Psikiyatride Güncel Yaklaşımlar-Current Approaches in Psychiatry 2020; 12(3):396-408
doi: 10.18863/pgy.641620

# Autobiographical Memory in Postpartum Depression
## Doğum Sonrası Depresyonda Otobiyografik Bellek

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**Abstract**
Post-partum depression is a serious disorder that has implications both for the mother's mental health and for the newborn's basic needs, such as nutrition, safety and emotional attachment. It is considered to have the same diagnostic criteria as the major depressive disorder except for the fact that postpartum depression is triggered by giving birth. Recent work in cognitive psychology has put forward that autobiographical memory which is defined as the ability to remember specific personal experiences may be related to some of the depressive symptomology. In particular, reductions in the levels of episodic specificity as well as an increase in the level of over-generality of memories were correlated with increased depression levels in both clinical and subclinical populations. In addition, intervention programs designed to increase episodic specificity -the episodic details in an autobiographical event account- of the memories resulted in psychological well-being and general decrease in the depression levels. Given the burden of postpartum depression for both the mother-newborn pair as well as the cost for the general public, findings from studies that investigate the association between major depression and autobiographical memory could be adapted to postpartum depression. Designing low-cost preventive and therapeutic intervention programs is beneficial. By reviewing the recent development in the respective fields, the present work aims to contribute both to the theory behind the mechanisms of postpartum depression as well as to the practical suggestions for the health service providers in order to determine the risk groups early on.
**Keywords:** Postpartum depression, pregnancy, autobiographical memory, episodic specificity

**Öz**
Doğum sonrası depresyon, annelerin ruh sağlığını ve dolayısı ile bebeğin yaşam, beslenme ve duygusal bağlanma gibi temel ihtiyaçlarını etkileyen bir ruhsal bozukluktur. Doğum başlangıçlı tetiklenmesi dışında, tanı ölçütleri bakımından, major depresyona benzer olduğu kabul edilmektedir. Bilişsel psikoloji alanındaki güncel çalışmalar, bireylerin kendi yaşam olaylarına ilişkin bilginin yer aldığı sistem olan otobiyografik sistemindeki bazı karakteristik bozuklukları; örneğin, epizodik özgüllükte (anıların detay oranı) azalma ve aşırı genelleme gibi özellikleri depresif belirtiler ile eşleştirmiştir. Otobiyografik bellek özelliklerini iyileştirici çalışmalar ise, depresif belirtilerde de azalma ve bireysel iyi oluşta artış ile sonuçlanmıştır. Doğum sonrası depresyonun, anne, bebek ve toplum geneli için maddi ve manevi yükü göz önüne alındığında, major depresyon ve otobiyografik bellek ilişkisinin bulgularını, bu alana uyarlayarak önleyici ve tedavi edici düşük-yüklü müdahale programlarının geliştirilmesi yararlıdır. Bu çalışma, ilgili literatürü değerlendirerek kuramsal alana katkıda bulunmanın yanı sıra, sahada çalışan sağlık personelinin doğum sonrası depresyon risk grubunda bulunan kişileri belirlemesine yardımcı olacak ve doğum sonrası depresyonun önlenmesi ve tedavisini kolaylaştıracak önerilerde bulunmayı amaçlamaktadır.
**Anahtar sözcükler:** Doğum sonrası depresyon, gebelik, otobiyografik bellek, epizodik özgüllük

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Received: 01.10.2019 | Accepted: 13.01.2020 | Published online: 24.02.2020

**ONE** of the most critical issues in the field of women's mental health is the issue of childbirth and the psychological issues surrounding it. Pregnancy and time period following pregnacy is prone for the emergence of psychiatric conditions with the contribution of both physiological and psychosocial factors (Özten and Sayar 2015). In the present work, current state of the literature on the relationship between major depression and autobiographical memory will be examined, and the implications of the research findings for postpartum depression (PPD) will be considered.

Traditionally, autobiographical memory has been studied mostly within the scope of cognitive psychology and neuroscience. Recent years, however, witnessed a surge of interest, from within clinical psychopathology –especially regarding it relations to depression- by suggesting practical applications and clinical interventions (Dalgleish et al. 2014, Urbanowitsch et al. 2013). The number of studies focusing on the disruptions of the autobiographical memory and its associations to the well-being of the individual has increased (Neshat-Doost et al. 2003).

Since it has implications for the mental health of the mother as well as for the physiological/survival and emotional needs of the baby, PPD to remain undiagnosed or untreated is highly critical. Accordingly, the present review focuses on how autobiographical memory research could contribute to the early detection and prevention of PPD. Considering the overlap between the diagnostic criteria of PPD and major depression, firstly, the literature on the relationship between depression and impairments in autobiographical memory will be covered. After briefly summarizing general information and risk factors of PPD, existing studies on the relationship between PPD and autobiographical memory will be reviewed, and a low-burden PPD prediction model will be proposed in light of the existing findings.

## Autobiographical memory system

In its simplest definition, autobiographical memory is memory for personal events from one's life. It is considered as a separate category than episodic and semantic memory is that because autobiographical memories are supposed to contain information regarding one's self (Brewer 1986), and are accompanied by an 'autonoetic consciousness' which is also known as mental time travel (Tulving 2002). This type of consciousness is defined as an awareness of remembering an original and specific event tied to a particular time and place; accompanied by a sense of reliving (Tulving 2002). According to the theorists, such awareness not only enables us to remember the past but also helps us to flexibly imagine a future (Tulving 2002, Özbek 2018).

Theoretically speaking, autobiographical memory system has two over-arching characteristics: (1) Researchers define it primarily as a dynamic system (Tulving 2002; Conway and Pleydell-Pearce 2000). That is, the subjective characteristics, and even the content of the to-be-remembered event may vary depending on the needs and goals of the present self. For instance, when we need to feel competent, we may want to remember and relive moments and events where we easily overcame difficulties. Researchers argue that, based on this feaure of the system, we could remember the same autobiographical event for different purposes at different time points, and even the content that was remembered could change. (2) The system is thought to be organized hierarchically. According to the most commonly used theoretical explanation, the Self-Memory System Model (Conway and Pleydell-Pearce, 2000), event-specific details, such as eating por-

ridge for breakfast, are at the bottom of the hierarchy; providing the sensory-perceptual details of the event (such as, the smell or texture) to ensure the vividness of the memory. These details, then, combine to form data for conceptual structures that recapitulate or consist of a combination of several events called general events (e.g., the summer I spent in Japan.) Similarly, general events form more thematic, general time periods called life periods (e.g., my years away from home). This autobiographical data set is an important building block of a person's past or current self. In Conway and Pleydell-Pearce's (2000) terms, the self is called the working self because the emotional states, needs and goals of the self are constantly changing. To summarize, the model puts forward that, within the hierarchical and dynamic organization, the working self guides what is to be remembered and how it is to be remembered, and at the same time remembering specific details of the events feeds back into the continuity and coherence of the present self. It has also been stated by many other researchers that the self has a strong connection to the autobiographical memory (Fivush and Haden 2003). Given the fact that in all mood disorders the coherence of the self is at stake (Berna et al. 2013), the role of autobiographical memory becomes even more ciritical.

Based on studies that underline that we may remember for different purposes each time we remember an event, one of the most frequent questions in the field is why we need autobiographical memory. Why do individuals think about their personal experiences? The functions of autobiographical memories have been grouped under three broad categories. The first one of these is the self-related functions; that is the functions related to the maintanence and the continuity of the sense of self, increasing the positive self-regard (Bluck and Alea 2011). For example, when we are about to make a negative judgement about ourselves, we can recall or relive personal experiences which will support that judgement or prove opposite depending on the situation.

The other category involves social functions where remembering autobiographical experiences contribute to initiating and maintaining social bonds, creating empathy in others as well as teaching/informing others (Webster 1993). For instance, we can use specific instances from our professional life to remind ourselves and others that we are good team players. Finally, the third category involves the directive functions, that is, remembering past experiences helps us to navigate in the future, guiding new experiences and learning from them (Pillemer et al 2013). Especially in problem-solving situations, the directive function of autobiographical memories is used widely (Biondolillo and Pillemer 2015).

It has been shown that when autobiographical memories are sufficiently detailed and vivid, in other words, have high episodic specificity (compared to the general type memories such as 'I was the most hardworking student in my class.'), they better serve the intended purposes (Waters et al. 2013). For example, having specific and detailed memories would allow individuals to be engaged in emotion regulation activities when responding to stressful new events (Erten and Brown, 2018). Accordingly, recent studies have linked the aforementioned functions of autobiographical memories with individuals' well-being and mental health (Waters 2014). Individuals who reported high levels of sharing and positive relationships in their lives used all three functions of autobiographical events extensively (Waters 2014).

To summarize, in light of these findings, one oculd conclude that a well-functioning autobiographical memory system which fulfills all these functions plays a major role in having a continous and integrated self perception. In the next section, studies on how

disruptions in autobiographical memory are associated with depressive symptoms will be reviewed.

## Autobiographical memory and major depression

It is often discussed in the literature that changes in the autobiographical memory quality may lead to the development of psychopathology (such as post-traumatic stres disorder or borderline personality disorder) (for a general review, see Kaya-Kızılöz and Altan-Atalay, 2018). In the case of clinical major depression, main findings from the studies investigating the changes in autobiographical memory can be summarized as follows:

In both classical and recent studies, memory accounts of individuals who were diagnosed with major depression have been reported to contain less episodic detail; i.e. lower levels of episodic specificity comapred to that of healthy controls (Kaya-Kızılöz and Altan-Atalay, 2018). They also have difficulties recalling detailed memories (Williams and Broadbent 1986, Holand and Kensinger 2010, Sumner et al. 2010). For example, Williams and Broadbent (1986) who conducted one of the first studies in that area, asked participants who were diagnosed with clinical depression to describe in detail personal events prompted by cue words provided to them. Researchers, then, classified these narratives as specific (a particular event lasted less than 24 hours) or general (lasting more than 24 hours, recurring or routine events). When compared to the healthy control group, it was observed that depressed patients recalled a high number of general events, and they had difficulty in remembering event-specific details. This phenomenone has come to be known as over-generalized memory (Sumner et al. 2010, Liu et al. 2013).

Even though reduction in episodic specificity has been widely accepted as a prominent characteristic of autobiographical memory in depression (e.g., Hitchcock et a. 2017), it is not without its opponents. For example, Raes et al. (2006) did not find an association between the specificity levels of word-cued autobiographical memories and depression levels. It is important to note here that special attention needs to be paid to how different research teams define the episodic spcificity variable. Studies reporting a reduction of specificity levels along with an increase in the depressive symptomalogy often used the scoring system in the Autobiographical Interview technique, originally developed by Levine et al. (2002). This technique is based on distinguishing the episodic and non-episodic (semantic) elements in the narratives. In other words, the degree of specificity in the autobiographical event accounts was determined by examining the presence of actual event-specific details. Instead of categorically classifying the whole narrative as specific or not (as was the practice in Raes et al. 2006), the narrative was coded into episodic details; resulting in a continous 'episodicity' score. This is particularly important in the context of the early diagnosis of PPD. Unlike major depression, PPD occurs naturally but in a special context (child birth) that affects the psychological state both physiologically and situationally. Pregnant women, even if they are prone to depression, could still generate memories that meet the minimum criterion of categorical specificity – a particular event tied to a particular time and place- due to past habits. Examining only the number of autobiographical incidents classified as specific may not be the optimal measure. In order to monitor change, a relatively more sensitive measure would be the reduction in the number of details. Since the post partum context would allow for multiple testing times (pre-depression during pregnancy and after-pregnancy depression), it is relatively easier to track any changes.

Another finding frequently reported in the literature is that individuals with clinical depression or mild depression (sub-clinical) chronically focus on events that include negative emotion; that is, they recall more negative events than positive ones (Holland and Kensinger 2010).

Although there are not many studies directly focusing on the relationship between the phenomenology of remembering autobiographical events and depression, the available findings suggest that systematic research is needed. First of all, the phenomenology of remembering, that is the subjective characteristics of events, has been generally measured by self-report measures. The participants rate the phenomenological characteristics of the events with Likert-type scales, such as vividness, reliving, memory perspective (first-hand or observer perspectives) and emotional intensity. Since this kind of rating or assessment is more about how the event is perceived rather than how it actually is, and therefore, has direct implications for mood disorders. For example, studies demonstrate a relationship between perceived emotional intensity of past experiences and depression (Rottenberg et al. 2005), and in a similar vein, between the perceived unity of the event details and depression were also shown (Dalgleish et al. 2011). In a study in which the vividness of memories was considered as the main unit of analysis, individuals with a history of depression reported low levels of vivid autobiographical memories when recalling positive events compared to individuals who had never been diagnosed with depression (Werner-Seidler and Moulds 2011). Mitchell (2016) reported a relationship between the personal significance of events and previous history of depression. These last two studies show that phenomenonology of remembering is affected by not only the immediate depressive symptoms but also when susceptibility to depression is observed.

In summary, the limited number of studies in the literature have focused on different parts of the phenomenology of remembering (such as vividness, personal significance, perceived unity of the event) in the context of relationship with depression, and there sems to be a need for more integrated research in the area. For instance, in the studies conducted with non-depressed individuals, when subjective feelings accompany remembering, people tend to believe in the accuracy of those memories (Talarico and Rubin 2007), and this way autobiographical memories feed into the integrity of the self as well as psychological well-being (Sutin and Gillath 2009). Considering that the phenomenology of memory and the specificity of memories are influenced differently by other types of variables, such as visual imagery (Aydin 2018), it is important to consider memory specificity and phenomenology together in the context of depression to fill a gap in the literature.

Finally, it should be noted that the findings reviewed in this section have been obtained mostly through correlational studies. This provides only limited evidence regarding the directionality of the relationship between memory variables, such as episodic specificity and phenomenology, and depression. In other words, it is difficult to make causal inferences with such cross-sectional correlational designs. There are a few longitudinal studies in the literature (Brewin et al. 1999), but due to the nature of depressive disorders (e.g., major depression), it is not possible to predict when individuals will exhibit depressive symptoms so even the longitudinal studies rely on monitoring memory outcomes only during and after the diagnosis of depression (Williams et al. 2007). In this respect, PPD which is defined as a type of depression triggered by child birth, could be of great importance because it is possible to track the changes in the memory varibles even before any depression diagnosis. In the next section, after a brief review of the defi-

nition and risk factors of PPD, existing studies on the relationship between PPD and autobiographical memory is discussed.

## Postpartum depression definition and characteritics

Pregnancy and child birth is a period in which physiological, psychological and social stress factors could be very intense for the mother. Possibly owing to these, a rise in the frequency of anxiety and PPD is observed in mothers and mothers (Kessler 2003). According to DSM (Diagnostic and Statistical Manual of Mental Disorders, APA 2013), PPD is categorized under major depression. Even though there are objections to this categorization (Bloch et al. 2005), there is consensus on the fact that PPD is not a separate diagnostic category, and that DSM-5 (APA 2013) considers it to have the same criteria as major depression (Jones et al. 2010). The only diagnostic criterion that distinguishes PPD from major depression is that it is triggered by childbirth (Jones et al. 2010). Although the exact onset of PPD is not yet agreed upon, the empirical studies have accepted it to start from first weeks to one year on after child birth (O'Hara and McCabe 2013). Based on DSM-5 (2013), half of the cases start even before child birth.

Other diagnostic criteria include loss of pleasure and interest in activities for two weeks or longer, weight-sleep changes, difficulty in concentration, feelings of worthlessness and guilt, anergy (low energy level), and recurrent thoughts of death (DSM-5, American Psychiatric Association 2013).

Across the world, the prevalence of PPD has been reported in a considerably wide range. It is important to note that many studies reporting the prevalence of PPD as 10-15% are based solely on data from developed Western countries (Kessler 2003). Halbreich and Karkun (2006) criticized this, and reported the prevalence values between 0% (Austria, Malaysia Singapore, Denmark) and about 60% (Brazil, Korea, South Africa, Chile, Italy) in their research involving forty different countries. In the Turkish context, PPD rates are reported to be within the range of 14-40.4% (Ege et al. 2008, Yağmur and Ulukoca 2010, Özbaşaran et al. 2011).

In addition to the negative consequences that the birth and postpartum process may have directly on the mother and the baby's health, the financial burden on society is also considered to be quite high. For example, it was stated that the total cost of mental health problems occurring annually in the UK was £ 8.1 billion (Bauer et al. 2016). It was reported that 28% of these costs belong to the mother and 72% belong to the child.

In the relevant literature, a wide range of risk factors related to PPD is reported, and it is emphasized that these risk factors of PPD should be treated as multidimensional (Halbreich 2005). These factors can be broadly grouped as family and personal history of mental disorders, socio-economic factors, issues in previous pregnancies, hormonal and biological factors.

Cultural differences have also been reported regarding some risk factors, particularly those related to the family. For example, in Turkey the sex of the baby (being female) was observed to be among the major risk factors (Eküklü et al. 2004). According to Ay et al.'s (2018) comprehensive literature review conducted on a national scale, the top three reported risk factors in the last decade are: mother's or family history of depression, mother's educational status and unwanted / unplanned pregnancy. In addition, negative emotional relations with the spouse, working status of the mother (in the Eastern re-

gions is she is working; if not in the Western regions) and the number of previous pregnancies and children were identified as important risk-increasing factors.

A final point to consider is the relationship between hormone levels and depression. In particular, there is evidence that trioid dysfunction and a decrease in estrogen levels may play a triggering role in a proportion of patients with PPD (Yonkers et al. 2011). It has been reported that social role perceptions are psycho-social variables that may be among the risk factors of depression (Halbreich and Karkun 2006, Gülseren 2013). Characteristics such as partner support and marriage satisfaction are considered in this category (Yalçınkaya Alkar and Gencoz 2005). In addition, mothers or prospective mothers having a history of depression -unrelated to childbirth- have the risk of recurrence with increased anxiety and stress in the postpartum period (Taşdemir et al 2006). Additional risk factors include pregnancy being an unwanted or unplanned pregnancy (Ay et al 2018).

In addition to these risk factors, one other variable evaluated in the etiology of PPD is the attachment patterns of the mothers (Monk et al. 2008). Several studies have shown that the correlation between PPD and attachment patterns is high. In particular, insecure attachment style contributed to to the risk (Monk et al. 2008).

In summary, it was noted above that PPD has negative consequences both for the mother and the baby. With regards to the mother, these manifest themselves as increases in introversion and suicidal tendencies, and with regards to the in infant, the consequences could be emotional attachment problems, increases in sucking behavior problems, motor function issues and general development problems, growth retardation, behavior and sleep disorders and newborn diseases (Çalık and Aktas 2011). In order to prevent these serious problems, easy-to-implement programs are needed to capture risk groups even before PPD occurs.

## Postpartum depression and autobiographical memory

By nature (since it is triggered by birth), PPD would allow to examine autobiographical memory before depression is diagnosed. Thus, changes in pre-partum and postpartum memory characteristics and depressive symptoms can easily be attributed to their depression. A research study conceptualized this way would inevitably possess a longitudinal design, and currently there are very few studies of this kind in the field.

Mackinger et al. (2000) conducted a longitudinal study with 53 participants. They completed the Edinburgh Postnatal Depression Scale (EPDS, Cox et al. 1987) and an autobiographical event description scale once before delivery and completed the EPDS three months after delivery. Autobiographical event narratives, prompted by positive and negative cue words, were categorized by external coders as specific or categorical (general events), and autobiographical memory characteristics were found to predict the improvement in PPD symptoms. It should be noted here that the variable predicting the postpartum depressive symptoms of pregnant participants is not the increase in the episodic specificity of the personal events, but a general decrease in the categorical event proportion. If impairments in autobiographical memory contribute to mothers' tendency to depression, as suggested in this study, it would be useful to monitor this relationship not only in the number of autobiographical events that are classified as specific or categorical but also in the degree of specificity of a single event.

In another study examining the relationship between PPD and autobiographical memory, memory performance of depressed mothers and healthy controls were compared (Croll and Bryant 2000). Depending on the severity of depression, being able to access specific events was negatively affected in terms of both the number of events and the response latency when compared to the control group. Similarly, when asked to remember events with a particular theme (parenting), mothers in the experimental group remembered fewer positive and more negative events than those in the control group. These results are in parallel with the findings in the literature and supported the hypothesis that disruptions in being able to recall specific events could be depression-related.

In light of these studies, it could be concluded that tracking the changes in the autobiographical memory patterns may also play a helping role in the diagnosis of PPD. The important point is whether or not a decrease in the depressive symptoms can be achieved by improving the autobiographical memory specificity. Although not numerous, such intervention designs are in use in the literature. In the following sections, these designs are reviewed, and the applicability of these in the PPD context is discussed.

## Autobiographical memory impairments: intervention studies

The increasing number of studies demonstrating the relationship between impaired autobiographical memory and major depression makes autobiographical memory research area a target to design interventions that may alter the prognosis of depression (Dalgleish and Werner-Seidler 2014).

There are a couple of existing intervention protocols. One of the prominent ones is the memory specificity training also referred to as MEST (Watkins et al. 2009). It is basically designed to train patients with major depressive disorder (or in some cases, patients with post-traumatic stress disorder) to generate memories with more episodic detail. The steps in the protocol are as follows: Patients first receive general information about depression and over-generalized memories. Following this general information session, they practice to produce specific memories in response to the cue words given to them for several sessions. In the last session, a meeting is held in which they review the main concepts. In addition, patients are given occasional exercises to remember memories / events evoked by positive, negative and neutral words with as much episodic detail as possible. Neshat-Doost et al. (2013) conducted a 5-session MEST technique study with young participants who had lost their fathers in the war in Afghanistan. Participants were evaluated for depressive symptomatology right after the training and two months later, there were no differences in the symptom severity levels when compared to a control group right after the training. However, after two months there was a drastic decrease of depressive symptoms in the experimental group. Similar findings were obtained with Iranian was veterans (Moradi et al. 2014). Thus, there is considerable support for the interventions such as MEST to be effective in decreasing the depression levels by way of alerting individuals to episodic specificity.

Another intervention program developed for similar purposes is Episodic Specificity Induction (ESI) by Madore et al. (2014). As a first step in this technique, participants watch an emotionally neutral short film. The participants are, then, randomly assigned to the memory specificity training group or control group. In the memory specificity condition, an adapted version of Cognitive Interview (Fisher and Geiselman 1992) is used which is a standard method in the forensic field (eyewitness testimony). The parti-

ciants were asked details in the film ("What color was the hair of the woman in the film? "). The participants in the control group were asked general questions instead (Did you like the video? "). Several studies conducted to measure the effectiveness of this method showed an increase in the post-training event detail rates of young and old participants compared to control groups (Williams et al 2017, Madore et al 2014). In addition, in a more recent study, detailed recall increased by using the episodic specificity technique, it was observed that future events that were expected to cause concern were perceived as less negative and narratives contained less negative emotions (Jing et al. 2017). Although this technique has been studied mainly with non-clinical samples, it has recently been adapted to clinical depression groups (Erten and Brown 2018).

In summary, it can be said that cognitive-based interventions that increase episodic specificity and reduce generalized memories are especially promising for the clinical depression cases. These methods, which work with very simple and low burden cognitive principles, will shed light on both the mechanisms underlying depression and therapeutic applications. It is clear that there is a need for preventive or low-burden intervention programs that assist in early diagnosis of PPD given the negative consequences for the individuals and the society as a whole. The characteristic deterioration of the autobiographical memory in the context of major depression and the effect of their improvement on prognosis also have potential for PPD.

## Implications of autobiographical memory intervention programs for postpartum depression

As summarized above, the diagnostic criteria of PPD is similar to that of major depression. The only difference is the timing of diagnosis; PPD's onset is four weeks after birth (American Psychiatric Association 2013). In the emprical practice, individuals who show depressive symptoms up to six months after birth are considered to have PPD (Beck 2008). Given the short- and the long-term burden of PPD on maternal, infant and general public health, research efforts have focused on making the diagnosis as early as possible (Yim et al. 2015). Therefore, applications of autobiographical memory intervention studies to PPD cases is critical. In PPD, since it is possible to monitor the changes in autobiographical memory, especially the episodic specificity level of memories, starting from the prenatal period, risk groups can be identified at a much earlier stage than they would be by the standard depression scales or questionnaires used in the clinical practice.

Although there are many treatment methods for PPD, ranging from psychopharmacology to behavioral techniques (Hollon et al. 1992), it is known that the majority of women experiencing postpartum depressive symptoms do not seek actually psychiatric help (Bilgiç et al. 2015). This will only lead to the deterioration of depressive symptoms. The barriers listed in the literature about accessing treatment include not believing to have serious problems to seek treatment, thinking that they will not meet the financial costs, and fear of social judgments (Blumenthal and Endicott 1997). Similarly, difficulty in asking for help, thinking that no help can be obtained from health workers, and the fear of being labeled, and stigma of mental illness in one's medical records is among the listed reasons (Bauer et al. 2016). Considering that many of these reasons are cognitive barriers, it is conceivable that autobiographical memory programs will yield more efficient results than traditional treatment or therapy methods. In the autobiographical memory programs, the health worker is not expected to talk to the patient about the

emotional content of these narratives, but to give feedback only on the form (detail amount) of the narratives. Concerns about being labeled or socially stigmatized can easily be addressed by this method. The patient's psychological issues will be assessed non-directly, i.e., by talking about the specificity / detail level in the personal event narratives. From this point of view, autobiographical memory programs can be considered as complementary to therapies used in clinical settings.

From a financial point of view, autobiographical memory programs have advantages both in terms of personnel training and in terms of access and following-up of patients compared to traditional psychopharmacology or psychotherapy methods. In these respects, they can be considered among the complementary techniques that help diagnose and determine the risk groups.

# Conclusion

PPD has been regarded as a public health problem by some researchers considering its importance on maternal and infant health as well as the material and psychological burden on the society (Martinez et al 2016). In the last decade, studies in the field of autobiographical memory have made progress in predicting and improving conditions such as major depression and post-traumatic stress disorder (Williams et al. 2007). For example, a decrease in the episodic detail levels of autobiographical event narratives was associated with depressive symptoms (Williams et al. 2007). Moreover, when individuals were trained to increase the degree of episodic specificity (event detail) in their autobiographical memories (through intervention programs), a decrease in the rate of depression was also observed (Neshat-Doost et al. 2013). This was not only a short-term effect but continued to be observed until one year after individuals received training.

The question that arises as a result of these new research venues is whether these methods developed for major depression cases could be applied to PPD as well. Given that the risk factors of PPD are multifold, and the costs diagnosis and treatment are high, it would be advantageous to use the specificity increasing techniques used in these programs in PPD. Since PPD is categorized similarly with major depression except for a timing difference (PPD starts with childbirth), extending the applications to PPD seems like a promising venture. However, it should be noted that PPD occurs in a special context, both physiologically and situationally. The contextual difference between major depression and PPD is important for the content and extent of the preventive interventions described above. For example, an individual in the PPD risk group may be expected to have a different level of motivation compared to a typical individual diagnosed with major depression to cope with the severity of the emotional state in which he or she is due to a particular condition (such as guilt from being responsible for a newborn baby). It may create a different pattern of specificity than is expected from a typical case of major depression. Therefore, there is a need for an increase in the number of clinical and non-clinical comparative studies that will apply these autobiographical memory interventions to the PPD context.

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**Authors Contributions:** The author attest that she has made an important scientific contribution to the study and has assisted with the drafting or revising of the manuscript.
**Peer-review:** Externally peer-reviewed.
**Conflict of Interest:** No conflict of interest was declared by the author.
**Financial Disclosure:** This work is supported by Tübitak under the 3501 Career Development Program (Project No: 155K308).