

**THE EFFECT OF ATTACHMENT ANXIETY AND AVOIDANCE ON FREELY RECALLED
AUTOBIOGRAPHICAL MEMORIES: A LINGUISTIC ANALYSIS****BAĞLANMA KAYGISI VE KAÇINMASININ SERBEST HATIRLANAN OTOBİYOGRAFİK
ANILAR ÜZERİNDEKİ ETKİSİ: BİR DİL BİLİMSEL ANALİZ**

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There is a considerable debate regarding the effect of attachment on memory processes. In the present study, the relationship between attachment dimensions and linguistic characteristics of freely recalled autobiographical memories was investigated. Participants (N = 215) retrieved 3 autobiographical memories and completed a measure of attachment anxiety and attachment avoidance. Results indicated that the linguistic indicators of psychological processes varied according to the attachment orientations of individuals. Individuals with high attachment anxiety reported memories which contained rich social details, as a part of hyperactivating affect regulation strategies comprising obsessive attention to attachment figures. Deactivating affect regulation strategies related to attachment avoidance seem highly efficient in preventing the recall of autobiographical memories that may activate attachment behavioral system, since it showed a negative association with the use of words referring to family interactions. Discussion focuses on how the attachment related knowledge structures and affect regulation strategies lead variations in the content of autobiographical memories.

Keywords: Attachment anxiety, attachment avoidance, autobiographical memory, free recall, and LIWC.

ÖZET

Alanyazında, bağlanmanın bellek süreçleri üzerindeki etkisi üzerine önemli tartışmalar yürütülmektedir. Bu çalışmada bağlanma boyutları ve serbest hatırlanan otobiyografik anıların dilbilimsel özellikleri arasındaki ilişkiler araştırılmıştır. Katılımcılar (N = 215) 3 anı hatırlamış ve bağlanma kaygısı ve bağlanma kaçınmasına dair bir ölçeği doldürmüşlardır. Sonuçlar psikolojik süreçlere işaret eden dilbilimsel göstergelerin kişilerin bağlanma eğilimlerine göre farklılaştığını göstermektedir. Yüksek bağlanma kaygısına sahip bireyler, bağlanma figürlerine saplantılı bir dikkat eğilimini içeren aşırılaştırma stratejilerinin bir yansıması olarak zengin sosyal detaylar içeren anılar rapor etmiştir. Bağlanma kaçınması, aile ilişkilerini gösteren kelimelerin kullanımı ile negatif yönde bir ilişki göstermiştir. Bağlanma kaçınması ile ilintili sönümleyici duyuş düzenleme stratejileri ise bağlanma davranış sistemini tehdit edebilecek otobiyografik anıların hatırlanmasını engelleme noktasında oldukça başarılı görünmektedir. Tartışmada bağlanma ilişkili bilgi yapılarının ve duyuş düzenleme stratejilerinin otobiyografik anıların içeriğinde nasıl farklılıklara yol açtığı üzerinde durulacaktır.

Anahtar Kelimeler: Bağlanma kaygısı, bağlanma kaçınması, otobiyografik bellek, serbest hatırlama, LIWC.

1. INTRODUCTION

Attachment theory (Bowlby, 1969, 1973, 1980) is a powerful framework for understanding individual differences in cognitive processes, especially in emotional memories. Research suggests that attachment behavioral system plays a crucial role in the processing of emotional information including attention, encoding, and retrieval processes (e.g., Edelstein, 2006; Kohn, Rholes, & Schmeichel, 2012; Miller & Noiro, 1999), but very few of them used free recall paradigm (Haggerty, Siefert, & Weinberger, 2010). A limited number of studies has addressed the influence of attachment orientations on the content features such as narrative coherence, specificity, and emotional details (e.g., Conway, Singer, & Tagini, 2004; Hesse, 1996, 1999), and linguistic characteristics of personal memories (e.g., Cassidy, Sherman, & Jones, 2012). The present study investigated the associations of attachment anxiety and attachment avoidance with the linguistic characteristics of freely recalled autobiographical memories (AMs) using a psychological text analysis program.

2. ATTACHMENT RELATIONSHIPS FROM EARLY CHILDHOOD TO ADULTHOOD

According to Bowlby (1969), who is considered the pioneer of attachment theory, attachment has served as a survival mean which protects newborns against the threat of environment. In adulthood, the mental representations of attachment figures continue to produce the sense of safety (see Berman & Sperling, 1994). The nature of the relationships with the caregivers is one of the most important factors in psychological well-being in adulthood, since relationships with available and responsive caregivers lead to formation of both a sense of attachment security and positive working models of the self and others. Interactions with caregivers who are not available and supportive result in negative working models of the self and others (for more extensive reviews, see Mikulincer & Shaver, 2003a; Shaver & Mikulincer, 2002).

One direction has focused on how attachment is associated with other psychological constructs and processes, while another line of research has focused on the development of psychometrically sound scale of adult attachment. Early adult attachment instruments offered discrete categories measuring adult attachment on the basis of Ainsworth's classification for infants -secure, avoidant, and anxious-ambivalent attachment styles (e.g., Hazan & Shaver, 1987; Klohnen & Bera, 1998; Mayseless, Danieli, & Sharabany, 1996). One of the most widely used categorical model constructed by Bartholomew & Horowitz (1991) divided avoidant attachment style into two different categories: Dismissing (the combination of a positive model of the self and a negative model of others) and Fearful (the combination of a negative model of the self and a negative model of others) attachment styles. Subsequent research, however, revealed that dimensional models of attachment provide a better representation of attachment organization and there are two dimensions which underlie the attachment-related behaviors. Attachment anxiety reflects the extent to which a person worries about rejection and abandonment and attachment avoidance reflects the extent to which a person feels discomfort in close relationships (Fraley & Shaver, 2000; Fraley & Waller, 1998).

Attachment theory has delineated the affect regulation strategies that are related to the attachment orientations. As one of the most important notions of attachment theory, Bowlby (1969) supposed that attachment-related behaviors are organized around an affect regulation system. In the existence of a threat, the attachment behavioral system is activated as a protective mechanism using attachment figures as a safe environment. The absence or rejection of attachment figures, however, results in the development of secondary defensive strategies called hyperactivating and deactivating strategies (Berant, Mikulincer, Shaver, & Segal, 2005). Hyperactivating strategies are characterized by chronic activation of the attachment system (Pereg & Mikulincer, 2004), insistent in proximity-seeking behaviors, and intense orientation to attachment figure to gain the attachment figure's love and support. Deactivating strategies, in contrast, are characterized by the denial of attachment needs and the attempts to deactivate attachment behavioral system (Mikulincer & Shaver, 2003a).

3. ATTACHMENT BEHAVIORAL SYSTEM AND AUTOBIOGRAPHICAL MEMORIES

Attachment-related affect regulation strategies, mental representations of the self and others, and the associations of the attachment behavioral system with the other self-constructs seem to lead remarkable variations in emotional memories. For instance, Mikulincer and Orbach (1995) found that secure individuals were more likely to have moderate defensiveness, low anxiety, and high accessibility of negative memories, the anxious-ambivalent individuals were more likely to have relatively high levels of anxiety and low levels of defensiveness against emotional memories, and avoidant persons were the most defensive group to negative memories and reported moderate-high levels of anxiety. Edelstein (2006) also reported that attachment avoidance is marked by high levels of defensiveness in the processing of information that may activate attachment behavioral system. Results from the Adult Attachment Interview (AAI; George, Kaplan, & Main, 1985; Main, Kaplan, & Cassidy, 1985), a well-developed measure of adult attachment, has revealed that memories for childhood show important variations depending on the attachment styles. Secure discourse in the AAI is characterized by the capacity for fluid shifting of focus of attention between memories evoked by discourse task and maintenance of coherent discourse with the interviewer, whereas dismissing individuals tend to minimize the attention to attachment-related experiences and preoccupied individuals overemphasize the attachment-related experiences (Hesse, 1996).

With regard to the phenomenological properties of AMs, previous research indicated that the attachment anxiety dimension is associated with negative valence, visceral reactions, and vividness of freely recalled AMs (Boyacioglu & Sumer, 2011), intense negative emotions, visceral reactions, incoherent memory narratives, rich perceptual details for negative self-defining memories (SDM) and AMs related to romantic relationships (Boyacioglu, 2012), whereas the attachment avoidance dimension is associated with low levels of emotional

intensity (Haggerty et al., 2010) and with the weak recollection of freely recalled AMs (Boyacioglu & Sumer, 2011), observer view point in the recall of AMs related to romantic relationships and SDMs (Boyacioglu, 2012). The effect of attachment orientation on the linguistics features of memory narratives, however, is a relatively new research subject. Few previous studies demonstrated that attachment dimensions are related the total number of words used in memory narratives, use of personal pronouns, prepositions, words referring to affective, social, and cognitive processes (e.g., Alexander et al., 2010, Boyacioglu, 2010).

This research addresses the gap in the literature on attachment and memory by examining how attachment dimensions relate to the linguistics characteristics of freely recalled AMs. Since it has been consistently found that attachment has an impact on the content, storyline, and structure of memory narratives (e.g., Conway et al., 2004; Hesse, 1996, 1999), it is reasonable to consider that attachment-related knowledge structures and affect regulation strategies influence the linguistic aspects of AMs. With regard to attachment anxiety, it is expected that both the models of the self and others and hyperactivating affect-regulation strategies will reflect in linguistic indicators of affective and social processes. While the obsessive attention to attachment figures may result in variation in social expressions, hyperactivating strategies which result in spread of activation through the autobiographical knowledge base may lead to recall of excessively detailed negative memories. Attachment avoidance, in contrast, may not lead significant variations in linguistic dimensions, because deactivating strategies are highly efficient in dealing with non-attachment related stimuli by preventing activation of attachment behavioral system. For the aim of investigating the associations between attachment dimensions and linguistic characteristics of freely recalled AMs, the content of AMs collected through the present study were examined using Linguistic Inquiry and Word Count Program (LIWC; Pennebaker, Booth, & Francis, 2007), which will be introduced below.

4. METHOD

4.1. Participants

A total of 215 university students from the Middle East Technical University, the Universities of Hacettepe and Ankara, Turkey participated in the study. Nine participants whose reports did not meet the criteria of AM and 11 participants who did not provide at least two memories were excluded from the study. The content analysis using LIWC were performed on 567 AMs collected from the remaining 195 participants (111 women, 84 men). Participants were aged between 18 and 35 ($M = 21.56$, $SD = 2.42$).

4.2. Measures

Experiences in Close Relationships-Revised. The revised Experiences in Close Relationships Questionnaire (ECR-R) developed by Fraley, Waller, and Brennan (2000) is 7-point Likert type scale and includes 18 items for attachment anxiety and 18 items for attachment avoidance. The avoidance subscale assesses the comfort with closeness, while the anxiety subscale reflects concerns about abandonment. The ECR-R was adapted into Turkish by Selcuk, Gunaydin, Sumer, & Uysal (2005). Reliability coefficients for internal consistency were .81 for avoidance subscale and .82 for anxiety subscale. In the present sample, the internal consistency of attachment anxiety and avoidance subscales were also found satisfactory (Cronbach's $\alpha = .86$ and $.87$, respectively).

4.3. Procedure

After providing informed consent, participants read the description of AM adapted from Talarico, Labar, & Rubin (2004):

Autobiographical memories are about the important events you were personally involved in. Autobiographical memories can be related many subjects including your school or professional life or your experiences in your romantic relationships or family life. Autobiographical memories mostly have emotional content. They could be positively- or negatively-valenced. Positive autobiographical memories make you feel happy, safe, loved, etc. Negative autobiographical memories make you feel sad, anxious, angry, etc.

It is usually a snapshot of a specific scene rather than a film about a period of time or an extended event. There is usually a plot, a setting, and characters. However, not all of these characteristics must be present in each individual memory. You can usually recall or trace the date of an autobiographical memory. They can be from any time in your life from early childhood up to what you did right before coming here today.

In the present study, you will be asked to remember three autobiographical memories from your life and to write them in detail. Now, in the light of this description given above, please think about your past and choose a memory to report here. Please write a description of your autobiographical memory. After you complete writing, please pass the other memory task.

After the free recall task, the attachment scale is given to the participants. Participants were asked to fill out the survey packets at home and bring them back to the next class meeting. The participation was completely voluntary and no reward was provided.

The content of AMs reported by participants was analyzed using LIWC that is a computerized text analysis program for examining emotional, cognitive, and structural components of a verbal or written speech samples. LIWC default dictionary covers 4,500 words and word stems and nine categories for linguistic, social, affective, cognitive, perceptual, biological processes, relativity, personal concerns, and spoken categories as well as 80 output variables (Pennebaker et al., 2007). The adaptation study of LIWC to Turkish was conducted by Muderrisoglu (2012) with the objective to prepare a Turkish dictionary that covers all linguistic categories of the LIWC default dictionary. Data were analyzed according to the categories of psychological processes including social, affective, cognitive, perceptual processes and attachment-related linguistic processes only, the LIWC categories for particular linguistic categories such as punctuations, passive verbs, or modals, and the biological processes, relativity, personal concerns, and spoken categories were not explored in accordance with the aim of the present study.

5. RESULTS

Means, standard deviations, and zero-order correlations for study variables involved in the central hypotheses are given in Table 1. Attachment anxiety was significantly and positively correlated with the use of words covered by LIWC dictionary ($r = .23, p < .001$), pronouns ($r = .17, p < .02$), personal pronouns ($r = .16, p < .02$), singular first-person pronouns such as “he, she, her” ($r = .17, p < .02$), and the words referring to social processes such as “meeting, talk, share” ($r = .19, p < .01$), while attachment avoidance was significantly and positively correlated with the total word count ($r = .19, p < .01$) and the use of words referring to perceptual processes ($r = .14, p < .05$).

Table 1. Summary of Correlations between the Attachment Dimensions and Linguistic Characteristics of AMs, Means, and Standard Deviations

Basic LIWC Categories	Attachment Anxiety	Attachment Avoidance	<i>M</i>	<i>SD</i>
Word Count	.04	.19**	49.84	36.30
Dictionary Words	.23***	-.02	42.51	6.94
Pronouns	.17*	.09	6.09	3.10
Social Processes	.19**	.00	6.61	4.33
Affective Processes	.07	-.01	2.68	2.16
Cognitive Processes	.00	-.04	8.57	3.56
Perceptual Processes	.08	.14*	.28	.55

* $p < .05$, ** $p < .01$, and *** $p < .001$

A series of hierarchical regression analyses were performed in order to determine the unique contributions of attachment anxiety and avoidance to the linguistics categories of AMs defined by LIWC. Gender was entered to the regressions at the first step to control its effect and attachment anxiety, attachment avoidance, and their interaction were entered in the second step.

As given in Table 2, attachment anxiety had a significant unique and positive effect on the use of words covered by LIWC dictionary ($\beta = .25, p < .001$), pronouns ($\beta = .16, p < .05$), personal pronouns ($\beta = .15, p < .05$), singular third-person pronouns such as “he, she, him” ($\beta = .16, p < .05$), words referring to the social processes ($\beta = .21, p < .01$), and family relationships ($\beta = .17, p < .05$). Attachment anxiety seems to increase the use of dictionary words, pronouns, especially personal pronouns and singular third-person pronouns, and the words related to social relationships, especially family relationships.

Regarding attachment avoidance, it had a significant unique and positive effect on the use of words referring to visual perception such as “see, look, image” ($\beta = .16, p < .05$) and a negative effect on words referring to the family relationships ($\beta = -.16, p < .05$), as summarized in Table 2. Persons with high attachment avoidance were more likely to describe the perceptual details of their personal experiences, while they were less likely to mention their family relationships. In predicting total word count, both attachment avoidance ($\beta = .17, p < .05$)

and the interaction of attachment dimensions ($\beta = .15, p < .05$) showed a significant effect. However, the slope difference test did not yield significant results for word count.

Table 2. Predicting Linguistic Characteristics of AMs from Attachment Dimensions

			ΔR^2	F change	β	t
Word Count	Step I	Gender	.01	3.035	.12	1.742
	Step II	Anxiety	.05	3.606**	-.02	-.307
		Avoidance			.17	2.319*
		Interaction			.15	2.103*
Dictionary Words	Step I	Gender	.02	4.507*	.15	2.123
	Step II	Anxiety	.07	4.791**	.25	3.505***
		Avoidance			-.11	-1.565
		Interaction		.09	1.277	
Pronouns	Step I	Gender	.02	4.833*	.16	2.198*
	Step II	Anxiety	.03	2.068	.16	2.155*
		Avoidance			.03	.382
		Interaction		.04	.517	
Personal Pronouns	Step I	Gender	.02	5.000*	.16	2.198*
	Step II	Anxiety	.03	1.734	.15	2.083*
		Avoidance			.02	.270
		Interaction		.00	.013	
Singular Third-Person	Step I	Gender	.01	2.174	.11	1.475
	Step II	Anxiety	.03	2.208	.16	2.187*
		Avoidance			.04	.509
		Interaction		-.06	-.794	
Social Processes	Step I	Gender	.01	2.637	.12	1.624
	Step II	Anxiety	.05	3.100*	.21	2.820**
		Avoidance			-.08	-1.033
		Interaction		.08	1.078	
Family	Step I	Gender	.00	.409	.05	.640
	Step II	Anxiety	.04	2.723*	.17	2.295*
		Avoidance			-.16	-2.139*
		Interaction		.06	.799	
Visual Perception	Step I	Gender	.00	.861	.07	.928
	Step II	Anxiety	.04	2.751*	-.13	-1.759
		Avoidance			.16	2.094*
		Interaction		-.12	-1.644	

* $p < .05$, ** $p < .01$, and *** $p < .001$

6. DISCUSSION

A considerable body of evidence has indicated that attachment is an important source of the variation in memory processes such as retrieval, accessibility, and the recall experiences for attachment-related stimuli. The findings of the present study portrayed the associations of attachment dimensions with the linguistic characteristics of freely recalled AMs. Attachment anxiety and avoidance influenced particular linguistic, social, and perceptual categories defined by LIWC.

In literature, there is an extensive evidence for the effect of attachment behavioral system on the attachment related phenomena such as romantic or family relationships, beliefs about the self and the others, affect regulation strategies, and so on (for a review see, Mikulincer & Shaver, 2003b). However, the effect of attachment styles on phenomena unrelated to attachment is a recent, but an intriguing research subject (e.g., Haggerty et al., 2010; Roisman, 2007; Thornhill & Fincher, 2007). It is reasonable to assume that during free memory recall, the secondary affect-regulation strategies may be involved in the process by the activation of particular knowledge structures even if there is no cue directly linked to the attachment behavioral system, especially in the case of attachment anxiety. Consistent with this assumption, the freely recalled memory narratives of individuals with high attachment anxiety were characterized by obsessive attention to attachment figures, similar to attachment-related memory tasks. Attachment anxiety seems consistent predictor of linguistic indicators of social processes. Persons with high attachment anxiety were more likely to use words referring to social processes and family relationships. In line with these findings, attachment anxiety showed a positive relationship with the use of personal pronouns, especially the singular third-person pronouns such as “he, she, him”. In a similar study, Boyacioglu (2010) also reported that attachment anxiety was related to the use of the singular third-person pronouns for both positively and negatively valenced AMs related to

romantic relationships. Although a free recall paradigm was used rather than an attachment-related memory task in the present study, the narratives of the participants with an anxious attachment orientation seems to excessively focus on attachment figures such as their parents, presumably due to hyperactivating strategies which involve intense attention to significant others (Hazan & Shaver, 1987; Mikulincer & Shaver, 2003a).

Another important aspect of the results related to personal pronouns is that in Turkish to use a personal pronoun in a sentence is mostly a personal choice, because the person of an action is specified by adding particular affix to the verb. The association between personal pronouns and attachment has implications for not only for social and self psychology, but also for linguistic research, since it indicates how individual differences reflect in language. Until recently, the link between emotion and language, however, has been neglected in the linguistic literature (Eilola, Havelka, & Sharma, 2007), but there is a growing body of research on linguistic aspect of psychological processes by the help of new technological developments in psychological text analysis programs (Tausczik & Pennebaker, 2010).

Prior research showed that persons with an avoidant attachment orientation tend to describe their personal experiences without emotions or thoughts (Conway et al., 2004) and perceptual information including visual, tactile, taste, and auditory details (Boyacioglu, 2010) or the words referring to auditory perception (Cassidy et al., 2012) and to have lower scores on vividness and recollection (Boyacioglu & Sumer, 2011), as a part of their secondary affect regulation strategies. The results from the present study, in contrast, revealed that attachment avoidance positively related to the use of words referring to visual perception. Similarly, the positive association of attachment avoidance with total word count seems inconsistent with the findings from previous research, at the first glance. There is empirical evidence that avoidant individuals tend to give short (Boyacioglu et al., 2014) and overgeneral memory narratives (Conway et al., 2004). Boyacioglu (2010), however, reported that the associations of attachment avoidance with word count and the linguistic indicators of perceptual processes were insignificant for non-attachment related memories, while its association with the linguistic indicators of auditory perception was positive and significant only if the content of recalled AM satisfied the need for self-enhancement. Edelman (2006) also noted that avoidant memory impairments are specific to attachment-related stimuli. Therefore, it is reasonable to consider that the deactivating affect regulation strategies are more efficient for non-attachment related memory tasks. Because their secondary affect regulation strategies are successful in avoiding recall of memories which may threaten the attachment behavioral system, persons with high attachment avoidance may feel free to give long and detailed descriptions of their personal experiences in a free recall task. In line with this assumption, attachment avoidance was found negatively associated with the use of words referring to family relationships. That is, they most probably avoid recall attachment-related information, such as their memories with their parents. Moreover, the results showed that attachment anxiety increases the use of LIWC dictionary words which reflect different type of psychological processes, whereas attachment avoidance has no significant relationship with the use of these words. In other words, the expressions in describing a personal memory preferred by individuals with high attachment avoidance might not reflect information which is psychologically important, even if they were more likely to have high scores in the total word count they used.

In sum, the present study represents an early attempt at investigating the relationship between attachment and the linguistic features of freely recalled AMs. The findings presented here suggest that attachment orientations may lead variations in the content of AMs even in non-attachment related paradigms. However, the degree and manner of the effect of attachment on memory processes seems to differ as a function of memory type and content. For instance, the strong association between attachment anxiety and negative affect detected in previous research (e.g., Conway et al., 2004; Mikulincer & Orbach, 1995) was not observed in the present study, as an important finding. At this point, it has to be noted that LIWC has no category attachment-related interactions, but it permits use of dictionaries or categories created by users (Pennebaker, Francis, & Booth, 2001). In further studies, it may be beneficial to explore the effect of attachment anxiety on new-developed categories for attachment-related interactions which most probably would be more sensitive to the effect of hyperactivating strategies.

Before ending this discussion, it is important to note that the relationship between attachment and the content features of memory is a challenging research subject in which researcher has to choose between a large sample size with a memory task depending on one memory session and a great number of memories from a relatively small sample size, because memory tasks involve more than one session require time and effort of participants. A strength of the present study is the large sample size with a great number of memories. Nevertheless, there is clearly a need for further research to understand how attachment-related knowledge structures and processes involve in memory processes.

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