmanın verilerinin Nisan 2007 sonuna kadar elde edilmesi amaçlanmaktadır. Elde edilen veriler sadece Psk. Mehmet Akif Güzel’in yüksek lisans tezinde ve/ve ya bilimsel kongre ve yayınlarda kullanılacaktır. Çalışmanın sonuçlarını öğrenmek ya da bu çalışma hakkında daha fazla bilgi almak için Psk.. Mehmet Akif Güzel’e başvurabilirsiniz. (İletişim İçin: Ofis B32 – Tel: 210 5943; E-posta : [mehmetakif82@yahoo.co.uk](mailto:mehmetakif82@yahoo.co.uk))

## APPENDIX D

### Autobiographical Memory Test (Williams & Broadbent, 1986) (Atobiyografik Bellek Testi)

#### AUTOBIOGRAPHICAL MEMORY TEST\*

##### Instruction

*I am interested in your memory for events that have happened in your life. I am going to read to you some words. For each word I want you to think of an event that happened to you which the word reminds you of. The event could have happened at any point in your life from when you were small to last week, please do not include memories from last week. It might be an important event, or trivial event.*

*Just one more thing : the memory you recall should be a specific event – **an event that lasted less than a day, and occurred at a particular time and place.** So if I said the word “good” – it would not be OK to say, “I always enjoy a good party”, because that does not mention a specific event. But it would be OK to say “I had a good time at Jane’s party” (because that is a specific event). It is important to try retrieve a different memory or event for each cue word.*

*Let us try some words for practice:-*

***Rain***

***Newspaper***

***Milk***

---

\* The original English version of the Autobiographical Memory Test instruction and some form examples were sent by J. M. G. Williams in an e-mail contact. I am gladfull to him for this geneous contribution.



## OTOBİYOGRAFİK BELLEK TESTİ- FORM A INSTRUCTON

(The Turkish Version of “One-cue-word AMT Instruction)

### Yönerge

*Bu çalışmada yaşadığınız olaylarla ilgili olarak belleğinizde yer alan bilgilerle ilgilenmekteyim. Size bazı kelimeler okuyacağım. **Sizden, her bir kelime için, bu kelimenin size hatırlattığı ve sizin başınızdan geçen bir olayı düşünmenizi istiyorum.** Bu aktaracağınız olay, yaşamınızın herhangi bir döneminde yer alan bir olay olabilir. Bu olay, küçüklüğünüzde yaşadığınız bir olay olabileceği gibi geçen haftaya kadar olmuş olabilir. Ancak lütfen, geçen hafta içinde yaşadığınız bir olay olmamasına özen gösteriniz. Yine bu hatırlamanızı istediğim anı, sizin için çok önemli ya da önemsiz bir olay olabilir.*

*Sizden bir ricam daha olacak. Sizden hatırlamanızı istediğim anı, spesifik bir anı olmalı. **Yani, bu olay bir günden kısa sürmüş olmalı; ve belirli bir yer ve zamanda gerçekleşen bir olay olmalı.***

*Bu nedenle, örneğin ben size “iyi” kelimesini söylersem, “İyi geçen bir doğum günü partisinden hep çok hoşlanmışımdır” gibi bir cevap uygun değildir. Ama, “Ayşe’nin doğum gününde çok iyi vakit geçirmiştik” gibi bir yanıt uygun olacaktır. Çünkü; bu özel, bir günden kısa süren ve belirli bir yerde ve zamanda geçmiş olan bir olaydır. Ayrıca, sizden söyleyeceğim her bir kelime için “farklı” bir anınızı (ya da olayı) anlatmanızı rica ediyorum.*

*Şimdi örnek olarak bazı kelimeleri deneyelim:*

**Yağmur**

**Gazete**

**Süt**

## OTOBİYOGRAFİK BELLEK TESTİ - FORM B INSTRUCTION

(“Twe-cue-words AMT Instruction” in Turkish )

### Yönerge

*Bu çalışmada yaşadığınız olaylarla ilgili olarak belleğinizde yer alan bilgilerle ilgilenmekteyim. Size bazı kelime çiftleri okuyacağım. Sizden, her bir kelime çifti için, bu kelimelerin size hatırlattığı ve sizin başınızdan geçen bir olayı düşünmenizi istiyorum. Bu aktaracağınız olay, yaşamınızın herhangi bir döneminde yer alan bir olay olabilir. Bu olay, küçüklüğünüzde yaşadığınız bir olay olabileceği gibi geçen haftaya kadar olmuş olabilir. Ancak lütfen, geçen hafta içinde yaşadığınız bir olay olmamasına özen gösteriniz. Yine bu hatırlamanızı istediğim anı, sizin için çok önemli ya da önemsiz bir olay olabilir*

*Sizden bir ricam daha olacak. Sizden hatırlamanızı istediğim anı, spesifik bir anı olmalı. Yani, bu olay bir günden kısa sürmüş olmalı; ve belirli bir yer ve zamanda gerçekleşen bir olay olmalı.*

*Bu nedenle, örneğin ben size “telefon” ve “iyi” kelime çiftini söylersem, “Telefonda iyi haberler almayı hep çok sevmişimdir” gibi bir cevap uygun değildir. Ama, “ÖSS’yi kazandığımı öğrendiğim gün, Ayşe beni telefonla arayıp tebrik etmişti” gibi bir yanıt uygun olacaktır. Çünkü; bu özel, bir günden kısa süren ve belirli bir yerde ve zamanda geçmiş olan bir olaydır. Ayrıca, sizden söyleyeceğim her bir kelime için “farklı” bir anınızı (ya da olayı) anlatmanızı rica ediyorum.*

*Şimdi örnek olarak bazı kelimeleri deneyelim:*

***Yağmur / Ekmek***

***Süt / Tiyatro***

***Banyo/ Gazete***

# OTOBİYOGRAFİK BELLEK TESTİ

## FORM A

### Sample Items in OBB Using One Cue

<b>1. BAŞARILI</b>			
The memory recalled by the subject is jotted down this section.			
E.g. “ÖSS’ye girdiğim günü hatırlıyorum. Sınavım çok güzel geçmişti ve o gün kendimi çok başarılı hissetmişim.”			
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
<input type="checkbox"/> Özel <input type="checkbox"/> Uzun süren <input type="checkbox"/> Kategorik <input type="checkbox"/> Diğer <input type="checkbox"/> Yanıt Yok	<input type="checkbox"/> Özel <input type="checkbox"/> Uzun süren <input type="checkbox"/> Kategorik <input type="checkbox"/> Diğer <input type="checkbox"/> Yanıt Yok		Süre _____ / 60 sn.
<input type="checkbox"/> Düzeltme talebi			

<b>2. DOLAP</b>			
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
<input type="checkbox"/> Özel <input type="checkbox"/> Uzun süren <input type="checkbox"/> Kategorik <input type="checkbox"/> Diğer <input type="checkbox"/> Yanıt Yok	<input type="checkbox"/> Özel <input type="checkbox"/> Uzun süren <input type="checkbox"/> Kategorik <input type="checkbox"/> Diğer <input type="checkbox"/> Yanıt Yok		Süre _____ / 60 sn.
<input type="checkbox"/> Düzeltme talebi			

### 3. MUTSUZ

<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
<input type="checkbox"/> Özel <input type="checkbox"/> Uzun süren <input type="checkbox"/> Kategorik <input type="checkbox"/> Diğer <input type="checkbox"/> Yanıt Yok	<input type="checkbox"/> Özel <input type="checkbox"/> Uzun süren <input type="checkbox"/> Kategorik <input type="checkbox"/> Diğer <input type="checkbox"/> Yanıt Yok		Süre _____ / 60 sn.
<input type="checkbox"/> Düzeltme talebi			

### 4. NEŞELİ

<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
<input type="checkbox"/> Özel <input type="checkbox"/> Uzun süren <input type="checkbox"/> Kategorik <input type="checkbox"/> Diğer <input type="checkbox"/> Yanıt Yok	<input type="checkbox"/> Özel <input type="checkbox"/> Uzun süren <input type="checkbox"/> Kategorik <input type="checkbox"/> Diğer <input type="checkbox"/> Yanıt Yok		Süre _____ / 60 sn.
<input type="checkbox"/> Düzeltme talebi			

# OTOBİYOGRAFİK BELLEK TESTİ

## FORM B

### Sample Items in OBТ Using Two Cues

<b>1. ŞİŞE / BAŞARILI</b>			
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
<input type="checkbox"/> Specifik <input type="checkbox"/> Uzun süren <input type="checkbox"/> Kategorik <input type="checkbox"/> Diğer <input type="checkbox"/> Yanıt Yok	<input type="checkbox"/> Specifik <input type="checkbox"/> Uzun süren <input type="checkbox"/> Kategorik <input type="checkbox"/> Diğer <input type="checkbox"/> Yanıt Yok		Süre _____ / 60 sn.
<input type="checkbox"/> Düzeltme talebi			

<b>2. DOLAP / KÜL</b>			
<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
<input type="checkbox"/> Specifik <input type="checkbox"/> Uzun süren <input type="checkbox"/> Kategorik <input type="checkbox"/> Diğer <input type="checkbox"/> Yanıt Yok	<input type="checkbox"/> Specifik <input type="checkbox"/> Uzun süren <input type="checkbox"/> Kategorik <input type="checkbox"/> Diğer <input type="checkbox"/> Yanıt Yok		Süre _____ / 60 sn.
<input type="checkbox"/> Düzeltme talebi			

### 3. POŞET / MUTSUZ

<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
<input type="checkbox"/> Specifik <input type="checkbox"/> Uzun süren <input type="checkbox"/> Kategorik <input type="checkbox"/> Diğer <input type="checkbox"/> Yanıt Yok	<input type="checkbox"/> Specifik <input type="checkbox"/> Uzun süren <input type="checkbox"/> Kategorik <input type="checkbox"/> Diğer <input type="checkbox"/> Yanıt Yok		Süre _____ / 60 sn.
<input type="checkbox"/> Düzeltme talebi			

### 4. DÜĞME / NEŞELİ

<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
<input type="checkbox"/> Specifik <input type="checkbox"/> Uzun süren <input type="checkbox"/> Kategorik <input type="checkbox"/> Diğer <input type="checkbox"/> Yanıt Yok	<input type="checkbox"/> Specifik <input type="checkbox"/> Uzun süren <input type="checkbox"/> Kategorik <input type="checkbox"/> Diğer <input type="checkbox"/> Yanıt Yok		Süre _____ / 60 sn.
<input type="checkbox"/> Düzeltme talebi			

**\*FORM - B<sub>a</sub>**

KATILIMCI NO <input type="text"/>	NASIL?	HANGİSİ?
1.ŞİŞE / BAŞARILI	Aynı__ Sırayla__(ise)	Önce__ Sonra__
2. DOLAP / KÜL	Aynı__ Sırayla__(ise)	Önce__ Sonra__
3.POŞET / MUTSUZ	Aynı__ Sırayla__(ise)	Önce__ Sonra__
4.DÜĞME / NEŞELİ	Aynı__ Sırayla__(ise)	Önce__ Sonra__
5.DÜKKAN / DEMİR	Aynı__ Sırayla__(ise)	Önce__ Sonra__
6.KÜTÜPHANE / BERBAT	Aynı__ Sırayla__(ise)	Önce__ Sonra__
7.MERDİVEN / MUTLU	Aynı__ Sırayla__(ise)	Önce__ Sonra__
8.BARDAK / PAKET	Aynı__ Sırayla__(ise)	Önce__ Sonra__
9.PİYANİST / ÇARESİZ	Aynı__ Sırayla__(ise)	Önce__ Sonra__
10.ANAHTAR / UMUTLU	Aynı__ Sırayla__(ise)	Önce__ Sonra__
11.ÇORAP / TOKA	Aynı__ Sırayla__(ise)	Önce__ Sonra__
12.SABUN / UMUTSUZ	Aynı__ Sırayla__(ise)	Önce__ Sonra__
13.PANTOLON / HUZURLU	Aynı__ Sırayla__(ise)	Önce__ Sonra__
14.PERDE / KAŞIK	Aynı__ Sırayla__(ise)	Önce__ Sonra__
15.ÇERÇEVE / REDDEDİLMİŞ	Aynı__ Sırayla__(ise)	Önce__ Sonra__

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\* It is the form filled by each subject allocated to the “two-cue-words AMT” condition.