

IMPLANTING FALSE AUTOBIOGRAPHICAL MEMORIES AND THE EFFECT OF
MOOD ON FALSE AUTOBIOGRAPHICAL MEMORY CREATION



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PLAGIARISM

I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

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ABSTRACT

Although human memory appears to be highly reliable, memory distortions are inevitable, influenced by external factors or the passage of time. These distortions have significant psychological and social consequences in many cases. Researchers have extensively studied these memory distortions, commonly known as false memory. The phenomenon has been primarily investigated through implantation studies. The present study has two main objectives. Firstly, it aims to replicate a new method for implanting false autobiographical memories (Otgaar et al., 2022). Secondly, it seeks to explore the impact of mood on the rates of false autobiographical belief and memory implantation, specifically examining whether the rates differ between positive and negative moods. For the replication phase, the participants were divided into Single and Repeated groups ($N = 104$, $M_{age} = 31$). Participants were presented with a set of 20 autobiographical events, including a critical false event (swimsuit falling off), and were asked to recall whether they had experienced these events. After one week, participants who had not encountered the false event were given a second survey that suggested they had indeed experienced it, with one group being suggested once and the other repeatedly. They were then asked to provide belief and recollection ratings, along with event-related details. The replication of the study was partially successful, with the successful implantation of false beliefs and false memories ranging between 4% and 12%. Interestingly, the occurrence of false beliefs and false memories was equally probable in both the Single and Repeated groups. For the mood induction phase, participants were divided into four groups: Single-Positive, Single-Negative, Repeated-Positive, and Repeated-Negative ($N = 206$, $M_{age} = 31$). The same procedure was followed, but at the onset of the second survey, participants' mood was manipulated using positive or negative video clips. The mood induction part of the study was also partially successful. The occurrence of false memories was equally probable in both the Positive and Negative mood groups. However, regardless of the event frequency groups, the false belief creation was significantly higher in the Negative mood groups than in the Positive mood groups, aligning with previous literature. Similarly, psychopathologies characterized by persistent negative mood states such as depression and PTSD, along with their subclinical symptoms, might also exhibit susceptibility to suggestion in both therapeutic contexts and everyday situations. The study's results, clinical implications, limitations, and future recommendations were thoroughly discussed.

Keywords: Autobiographical Memory, False Memory, False Memory Implantation, False Belief, Lost in the Mall Experiment, Memory, Mood, Mood Induction.

ÖZET

İnsan hafızası oldukça güvenilir görünse de bellek bozulmaları kaçınılmazdır, dış etkenler veya zaman tarafından etkilenir. Bu bozulmalar, birçok durumda önemli psikolojik ve sosyal sonuçlara sahiptir. Araştırmacılar, sahte anı (bellek yanılgısı) olarak bilinen bu bellek bozulmalarını kapsamlı bir şekilde incelemiştir. Bu olgu, genellikle sahte anı yerleştirme çalışmaları yoluyla araştırılmıştır. Bu çalışmanın iki temel amacı vardır. İlk olarak, sahte otobiyografik anıları yerleştirmek için geliştirilmiş yeni bir yöntemin replikasyonunu amaçlamaktadır (Otgaar vd., 2022). İkinci olarak, pozitif ve negatif duygu durumunun sahte otobiyografik inanç ve anı oluşumu üzerindeki etkisini keşfetmeyi amaçlamaktadır. Replikasyon aşaması için katılımcılar Tekil ve Tekrarlayan gruplara bölünmüştür ($S = 104$, $Ort.yaş = 31$). Katılımcılara kritik bir sahte olayı içeren (mayo düşmesi) 20 otobiyografik olay sunulmuş ve bu olayları deneyimleyip deneyimlemediklerini hatırlamaları istenmiştir. Bir hafta sonra, sahte olayı yaşamamış katılımcılara bu olayı aslında yaşadıklarını belirten ikinci bir anket verilmiştir. Bir grup katılımcıya olayın bir kez olduğu, diğer gruba ise birden fazla olduğu söylenmiştir. Katılımcılardan inanç ve hatırlamalarını puanlamaları ve olayla ilgili detaylar sağlamaları istenmiştir. Çalışmanın replikasyonu kısmen başarılı olmuş, sahte inanç ve sahte anılar %4 ila %12 arasında yerleştirilmiştir. İlginç bir şekilde, Tekil ve Tekrarlayan gruplarda sahte inançların ve sahte anıların oluşumunun eşit derecede muhtemel olduğu bulunmuştur. Duygu durumu incelenen aşama için katılımcılar Tekil-Pozitif, Tekil-Negatif, Tekrarlayan-Pozitif ve Tekrarlayan-Negatif olmak üzere dört gruba ayrılmıştır ($S = 206$, $Ort.yaş = 31$). Bu aşamada da aynı prosedür takip edilmiş, ancak ikinci anketin başlangıcında katılımcıların ruh hali pozitif veya negatif video klipler kullanılarak manipüle edilmiştir. Çalışmanın duygu durumu incelenen kısmı da kısmen desteklenmiştir. Pozitif ve Negatif duygu durum gruplarında sahte anıların oluşumunun eşit derecede muhtemel olduğu bulunmuştur. Ancak, olay sıklığı gruplarından bağımsız olarak, Negatif duygu durumdaki gruplarda sahte inanç oluşma oranları Pozitif duygu durumdaki gruplardan anlamlı derecede daha yüksek olmuştur ve bu bulgu literatürle de uyumludur. Benzer şekilde, depresyon ve TSSB gibi süregelen olumsuz duygu durumlarıyla karakterize edilen psikopatolojiler ve bunların subklinik semptomları da hem terapötik bağlamlarda hem de günlük durumlarda telkine duyarlılık sergileyebilir. Çalışmanın sonuçları, klinik çıkarımları, limitasyonları ve gelecekte yapılacak çalışmalara yönelik önerileri ayrıntılı olarak tartışılmıştır.

Anahtar Kelimeler: Otobiyografik Bellek, Sahte Anı (Bellek Yanılması), Sahte Anı Yerleřtirme, Sahte İnanç, Alışveriş Merkezinde Kaybolma Deneyi, Bellek, Duygu Durumu, Duygu Durumu Deęiřimleme.



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1. INTRODUCTION

Memory is a highly comprehensive subject that has been studied for many years in various fields, such as psychology, sociology, medicine, neuroscience, neuropsychology, cognitive sciences, linguistics, history, engineering, and more. Extensive research in psychology and other disciplines has led to the identification of specific classifications and systems within memory (Goldstein, 2011).

The broadest distinction in memory lies between short-term memory and long-term memory, and each has its own unique characteristics and fields of study. Long-term memory, for instance, is further divided into two broad subheadings: explicit (conscious) and implicit (unconscious) memory (Goldstein, 2011). Explicit memory, in turn, can be categorized into two separate subfields: episodic (personal events) and semantic (facts and knowledge) memories. This thesis focuses on long-term memory and its examination of episodic memory. The distinction between episodic and semantic memory is generally based on the type of information being remembered, with episodic memory involving personal events and experiences (Goldstein, 2011). Another perspective is that episodic memory is experience-based, while semantic memory does not require personal experiences. Tulving, a prominent researcher in memory, described episodic memory as "mental time travel," where the mind embarks on a journey as far back as it can remember (1985). On the other hand, semantic memory contains information and facts; for example, we "know" which city is the capital of Turkey, and this knowledge does not require access to a personal experience.

Regarding autobiographical memory, it is often associated with episodic memory. To some extent, this is correct, as autobiographical memory encompasses recollections of one's own past (Rubin, 2005). Additionally, autobiographical memory endures over extended periods, ranging from weeks to lifetimes, and contributes to one's understanding of oneself at varying degrees of conceptualization (Conway, 2001). However, autobiographical memory also includes semantic memories of facts about our lives. For example, remembering funny events on a family holiday as a child is an example of episodic memory, while knowing the year and location of that holiday constitutes semantic memory (Cabeza & St Jacques, 2007). These memories possess person-specific, episodic, long-term, and complex characteristics, as they relate to various fundamental aspects of the sense of self, such as personal experiences, emotions, culture, and the environment in which one has lived (Goldstein, 2011). Given the multifaceted nature of autobiographical memory, it is studied in various research areas that explore the human experience from different angles, including sociology, psychology, history,

and more. In psychology, autobiographical memory is examined in numerous subfields, such as social, developmental, neuropsychological, cognitive, and clinical psychology (Conway & Pleydell-Pearce, 2000). Research in these areas has delved into the mechanisms of autobiographical memory, its functions, its relationships with other cognitive processes and executive functions, its weaknesses, vulnerabilities, strengths, and components (Kasabova, 2009).

The commonly accepted view of autobiographical memory for many years is that it goes beyond merely remembering pure facts and events from the past. Instead, it often involves a reconstructed reality influenced by personal beliefs, thoughts, and emotions about perceived past experiences (Bruner, 1990; Fivush, 2010; Vanderveren et al., 2019). For instance, literature argues that emotions experienced at the time of autobiographical memory retrieval can influence the information recalled, and the emotional content of autobiographical memory can also impact the way events are remembered (Holland & Kensinger, 2010). These findings have been corroborated by other recent studies examining the relationship between autobiographical memory retrieval and mood through mood induction procedures (Mitchell, 2016; Monnier et al., 2018).

When retrieved autobiographical memory is affected by external and internal factors, or simply by the passage of time as mentioned above, the original memory may be distorted, either fully or partially (Goldstein, 2011). This changed and reconstructed memory is referred to as false memory in psychology literature and can be observed not only in autobiographical memories but also in other types of memories, such as working and semantic memory (Yüvrük & Kapucu, 2022). More specifically, false memory for autobiographical memories refers to recalling either non-existent events or recollecting them in a significantly altered manner compared to their actual occurrence (Roediger & McDermott, 1995). False memory creation can occur in various contexts, including daily occasions (Wang et al., 2018) and controlled settings such as laboratories, with both behavioral and psychophysiological data, like event-related EEG potentials of misled memory (Volz et al., 2019). Importantly, its creation can also be influenced by a person's current mood and the valence of the information being retrieved.

Considering all the information presented about autobiographical memory, mood, and false memory, the questions that have prompted this study have begun to take shape. These three different yet highly related psychological phenomena are examined in terms of their interconnections. The specific research interest of this study revolves around how positive and negative moods affect false memory creation in autobiographical memories. To delve into this

in more detail, the study has four main purposes. Firstly, it aims to replicate and validate a very new false autobiographical memory implementation procedure (Otgaar et al., 2022). Secondly, the procedure was tested with a new condition involving mood, investigating whether false memory rates differ across different mood valences. Thirdly, considering the scarcity of research and theses on the topic of false memory in the current literature in Turkish language, this study was planned to contribute to the literature by introducing a false memory research and a brand-new implementation method baked up by Turkish norms. Lastly, while controversy exists among clinicians and therapists regarding false memory, the phenomenon's existence is nonetheless well-established. Therefore, understanding the conditions that make memories susceptible to suggestion and falsification, such as mood, can be used in taking precautions during clinical interventions and psychotherapy. To achieve these research goals, the mentioned phenomena need to be carefully examined in more detail, including a thorough exploration of previous studies.

1.1. Autobiographical Memory

Autobiographical memory has been classified into three levels by researchers (Conway and Rubin, 1993). The first one is lifetime periods, which includes long periods of life such as years or decades (e.g., "When I lived at X"). The second one is general events, encompassing repeated experiences over days, weeks, or years (e.g., "I used to eat biscuits while watching movies"). The third level is event-specific knowledge, consisting of personal and distinctive details of an event measured in minutes, hours, or a day (e.g., "The day I met her it was raining"). These levels of memory have been generally examined by directly collecting memories from participants in behavioral and experimental studies, as this person-specific approach is the most plausible way to gather such information.

There are two commonly used methods to collect autobiographical memories (see, Luchetti et al., 2016). The first method involves asking participants to recall a memory of an event or time period, leaving the decision of how much information and details to provide open-ended. Two types of this method exist: one with minimal instructions (MI Task), such as "Recall a memory from at least one year ago," and another with autobiographical memory instructions (AM Task), which directs participants to share any recollection of an experience regardless of its nature, along with a detailed description of the event, timeframe, accompanying individuals (if applicable), and their emotional state or response at the time.

The second method utilizes survey questions that lead participants to find a specific memory on a topic with a predetermined number of details through standardized interviews. For example, questions like "During the last 3 weeks, on days when you drank beer, about how many drinks did you have?", "During the past 6 months, how many visits did you make to a doctor?", and "When did you last work at a part-time job?" are used (Bradburn et al., 1987). Both methods have their advantages and disadvantages. Surveys can capture important points regarding what, when, and how often events happened, thus ensuring the quality of autobiographical memory. However, they might fail to reflect the interrelatedness of events at the same time (Belli, 1998). On the other hand, unstandardized interviews allow participants to build a more meaningful story without the inhibition of closed-ended questions, but they might result in the loss of required information. Some studies have suggested that self-reports of events can sometimes be underreported for autobiographical knowledge based on the duration of an event and the length of the retention interval. For example, participants showed only 3% error when reporting hospitalizations within 1 to 10 weeks after the occurrence of the event, but this error increased to 42% when asked 1 year after the event (Cannell et al., 1965). Similar limitations have been found for autobiographical recall in specific events, such as motor vehicle accident injuries (Cash & Moss, 1972) and periods of unemployment (Mathiowetz, 1986). Generally, unstandardized interviews for collecting autobiographical memories are favored because they provide flexibility and allow interconnections between memories, supporting the cognitive structure and reconstructive process of memory (Reimer & Matthes, 2007).

According to Conway (1992), memories of specific events collected with unstandardized instructions involve episodic information and perceptual details, allowing the reconstruction of event details due to their nature. However, this reconstruction process might lead to distortions and changes in the retrieved and recalled memory, both in daily life and controlled settings. While the human brain is generally reliable in remembering the past accurately, people rely on their memory, formed by their experiences, to guide their behavior, decisions, and reactions throughout their lives. Nevertheless, sometimes the information retrieved from the past may not be exactly as it actually happened. It might contain elements of truth, but it can also change, add, subtract, or distort some details of the actual truth during retrieval or recall. Memory is relatively vulnerable to impairment over time, and it cannot remember the past perfectly due to this vulnerability (Schacter & Loftus, 2013).

While some studies argue that certain individuals are more resistant to memory distortions (LePor et al., 2016), others are more prone to them (Patihis et al., 2013). In many

cases, missing parts of a memory might be constructed with false but plausible information to complete the representation of the past in the mind (Addis & Schacter, 2008; Schacter & Addis, 2007; Schlichting & Preston, 2015). This process of "filling in the blanks" in memory can occur in various daily situations, even without the person's awareness. It can be considered a normal function of the human brain and may be adaptive in many scenarios (Howe, 2011; Schacter et al., 2012; Thakral et al., 2023). For example, false memories have been found to improve problem-solving behavior in some studies (Howe et al., 2010; Wang et al., 2017). However, it is essential to acknowledge that false memories can have negative consequences as well, such as leading to false confessions (Shaw & Porter, 2015) and false accusations of child sexual abuse (Otgaar et al., 2013).

1.2. False Memory and Autobiographical Memory

When it comes to the intersection of autobiographical memory and false memory, discovering numerous examples revealing the creation of false autobiographical memories would not be surprising. According to the current literature, there are three well-known and powerful procedures that researchers use to study the development of false (childhood) autobiographical memories (Scoboria et al., 2017). These methodologies are known as the "lost-in-the-mall" (Loftus & Pickrell, 1995), "familial-informant false narrative" (Lindsay et al., 2004), or "memory implantation" (Wade et al., 2002) techniques. The first developed technique, the lost-in-the-mall experiment, involves three induction sessions where researchers suggest to participants that they were lost in a shopping mall during childhood and rescued by an elderly stranger. Participants are then asked to recall more details about the event, along with some true childhood memories collected from their families. Subsequently, two interviewers discuss true and fabricated childhood memories. This experiment successfully implanted false autobiographical memories in nineteen out of twenty-four participants, who correctly identified the false event (Loftus & Pickrell, 1995). Similarly, all these techniques use suggestive methods and social pressure to convince participants of the reality of false events during their childhood. In fact, a recent replication of the lost-in-the-mall experiment, conducted 28 years after its original creation, reported that they implanted false memories in 35% of their participants ($N = 123$) using the same procedure, supporting the conclusions of the original study (Murphy et al., 2023).

Regarding false autobiographical memories, there are some social explanations. For instance, collective recall among cooperative human communities can frequently lead to memory distortions due to the failure to distinguish the source of the memory—whether it

belongs to the narrated experiences of others or the person's first-hand experiences. This phenomenon is known as source monitoring error in the literature and is considered a cognitive fallacy (Johnson et al., 1993). Another explanation, supported by many studies, is that during the recall of any past event, people reconstruct it in a social setting in their minds, leading to distortions in later memories of the same event through the creation of new imaginary narratives (Principe & Schindewolf, 2012; Stone et al., 2013).

Loftus and Palmer (1974) demonstrated this reconstruction process in a social setting by using only two different words to describe an automobile accident video that participants had watched earlier. When participants were later asked to guess the speed of the cars during the accident, changing the word "hit" to "smashed" caused higher estimations of the cars' speed compared to using the word "hit," leading participants to believe there were broken glasses in the scene, despite there being none. Considering that autobiographical memories often have strong social components and are mostly remembered through social contexts, this is an early but crucial example of the importance of social settings, context, and language in the creation of false memories during the recall of an experienced event. It illustrates how small changes in thinking during recall can lead people to easily create false autobiographical memories.

There are three theoretical reasons to explain and to create such distortions, among many others (Jablonka, 2017): The imagination inflation paradigm refers to the occurrence of fabricated memories or heightened confidence in a non-existent past event because of envisioning a new event in the present (Goff & Roediger, 1998). Gist-based associative memory errors involve the false recollection or recognition of a previously experienced perception or word due to its association with a newly introduced, different perception or word (Reyna & Kiernan, 1994). Post-event information effects pertain to situations where the introduction of incorrect information about a past event leads to the formation of false memories concerning that event (Addis et al., 2007). These reasons not only contribute to memory fallacies but are also used in memory implementation studies as techniques to induce false memories. One of the current studies reviewed the usage of these techniques to create false autobiographical events from childhood to adulthood and found that, on average, 47% of suggested events' recollective experiences were induced as false memories to participants. However, only 15% of participants rated them as full memories in false memory implantation studies (Brewin & Andrews, 2017). As in this example, reported false memory creation in any kind of memory might not result in the same amount of full false memory across questions for the same memory, and it may differ in various studies as well.

The variation in results among studies can be attributed to various factors, including disparities in the theoretical and operational definitions of false memory, the categorization of false memory, and the methods used for coding false memory (Shaw, 2018). These factors are crucial and must be taken into consideration while conducting false memory studies to ensure accurate results. For instance, some studies involve multiple impartial evaluators reviewing subjects' memory reports in the form of transcripts to assess whether the subjects outright reject the suggestion, genuinely believe the suggestion, or exhibit indications of recalling details about the non-existent event in coding false memories (Wade et al., 2018). On the other hand, other studies prioritize participants' ratings of their memories because it is believed that they are in the best position to classify the falseness of their memories and determine whether they genuinely believe they are recalling a memory, they believe they are unable to remember something, or they are consciously fabricating a falsehood in autobiographical memory research (Shaw, 2018).

For instance, a 9-point memory rating scale ranging from 1 = "It never happened" to 9 = "I remember it perfectly" was devised and utilized for participants to express different types of autobiographical memory failure and the extent of recall for each induced false autobiographical event description (Burt et al., 2004). Similarly, a classification taxonomy was developed by Shaw and Porter in 2015 to create a common identification and coding system in false memory studies, particularly in false autobiographical memory implementations. They classified participants into four categories based on the number of unique details of the false event reported over the course of three memory interviews and whether they responded yes or no to the question: "Were you under the impression that you had forgotten the event, but it genuinely took place?" If participants answered yes that memory would be considered a "believed event happened." In this case, if the number of unique details of the false event was equal to or above 10, that memory would be classified as a "false memory," indicating a full false memory; if the number of unique details was below 10, that memory would be classified as an "acceptance," indicating a partial false memory. If participants answered no that memory would be considered "did not believe event happened." In this case, if the number of unique details of the false event was equal to or above 10, that memory would be classified as a "compliance," indicating a partial false memory; if the number of unique details was below 10, that memory would be classified as "no false memory," meaning no false memory was created at all.

Similar but different classification and coding strategies exist in the literature, which can lead to problems. Therefore, the field has seen a push to collect various ways of defining false memories and developing a reliable coding system. A mega-analysis of memory reports from eight false memory implantation studies was conducted, and transcripts were coded using seven criteria: "accepting the suggestion, elaboration beyond the suggestion, imagery, coherence, emotion, memory statements, and not rejecting the suggestion" (Scoboria et al., 2017, p. 146). Based on these criteria, 30.4% of cases out of 423 were classified as false memories, another 23% of cases were classified as partial false memories, and together with self-relevant information, not accompanied by a photo depicting the event, and an imagination procedure, the formation of false memory rate was 46.1%. Other research has found factors such as the success of imagination in inducing false autobiographical memories (Mazzoni & Memon, 2003) and the effects of suggestions that include personal information in the production of false autobiographical memories (Scoboria et al., 2012) to be effective as well.

Considering all of this, although the criteria used in studies to identify false memories are deemed fruitful and appropriate in examining false autobiographical memories, they are confusingly varied and time-consuming. The new method mentioned earlier, which will be repeated and is the subject of this study, aims to offer a new solution to these confusions that is simple, provides consistent results, is repeatable, and does not take too long to conduct (Otgaar et al., 2022).

1.3. Mood and Autobiographical Memory

Autobiographical memories have also been examined in terms of their encoding mechanisms and emotional characteristics, in addition to their formational aspects. Numerous empirical studies have demonstrated that autobiographical memories with emotional significance are encoded differently from non-emotional ones (Talarico & Rubin, 2003). According to the literature, positive and negative autobiographical memories contain more perceptual, sensory, and semantic details compared to neutral memories, based on data from 84 participants who completed the Memory Characteristics Questionnaire (Comblain et al., 2005). Additionally, there is a positive correlation between the emotional state of participants and the number of details in their memories (Schaefer & Philippot, 2005). Moreover, the cues that trigger the recollection of autobiographical experiences can influence how these memories are retrieved (Robinson, 1980).

In a recent study investigating the effects of emotional mood and retrieval cues on the content and details of recalled autobiographical memories, distinguishing the impact of emotional dimensions such as valence, arousal, and retrieval cues, researchers found that cue valence was a more consistent predictor of the quantity of episodic details and emotional tone in memories compared to mood (Simpson & Sheldon, 2019). According to the findings, memories prompted by highly arousing cues tended to contain more episodic details, while cue valence played a decisive role in determining the emotional tone of the memories. Although these findings align with existing literature, the study argued that the importance of cue word valence surpassed mood valence during the retrieval process for autobiographical memory details. However, according to the authors, participants were also able to produce a higher number of details when recalling memories under a sad mood state compared to a happy mood state. The researchers employed mood induction procedures using music, like some other studies (Storbeck & Clore, 2005). Additionally, physiological studies investigating eye movements during the retrieval of emotional and non-emotional autobiographical memories found that memories associated with both positive and negative emotions elicited increased numbers of fixations and saccades (El Haj et al., 2017).

When examining emotional autobiographical memories in terms of their nature, distribution, phenomenology, and content, it was found that differences exist across the valence of these memories (García-Bajos & Migueles, 2013). Negative autobiographical memories contain more emotional details, references to cognitive processes, justifications, and mental rehearsal compared to positive ones, whereas positive autobiographical memories receive higher vividness ratings and sensorial details compared to negative ones. Once again, there are distinct characteristics and features between emotional and non-emotional autobiographical memories and within emotional autobiographical memories, further dividing them into positive and negative memories. Although numerous studies have drawn relatively similar yet slightly different mechanisms for the emotional aspects of autobiographical memories and how they are affected by mood, there is a consensus on the existence of differences.

Due to the existing differences between emotional and non-emotional autobiographical memories, working with autobiographical memories that have low emotional valence may produce more accurate results when measuring false memory creation among them. Manipulating memories by adding, subtracting, and altering them when individuals recall them with different emotions and incorporating them into a narrative could indirectly influence the formation of false memories and create a confounding variable due to the mentioned effects.

Until recently, researchers could only study the phenomenon by directly collecting memories from participants, which made it challenging to effectively control for these issues. However, this study, which replicates a new false memory implementation method (Otgaar et al., 2022), addresses this concern by providing preconcerted memories and asking participants whether they have ever experienced them or not during the initial phase of the study. The valence of memories remains stable across participants since they are all exposed to the same memories with the same ingredients, without exceptions. Consequently, this method offers an advantage in controlling for the different effects of the mood during false autobiographical memory induction.

1.4. Mood and False Memory

Similarly, to the relationship between mood and autobiographical memory, there is also a connection between mood and false memory creation (Wright et al., 2005). Previous studies have shown that individuals in a negative mood are less susceptible to false memory creation due to item-specific processing, while those in a positive mood are more prone to false memory creation because of relational processing (Storbeck & Clore, 2005). According to Storbeck and Clore, negative moods often lead people to focus on details rather than seeing the bigger picture, resulting in item-specific processing. Consequently, they can resist the induction of false memories, whether full or partial, as they thoroughly examine each detail compared to individuals experiencing a positive mood. This situation is reversed for those in a good mood. Various other studies in the literature support these findings (Storbeck, 2013). Many of these studies use the Deese/Roediger-McDermott (DRM) paradigm, which involves presenting negative, positive, or neutral word lists to measure the occurrence of false memories (Deese, 1959; Roediger & McDermott, 1995). Typically, participants recall a word related to the list but not actually presented, known as a critical lure. This paradigm has been widely used in mood and false memory induction studies, with researchers employing mood induction techniques to conduct their experiments. For example, one study suggested that false-memory production is amplified when the material aligns emotionally with the participant's mood during encoding. The findings indicated that false memories are more likely to occur for emotionally congruent materials compared to incongruent ones, even when accounting for valence and arousal (Bland et al., 2016).

In addition to the DRM paradigm, the Misinformation Paradigm is also used in similar studies (Loftus, 1979). The misinformation effect refers to the integration of false information into a person's memory of an event. Researchers study the misinformation effect using the

misinformation paradigm, in which participants are shown an event and then provided with information, some of which intentionally includes false details. During a memory test, individuals exposed to misinformation tend to accept it as true more often than those who were not exposed (Loftus, 1979). Studies employing DRM and the misinformation paradigm to induce false memories have also explored the effects of arousal. In the DRM Paradigm, low-arousal moods resulted in a higher occurrence of false recognition compared to high-arousal moods, regardless of emotional valence (van Damme, 2013). Furthermore, in the misinformation paradigm, arousal enhanced memory for accurate central details, while negative valence and arousal inhibited the tendency of control participants to mistakenly endorse false central details (van Damme & Smets, 2014). Most of the studies mentioned above have evaluated participants' moods and arousals in general terms, and it has been generally stated that negative mood is more resistant to false memory formation compared to positive mood.

However, some studies have suggested that the effect of mood changes under certain conditions. For example, a recent research project examining the effect of positive, negative, and neutral moods on positive, negative, and neutral word lists inducing false memory found that negative mood is more likely to process item-specific information, but only for positive and neutral word lists that decrease false memory (Zhang et al., 2017). In negative word lists, participants in a negative mood relied on gist, leading to false memories of the negative word list, similar to those in a positive mood (Zhang et al., 2017). Additionally, an examination of the persistence of mood-congruent false memories with the DRM paradigm found that a negative mood state resulted in higher "remember" judgments for negative-emotion critical lures compared to neutral-emotion critical lures, both in immediate and delayed testing (Knott & Thorley, 2014). These findings are particularly intriguing as they propose different mechanisms for negative content in a negative mood condition, contrary to the general belief that negative mood is always less prone to false memory creation and leads to item-specific processing. Furthermore, some clinical and subclinical psychopathology symptoms that cause frequent and intense negative moods, such as PTSD and depression, might predispose individuals to suggestion-induced memory distortions, particularly when repeatedly reporting these negative experiences in settings like psychotherapy or legal contexts (Scoboria et al., 2017). Additionally, there are further discoveries regarding the attributes of false memory formation and its interaction with mood. For instance, it has been found that persistent negative moods, such as depression, facilitate the creation of false memories (Bookbinder & Brainerd, 2016). In another study, mood did not affect susceptibility to the misinformation effect, but it

significantly influenced participants' confidence in their false memories. Specifically, feeling sad resulted in the highest confidence ratings for these erroneous recollections (van Damme & Seynaeve, 2013).

All the findings mentioned above have inspired further investigations into false memory creation in different mood conditions, particularly in the context of autobiographical memories. Most of these studies have utilized the DRM or misinformation paradigm, leading to varied conclusions about the tendency of false memory creation under different mood conditions and with different mood word lists. As a result, understanding the effect of different moods on the formation of false memories in autobiographical memories and whether similar findings can be observed in both directions remains a matter of interest.

1.5. Relevance with and Significance of the False Memory in Clinical Psychology

The early exploration of false memory dates to 1974 when the first successful experimental study aimed to measure false memories (Loftus & Palmer). During the same period, the emergence of recovered childhood memories of abuse through therapy or spontaneous recovery became known as repressed memories (Loftus, 1993). This debate sparked a similar discussion in clinical psychology, reminiscent of the works of Pierre Janet and Sigmund Freud on dissociation and memory retrieval through hypnosis (Gleaves et al., 2004), and it has been discussed in terms of different psychoanalytic perspectives (Berger, 1996).

The discourse around repression, memory recovery, and the phenomenon of false memory not only influenced psychology but also extended to other social sciences, including law. Its impact on legal matters, such as false confessions (Nash & Wade, 2009), false accusations (Otgaar et al., 2013), false convictions (Howe & Knott, 2015), and false eyewitness testimonies (Frenda et al., 2011; Wade et al., 2010; Wixted et al., 2018), has been extensively studied and continues to be investigated. In real-world scenarios, any form of misinformation in legal situations can lead to false memories concerning specific event details or entire events. This presents a significant problem, particularly in critical situations like being a witness to a crime, where false memories can mislead investigators and lead to wrongful arrests.

In the realm of psychology, the false memory phenomenon, initially observed within clinical discussions regarding repressed memories, has been the subject of investigation in experimental studies, cognitive psychology, and autobiographical memory. Theoretical studies on memory suggestibility have investigated various phenomena, including presuppositions and

the misinformation effect associated with false information suggestions (Loftus, 1975b), the construction hypothesis, and skeleton theory linked to memory's malleability (Loftus, 1975a), word lists linked to semantic meanings (McDermott & Roediger, 1998), staged naturalistic events tied to expectations (Lampinen et al., 1997), and fuzzy-trace theory and DRM paradigm associated with relational processing (Brainerd & Reyna, 2002; Deese, 1959). Drawing from these theoretical explanations, the factors contributing to false memory formation include individual differences (Paddock et al., 2000), social desirability and social pressure (Ost et al., 2005), childhood trauma affecting children's attachment style with their parents (Edelstein, 2006), anchoring effects (Wade et al., 2010), sleep deprivation (Diekelmann et al., 2008), false memory syndrome, which is considered a disorder though not included in DSM-5 (Kaplan & Manicavasagar, 2001), and PTSD (Friedman, 1996).

Furthermore, as most occurrences and studies of false memory have centered around autobiographical false memories, researchers have explored them from various perspectives, including autobiographical memory, autobiographical belief, and event plausibility (Scoboria et al., 2004). Among these, one argument suggests that certain false autobiographical memories may arise as false autobiographical beliefs instead (Scoboria et al., 2007). In another study, researchers examined autobiographical belief in relation to unlikely childhood events such as bone density and plausibility for both bone density and receiving an enema. These beliefs were influenced by manipulated prevalence information suggesting the common occurrence of such events (Scoboria et al., 2006).

Considering all the mentioned frameworks, the impact of the false memory phenomenon on society is substantial. Legal cases involving therapy-induced memory recovery, particularly concerning sexual abuse, have been extensively discussed in terms of their validity (DePrince et al., 2012). In addition to legal cases, trauma victims, especially childhood sexual abuse victims, are central subjects of false memory research concerning dissociative amnesia, victim narratives, selfhood, and source misattribution (Bremner et al., 1996; Ceci et al., 1994; Christianson & Loftus, 1987; Davis, 2005). Due to these reasons, the clinical and cognitive psychology communities have been dedicated to better understanding the phenomenon, examining how it can be created, its potential harm or benefit, and how it should be approached ethically and considering public opinion (Goodman et al., 1998).

The primary method of research involves implantation studies conducted in laboratory or controlled research conditions. One current research project, testing the public's views on the ethics of false memory implementation in psychotherapy for treatment (referred to as 'False-

Memory Therapy,' which is a fictional, non-existing method), gathered responses from 758 participants (Nash et al., 2016). The results were diverse: some participants rated the morality, acceptability, and ethicality of the proposed therapy method as being around the midpoint of the 7-point Likert Scale. However, individual attitudes varied greatly, with some participants finding it entirely unacceptable, immoral, and unethical, while others considered it entirely acceptable, moral, and ethical. The reasons for these differences were based on beliefs that the end justifies the means for the favorable participants, the notion that people need support and different treatment options, and that this method is no worse and no more harmful than other alternative methods. Conversely, unfavorable participants held opposing views, including concerns about the potential for abuse and lack of consent (Nash et al., 2016).

As evident from Nash et al.'s research, the issue of false memory is not only of interest to research circles but also to the public. Although the fictional therapy method used in the study does not actually exist, as previously mentioned, false memories can arise naturally or due to external influences, with the most concerning cases being those associated with seeking repressed memories to explain unexplained symptoms during therapy. While it is known that depression can lead to lower memory confidence and capacity (Fastame, 2014), and PTSD can cause individuals to doubt their memory abilities (Sacher et al., 2018), caution is necessary when dealing with such risks during treatments and interventions.

Considering all, false memory studies should not be limited to the realm of cognitive psychology but should also extend to psychotherapy and clinical psychology, where people's memories are the focus. This approach will enable us to gain better knowledge of this phenomenon and therefore understand the conditions that contribute to the formation of false memories. Additionally, it will help us develop preventative measures that can be implemented in obstructing unintentional formation of false memories in psychotherapy.

1.6. Goals and Hypotheses of the Study

In brief, the main contribution of the current study lays in investigating the relationship between false memory, mood, and autobiographical memory simultaneously, which, to the best of our knowledge, has not been done before despite the existence of numerous powerful studies on the individual relationships between false memory and mood, and false memory and autobiographical memory. The primary objective of this study was to examine the impact of positive and negative moods on the creation of false memories in autobiographical contexts. To achieve this, a novel false memory implementation method was employed (Otgaar et al., 2022).

The reasons for choosing this procedure had been discussed in various sections of the introduction. In summary, it was a recent method that required replication across different cultures and conditions. Moreover, it was a straightforward and uncomplicated procedure, making it less prone to be influenced by different coding strategies. Additionally, its blind implementation ensured that researcher-participant interactions would not affect the results. The method was non-time-consuming and allowed for online application.

The experimental procedures closely followed those of previous studies for inducing false autobiographical memories, with the distinctive addition of mood manipulation as a new condition and variable. It was expected that there would be differences in false memory creation between the positive mood and negative mood conditions. Mood induction was carried out using both music (e.g., Niedenthal & Setterlund, 1994; Storbeck & Clore, 2005) and images (Kurdi et al., 2016; Lang et al., 1997; Lang et al., 2008; Marchewka et al., 2013) through video clips, as these methods had been successful in inducing positive and negative mood states in previous research.

Based on the objectives of the study, the hypotheses are presented below:

Objective 1: To replicate a new false autobiographical implantation method.

Hypothesis 1: The likelihood of false belief creation is higher in the Single group compared to the Repeated group.

Hypothesis 2: The imagination instruction leads to an increase in false belief creation.

Objective 2: To investigate the influence of mood on false belief and false memory creation.

Hypothesis 3: False belief and false memory creation are more likely to occur under Negative mood than under Positive mood.

Hypothesis 4: Differences exist in the rates of inducing false beliefs and false memories, as well as in belief and recollection ratings, among the experimental groups (Single-Positive, Single-Negative, Repeated-Positive, Repeated-Negative) both before and after imagination instruction, even though the direction of these differences is unpredictable.

Objective 3: To examine the self-reported mood of all participants in relation to false belief and false memory creation, irrespective of their assigned experimental groups.

Hypothesis 5: Regardless of the material they were exposed to, varying levels of false belief and false memory induction might occur based on participants' perceived mood.

Hypothesis 6: There might be different false memory and false belief induction rates, as well as belief and recollection ratings among condition groups: Event Frequency (Single and Repeated), Perceived Mood (Positive, Negative, and Neutral), and Imagination Instruction (Before and After).



2. METHOD

2.1. Participants

In the present study, participants from the general population were recruited through an online platform, Google Forms. Initially, 1642 participants were recruited for the first survey. However, the last 237 participants (based on the submission time of the first survey) were not considered since the required sample size had nearly been reached, as determined by G*Power analyses of the original study, which indicated a necessary sample size of 102 participants for the replication study (Otgaar et al., 2022).

Out of the remaining 1405 participants, 750 were eligible for the second survey, meaning they had not experienced the critical false event and had at least four true events they had experienced. In total, 310 participants returned for the second survey, with an average age of 31 years ($SD = 9.36$, range: 18 to 66). Among these 310 participants, 104 were in the replication groups ($M = 31$, $SD = 8.76$, range: 18 to 61), and 206 were in the experimental groups (mood induction groups) ($M = 31$, $SD = 9.67$, range: 18 to 66). The study received approval from the ethical committee of Yeditepe University.

2.2. Materials

2.2.1. Informed Consent Form

At the beginning of each session, participants were presented with a written informed consent form, which clearly stated that their participation in the study was entirely voluntary, and that they could withdraw at any point if they felt uncomfortable. A general explanation about the purpose of the study was provided, which involved examining some of the childhood memories they might have experienced. Only after providing open consent to the informed consent form were participants allowed to continue with the study (See Appendix 1).

2.2.2. Demographic Information Form

A demographic questionnaire, which included participants' age, gender, and education level, was utilized to gather information about the sample characteristics (See Appendix 2).

2.2.3. The List of Events

The list of events used in the study was the same as in the original research (Otgaar et al., 2022), except that they were translated into Turkish by a certified translator in collaboration with a psychologist. Both the original and translated versions of the list of events can be found in Appendix 3. The critical false event was "swimsuit falling off," which was the third event in both the first and second surveys.

2.2.4. Mood Induction Materials

Many studies have utilized mood-altering materials for various durations during mood manipulation. For instance, in the research that inspired this study, participants listened to pieces of music for 8 minutes (Storbeck & Clore, 2005). Another study had each group listen to music and view visuals for a total of 4 minutes (Jallais & Gilet, 2010). Yet another study used two videos for positive and negative mood manipulation, each lasting 1 minute and 47 seconds for both groups (Devilly & O'Donohue, 2021).

It becomes apparent that the display time of mood-altering materials in studies that manipulate mood is becoming shorter. This trend is likely influenced by the modern world, where individuals are bombarded with numerous stimuli in a very short period, leading to shorter attention spans and interest levels. To avoid potential boredom and maintain the effectiveness of mood manipulation (as participants' mood might shift negatively if they become bored), a 3-minute mood induction was chosen, balancing the average time used in previous studies. The mood induction material was a video clip created specifically for this study, featuring a combination of musical pieces, and carefully chosen images. The decision to use a video clip considered technological advancements affecting attention spans and cultural differences, such as unfamiliarity with classical music that had been used in previous studies.

2.2.4.1. Mood Induction: Open Affective Standardized Image Set (OASIS)

The images were selected from the Open Affective Standardized Image Set (OASIS) (Kurdi et al., 2017). The complete stimulus set, along with their valence and arousal ratings, is available on <https://www.benedekkurdi.com> (Benedek Kurdi, n.d.; Kurdi et al., 2017).

Table 1 provides the ID numbers, valence, and arousal means on a 7-point Likert scale, as well as the standard deviations, obtained from the ratings of 822 participants. Additionally, it shows the display order of the pictures viewed by the positive group.

Table 1.*Positive Images*

ID Numbers	Valance		Arousal	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Dog 6	6.49	0.78	5.03	1.72
Fireworks 2	6.27	0.90	4.98	1.74
Cat 5	6.21	0.99	4.86	1.78
Lake 12	6.37	0.87	4.72	1.76
Father 1	6.03	1.08	4.39	1.83
Baby 1	6.17	0.99	4.08	1.76
Beach 1	6.36	0.84	4.73	1.69
Dog 1	6.28	0.77	4.40	1.62
Galaxy 7	6.06	1.03	4.50	2.04
Wedding 6	6.00	0.98	3.92	1.53
Mother 1	6.10	1.10	4.08	1.74
Nature 1	6.11	0.97	4.40	1.75
Penguins 2	6.20	0.87	4.65	1.73
Picnic 1	6.05	1.07	3.70	1.66
Rainbow 2	6.25	0.95	4.90	1.70
Siblings 1	6.20	1.00	3.98	1.86
Sunset 3	6.12	0.98	3.71	1.91
Lake 9	6.41	0.82	4.10	1.91

Table 2 provides the ID numbers, valence, and arousal means on a 7-point Likert scale, as well as the standard deviations, obtained from the ratings of 822 participants. Additionally, it shows the display order of the pictures viewed by the negative group.

Table 2.*Negative Images*

ID Numbers	Valance		Arousal	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Fire 9	1.47	0.74	5.14	1.88
Garbage dump 2	1.60	0.78	3.77	1.95
Scary face 1	1.77	0.98	4.51	2.13
Dirt 1	1.60	0.82	4.98	1.98
Miserable pose 3	1.10	0.42	5.14	2.34
Explosion 5	1.82	1.30	5.45	1.79
War 6	1.39	0.88	5.02	2.06
Destruction 3	1.89	0.91	3.59	2.05
Dog 26	1.29	0.68	4.85	2.30
War 8	1.71	0.95	5.13	1.76
Car crash 1	1.85	0.76	4.55	1.75
Dog 24	1.89	1.08	4.77	2.15
Fire 11	1.75	1.11	5.31	1.89
KKK rally 1	1.34	0.89	4.70	2.20
Injury 1	1.97	1.00	4.53	1.90
War 1	1.75	1.28	5.00	2.00
Animal carcass 5	1.61	1.04	4.47	2.27
Dead bodies 2	1.24	0.69	4.47	2.37

For the positive group, the mean valence of all selected photos was above 6, and the mean arousal ratings were kept around 4, meaning they were around the midpoint of the scale. Conversely, for the negative group, the mean valence of all selected photos was below 2, and the mean arousal ratings were also kept around 4. Each video consisted of 18 photos, and each photo remained on the screen for 10 seconds, after which the next photo was displayed. Background music was played during the presentation of the photos. The total duration of the video clip was 3 minutes for both the positive and negative videos.

2.2.4.2. Mood Induction: Music

The positive mood group listened to "Eine Kleine Nacht Musik" by Mozart for 3 minutes, while the negative mood group listened to "Adagietto" by Mahler for 3 minutes. These musical pieces were selected because previous studies had found that they could successfully alter mood (Niedenthal & Setterlund, 1994; Storbeck & Clore, 2005). The musical pieces were played in the background of the video clip, which consisted of images selected from the Open Affective Standardized Image Set (OASIS) (Kurdi et al., 2017). The neutral mood group did not listen to any music or watch any video clip, and they served as the control group for mood manipulation.

2.2.5. Belief in Occurrence and Recollection Ratings Scales

In the second session, participants were asked to provide their belief in occurrence and recollection ratings for each event they received on 8-point Likert scales (belief in occurrence: *1 = definitely did not happen, 8 = definitely did happen*; recollection: *1 = no memory of the event at all, 8 = clear and complete memory of the event*; Otgaar et al., 2022; Scoboria et al., 2014; Scoboria et al., 2004). Four of these events were true memories that they reported to have experienced in the first session, and one of them was a false memory that they claimed not to have experienced.

The Belief in Occurrence and Recollection Ratings Scales were used to measure false memory induction. After rating each event for the first time, they received the imagination instruction (instruction: *Close your eyes and try to imagine that the event took place. Go back to the place where it happened. Who is with you? When did it happen? What are you feeling?* Otgaar et al., 2022), and they were asked to complete the scales again. Lastly, they were asked to provide event-related details if they remembered/wanted for each event. Both the original and translated versions of the scales can be found in Appendix 4. They were translated into Turkish by a certified translator in collaboration with a psychologist.

2.2.6. Mood Manipulation Check

A mood manipulation check was conducted with one self-report question for each type of mood induction after the completion of the video clip used for mood induction (Gray, 2001; Storbeck & Clore, 2005). Additionally, this question was asked to the replication group at the beginning of the second session to obtain information about their average mood and to enable a meaningful comparison between groups in all data analysis based on the mood statements. The question asked, "How do you feel right now at this moment?" and participants responded using a 7-point Likert scale (*extremely negative (1), somewhat negative (2), slightly negative*

(3), *neither positive nor negative* (4), *slightly positive* (5), *somewhat positive* (6), *extremely positive* (7)). Participants whose mood was not effectively manipulated would be excluded from the analysis.

2.3. Procedure

The research followed an experimental design and was conducted fully online, following the same procedure as the original study (Otgaar et al., 2022), with the addition of a new variable, mood. There were two manipulations: memory manipulation (critical false event induction) and mood manipulation.

The order of the procedure for the replication study was as follows: First, participants received 20 autobiographical events, including one critical false event, and they had to indicate whether they had ever experienced them. If they had experienced the event, they were asked how many times they had experienced it (never, once, twice, or three or more times). One week later, participants who did not experience the false event and had at least four true experienced memories received a second personalized survey, which included four random true events (they experienced) and the false event (suggested as 'experienced by you'). There were two groups: one group was told they experienced the false event once (Single group), and the other group was told they experienced the false event repeatedly (Repeated Group). Participants in the Single group received the true events they experienced once in their childhood, as indicated in the first survey. Meanwhile, participants in the Repeated group received the true events they experienced more than once in their childhood. The assignment groups for both event frequency and mood (six groups) were randomized at the beginning of the study, and this order was repeated for each participant according to the submission time of the first survey. The instructions for the Single group were, "[f]ive events are listed here that you previously indicated you had experienced once," and for the Repeated group, "[f]ive events are now listed that you previously indicated you experienced more than once" (Otgaar et al., 2022, p.3). Participants in both groups provided belief and recollection ratings for each event both before and after receiving imagination instructions (instruction: *Close your eyes and try to imagine that the event took place. Go back to the place where it happened. Who is with you? When did it happen? What are you feeling?*). After the imagination instructions, participants were also asked to provide event-related details (*Which details can you remember about the event?*). Lastly, after collecting their beliefs and recollections for the true/false events, they were informed that one of them was not experienced by them and asked to choose which one it was and how certain they were of their answer.

In addition to the above design, the proposed research included another variable: mood. There were three mood conditions: positive, negative, and no mood induction (replication). Mood induction was achieved using both music and images in the form of a 3-minute video clip, as they are successful methods for inducing positive and negative mood states according to findings from previous studies (refer to the “Materials” section). The images used in the video clip were selected from the Open Affective Standardized Image Set (OASIS) (Kurdi et al., 2017), and the music was selected from the research of Storbeck and Clore (2005), which tested the effect of positive and negative mood on false memory creation. The video clip was shown at the beginning of the second survey to the mood induction groups (Four groups: positive–single, negative–single, positive–repeated, negative–repeated). A short instruction was given to watch the video clip carefully for 3 minutes to conceal the purpose of the mood-induction procedure. After the instruction, participants watched the positive or negative mood video clip, while the no mood induction group (replication group) simply began the second session of the study as in the original one. The positive and negative mood groups started the second session of the study after the end of the video clip. A mood manipulation check was made with one self-report question for each type of mood induction after completion of the video, and the control group was also asked to answer this question at the beginning of the second session.

The reason for adding mood as a variable was to test the new implementation procedure under different conditions and to observe potential differences in false memory implementation between different mood valences. Previous literature had examined false memory creation in different moods and concluded with varying creation rates in different moods. In this scope, not only the replication of the new method was important but also its testing across mood conditions was necessary.

All manipulations were conducted in accordance with ethical boundaries, and participants were fully debriefed after the completion of the study, following the procedures of well-known false memory and mood induction studies (see Appendix 5).

2.4. Data Analytical Approach and Scoring

The design was a mixed design, incorporating both between-subjects and within-subjects variables. The first between-subject variable was event frequency (single or repeated), and the second was mood (negative, positive, and no mood induction). Additionally, there was a within-subject variable, which was imagination instruction (before and after). False belief,

false memory, and detailed false report creation were measured both before and after the imagination instructions. Participants were randomly assigned to six groups: Single-Positive, Single-Negative, Single-replication, Repeated-positive, Repeated-Negative, and Repeated-Replication. Data analyses were conducted using JASP Team Version 0.17.2 (JASP Team, 2023), while IBM SPSS Version 25 was also used as a support for some parts.

Various analyses, including both parametric and non-parametric tests, were conducted to examine the different objectives and hypotheses of the study (refer to the "Goals and Hypotheses of the Study" section).

For the first objective of the study, only the replication groups were assessed. The scoring strategy for the categorical analyses, which included Chi-squared analyses, mirrored that of the original study being replicated. There were three scoring categories: false belief, false memory, and detailed false report. For false belief, a belief score of five or higher was required, along with a recollection score lower than the belief score for the critical event. Regarding false memory, a recollection score of five or higher was necessary, coupled with a belief score equal to the recollection score. In the case of the detailed false report, additional details were needed for either false belief or false memory. The same methodology was applied to true memories and beliefs. The differences in induction rates across the event frequency groups, both before and after the imagination instruction, were likewise assessed using Chi-squared tests. Moreover, exploratory analyses were conducted on raw belief and recollection ratings, exploring their relationships with event frequency and imagination instruction through mixed ANOVA analyses. Independent samples *t*-tests and Chi-squared tests were employed to assess word counts of detailed false reports, false event identification and the certainty of selection as well.

Regarding the second objective of the study, exclusively the experimental groups, encompassing the mood induction groups designated as Positive or Negative, were examined in alignment with their respective assignments. The efficacy of the mood manipulation was evaluated through both Chi-squared and Binomial tests. Participants who experienced unsuccessful mood manipulation were excluded from the analyses. The identical scoring methodology employed for categorical analyses in assessing false belief, false memory, and detailed false report creation entailed Chi-squared tests. Differences in induction rates across the event frequency and mood groups, both before and after the imagination instruction, were similarly appraised via Chi-squared tests. Moreover, exploratory analyses delved into raw belief and recollection ratings, investigating their connections with mood, event frequency, and

imagination instruction using mixed ANOVA analysis. Independent samples *t*-tests and Chi-squared tests were also conducted to assess word counts of detailed false reports, false event identification and the certainty of selection.

As for the third objective of the study, all data were incorporated into the analyses, irrespective of replication and mood induction groups. Participant mood was determined based on their self-reported perceived mood, rather than assigned groups, resulting in three mood states: Positive, Negative, and Neutral. The consistent scoring approach employed for categorical analyses of false belief, false memory, and detailed false report creation entailed the use of Chi-squared tests. Differences in induction rates across the event frequency and mood groups, both before and after the imagination instruction, were likewise scrutinized using Chi-squared tests. Additionally, exploratory analyses explored raw belief and recollection ratings, investigating their connections with mood, event frequency, and imagination instruction via mixed ANOVA analysis. Independent samples *t*-tests, one-way ANOVA, and Chi-squared tests were also conducted to assess word counts of detailed false reports, false event identification and the certainty of selection.

3. RESULTS

3.1. Replication

In this section, the same analyses as those of the replicated study were conducted once again. Only the replication groups were included in all analyses, comprising 104 participants ($M = 31$, $SD = 8.76$, range: 18 to 61) in total (i.e., Single vs. Repeated Groups).

3.1.1. Percentages of False Beliefs and False Memories

As in the original study, first, the overall percentages of false belief and memory induction were examined. All percentages of memories, including true ones, before and after the imagination technique can be found in Table 3. Based on the information presented in Table 3, the rates of successful implantation of false beliefs and false memories varied between 4% and 12% among the 104 participants. Additionally, percentages of true events were examined, and their rates varied between 22% and 76%. Generally, their percentages were higher than the percentages of false beliefs and false memories.

When examining the provided details of the false event, it is interesting to note that there were 10 additional participants who offered extra information about the false event, apart from the reported number in Table 3 (i.e., $n = 12$). However, their belief and recollection ratings did not meet the category conditions (i.e., false belief or false memory) based on the scoring rules of the original study. As a result, they were not included in these categories. Despite this, even if their belief and recollection scores did not place them in the false belief or false memory category, the fact that 22 out of the 104 participants provided details about their experience of the false event suggests that a certain degree of false memory or false belief might have been present. Setting this aside, below is an example story of the false event from the original category:

I remember going to the aqua park in Istanbul, getting on the slide at the insistence of my friends despite my fear, and after slipping, I quickly fell into the pool and my swimsuit fell into the pool and my friend's mother grabbed me and I was not overly ashamed because we were very few people, but I had the feeling that I was a little disgraced.

Table 3.*Percentage and Number of Participants Producing Different Memory Types*

Memory Type	Percentage	Numbers
False belief	6%	$n = 6$
False memory	8%	$n = 8$
False belief after imagination	4%	$n = 4$
False memory after imagination	9%	$n = 9$
Detailed false report	12%	$n = 12$
True belief (first event)	27%	$n = 28$
True memory (first event)	41%	$n = 43$
True belief after imagination (first event)	22%	$n = 23$
True memory after imagination (first event)	48%	$n = 50$
Detailed true report (first event)	65%	$n = 68$
True belief (second event)	28%	$n = 29$
True memory (second event)	49%	$n = 51$
True belief after imagination (second event)	25%	$n = 26$
True memory after imagination (second event)	53%	$n = 55$
Detailed true report (second event)	76%	$n = 79$
True belief (fourth event)	27%	$n = 28$
True memory (fourth event)	48%	$n = 50$
True belief after imagination (fourth event)	23%	$n = 24$
True memory after imagination (fourth event)	49%	$n = 51$
Detailed true report (fourth event)	68%	$n = 71$
True belief (fifth event)	24%	$n = 25$
True memory (fifth event)	45%	$n = 47$
True belief after imagination (fifth event)	25%	$n = 26$
True memory after imagination (fifth event)	43%	$n = 45$
Detailed true report (fifth event)	67%	$n = 70$

3.1.2. False Beliefs and Memories for Single and Repeated Events

As a second step, the amounts of false beliefs and memories, along with their statistical differences across the group conditions, were examined (refer to Table 4). According to the

analyses, the amounts of false belief formation did not differ across the groups of event frequency: Single and Repeated groups, $\chi^2(1) = .18$, $p = .67$, Cramer's $V = .08$. Similarly, there was no statistically significant effect after the imagination instruction, $\chi^2(1) = .26$, $p = .61$, Cramer's $V = .10$.

In relation to the formation of false memories, there was also no statistically significant effect both before the imagination instruction, $\chi^2(1) = .14$, $p = .71$, Cramer's $V = .07$, and after the imagination instruction, $\chi^2(1) = .00$, $p = 1.00$, Cramer's $V = .03$.

Lastly, the results of participants who provided additional details while having false beliefs or false memories were examined. Once again, there was no statistically significant effect of event frequency (Single and Repeated Groups) on the formation of false statements with additional details, $\chi^2(1) = 1.51$, $p = .22$, Cramer's $V = .12$.

Table 4.

Percentage and Number of False Beliefs and Memories as a Function of Conditions

Memory Type	Single	Repeated
False belief	4 (8%; 4/52)	2 (4%; 2/52)
No false belief	48 (92%; 48/52)	50 (96%; 50/52)
False belief after imagination	1 (2%; 1/52)	3 (6%; 3/52)
No false belief after imagination	51 (98%; 51/52)	49 (94%; 49/52)
False memory	3 (6%; 3/52)	5 (10%; 5/52)
No false memory	49 (94%; 49/52)	47 (90%; 47/52)
False memory after imagination	4 (8%; 4/52)	5 (10%; 5/52)
No false memory after imagination	48 (92%; 48/52)	47 (90%; 47/52)
Detailed false report	4 (8%; 4/52)	8 (15%; 8/52)
No detailed false report	48 (92%; 48/52)	44 (85%; 44/52)

In addition to the false belief and memory formation provided by the original study, another comprehensive analysis was conducted to explore the potential effects of the groups in a more detailed manner. When false belief and false memory were examined concurrently as different levels of a single variable, the results demonstrated a lack of statistically significant

effect of the Single and Repeated groups on false belief and memory formation, $\chi^2(2) = 1.17$, $p = .56$, Cramer's $V = .11$. Interestingly, after the imagination instructions, the effect, which was anticipated to slightly increase, was found to further decrease; however, since it is not statistically significant, this unexpected outcome might be attributed to chance, $\chi^2(2) = 1.21$, $p = .55$, Cramer's $V = .11$.

Because of the sample size violation in the Chi-squared Tests (i.e., at least one cell has an expected count smaller than 5), all statistics reported here are based on χ^2 continuity correction.

3.1.3. Exploratory Analyses

Continuing with the same methodology as the original study, the next step involved examining the raw false belief and recollection ratings instead of categorizing them (i.e., not as False Belief and False Memory; refer to Table 5). A Mann–Whitney U test indicated that there was no statistically significant effect between the Single and Repeated groups in terms of mean belief and recollection ratings (all $U > 1327$, $p > .85$).

Table 5.

Mean False Belief and Recollection Ratings (Standard Deviations in Parentheses) as a Function of Condition

False Belief/Recollection	Single	Repeated
False belief	1.98 (2.02)	2.04 (2.20)
False recollection	1.73 (1.68)	2.06 (2.27)
False belief after imagination	1.92 (1.96)	2.12 (2.29)
False recollection after imagination	1.96 (2.04)	1.96 (2.11)

Furthermore, a 2x2 mixed ANOVA was conducted on the belief and recollection ratings, mirroring the approach taken in the original study. Event frequency was treated as a between-subject variable (Single vs. Repeated), while Imagination instruction served as a within-subject variable (Before and After). However, no statistically significant effects were observed (all $p > .11$).

Additionally, the word count of detailed false reports provided by the participants was examined to determine whether it differed between the Single ($M = 0.50$, $SD = 26.06$) and Repeated ($M = 3.60$, $SD = 11.23$) groups. Although an independent samples t -test indicated a

statistically significant effect, $t(102) = 1.95$, $p = .05$, Cohen's $d = .38$, a Mann–Whitney U test was conducted due to violations in normality. This time, no statistically significant effect was found ($U = 1238$, $p = .18$).

In the final step, an examination was conducted to determine whether participants correctly identified the false event and the level of certainty they held in their choice. While 58% ($n = 60$) of the participants accurately pinpointed the false event, 42% ($n = 44$) selected one of their true memories as the false event or expressed uncertainty. This selection did not display statistically significant differences between the Single and Repeated groups, $\chi^2(4) = 6.19$, $p = .19$, Cramer's $V = .24$.

Interestingly, among the 44 participants who incorrectly chose a true memory as the false event, only 11 reported being uncertain and relying on guessing, while the remaining 33 participants claimed to be (almost) certain of their choice. However, the χ^2 statistic ($\chi^2(2) = 13.41$, $p < .001$) indicates a significant connection between the accurate identification of the false event and the certainty of the selection. This implies that participants who accurately identified the false event were more confident in their decision compared to those who mistakenly chose true events, as indicated by the percentages within rows of contingency tables. The level of certainty in their selections showed no variance between the two groups, $t(102) = .41$, $p = .68$, Cohen's $d = .08$.

3.2. Mood Induction Groups

In this section of the results, the replication groups have been omitted from the analyses. The analyses encompass only the mood induction groups, namely Positive-Single, Positive-Repeated, Negative-Single, and Negative-Repeated, comprising a total of 206 participants ($M = 31$, $SD = 9.67$, range: 18 to 66), excluding the mood manipulation check. It is worth noting that the groups categorized as negative and positive in this section all viewed the same video within their respective groups, thereby controlling for the video's impact across participants.

Within this section, while replicating the same analyses as those of the replicated study, additional analyses were conducted by incorporating the between-subject mood variable.

3.2.1. Mood Manipulation Check

To assess the success of the mood manipulation, the connection between participants' mood statements and their assigned groups was examined using the Chi-squared test. The positive mood category includes ratings from slightly positive (5), somewhat positive (6), and

extremely positive (7). The negative mood category includes ratings from extremely negative (1), somewhat negative (2), and slightly negative (3). The neutral mood category includes ratings of neither positive nor negative (4). In this analysis, the event frequency groups were disregarded to solely gauge the effectiveness of the mood induction material. The χ^2 statistic ($\chi^2(2) = 135, p < .001$) indicates a substantial correlation between participants' mood statements and their assigned groups, with a very strong effect size, Cramer's $V = .81$.

As illustrated in Table 6 and when observing the percentages within rows, it is evident that the positive groups reported feeling more positive compared to the negative groups, while the negative groups conversely reported feeling more negative compared to the positive groups.

Table 6.

Mood Manipulation Check

Experimental Groups		Mood Statements			Total
		Positive	Neutral	Negative	
Positive Groups	Count	75.00	22.00	6.00	103.00
	Expected count	39.50	17.50	46.00	103.00
	% within row	72.82 %	21.36 %	5.83 %	100.00 %
Negative Groups	Count	4.00	13.00	86.00	103.00
	Expected count	39.50	17.50	46.00	103.00
	% within row	3.88 %	12.62 %	83.50 %	100.00 %
Total	Count	79.00	35.00	92.00	206.00
	Expected count	79.00	35.00	92.00	206.00
	% within row	38.35 %	16.99 %	44.66 %	100.00 %

As indicated by the descriptive statistics, among the initial 206 participants, 45 were excluded from the analysis due to unsuccessful mood manipulation, resulting in a final sample size of 161 participants ($M = 32, SD = 10.05$, range: 19 to 66) for subsequent analyses in this section. Furthermore, a Binomial test was conducted to cross-validate the success of mood manipulation between participants who experienced successful mood induction and those who did not.

The reported relative proportion of successful mood induction within the experimental groups was 50% each. The Binomial test unveiled a significant difference ($p < .001$) in the proportion of participants who experienced successful mood induction (78%) compared to those for whom mood induction was unsuccessful (22%) in the mood induction groups ($N = 206$), with a 99% confidence interval of 0.70 to 0.85.

Collectively, these findings underscore the success of the mood induction video materials developed for the first time in this study. They have effectively induced mood and are projected to maintain a success rate between 70% and 85% within a 99% confidence interval for their prospective application.

3.2.2. Percentages of False Beliefs and False Memories

Firstly, the overall percentages of false belief and memory induction were examined. All percentages of memories, encompassing both true events before and after the imagination technique, can be found in Table 7. Based on the data provided in Table 7, the successful implantation rates of false beliefs and false memories ranged between 6% and 11% among the 161 participants. Additionally, the percentages of true events were investigated, showing rates ranging between 17% and 72%. Notably, the percentages of true events were generally higher compared to the percentages of false beliefs and false memories.

When examining the provided details of the false event, it is noteworthy that there were 19 additional participants beyond the reported number in Table 7 (i.e., $n = 17$) who provided additional details about the false event. However, their belief and recollection ratings did not meet the category conditions (i.e., false belief or false memory) based on the scoring rules of the original study. As a result, they were not included in these categories. Nevertheless, even though they did not fit into the false belief or false memory category, it can be suggested that a certain degree of false memory or false belief might have existed in 32 out of the 161 participants, considering their provision of details about their experience of the false event. Setting this aside, an example story of the false event from the original category is presented below:

In the summer, I used to go to aquaparks with my grandmother all the time. I bought a new swimsuit on a trip. It had a skirt, but it was removable, and it had 2-3 accessories, you could replace it by plugging it in. But I had lost a lot of weight that summer, so it was a little big. The ropes were opened in the wave pool, too, I was very embarrassed, but we fixed it immediately.

Table 7.*Percentage and Number of Participants Producing Different Memory Types in Mood Groups*

Memory Type	Percentage	Numbers
False belief	7%	<i>n</i> = 11
False memory	6%	<i>n</i> = 10
False belief after imagination	6%	<i>n</i> = 9
False memory after imagination	6%	<i>n</i> = 10
Detailed false report	11%	<i>n</i> = 17
True belief (first event)	19%	<i>n</i> = 31
True memory (first event)	54%	<i>n</i> = 87
True belief after imagination (first event)	17%	<i>n</i> = 27
True memory after imagination (first event)	53%	<i>n</i> = 86
Detailed true report (first event)	65%	<i>n</i> = 104
True belief (second event)	25%	<i>n</i> = 41
True memory (second event)	49%	<i>n</i> = 79
True belief after imagination (second event)	19%	<i>n</i> = 31
True memory after imagination (second event)	53%	<i>n</i> = 85
Detailed true report (second event)	70%	<i>n</i> = 113
True belief (fourth event)	22%	<i>n</i> = 36
True memory (fourth event)	51%	<i>n</i> = 83
True belief after imagination (fourth event)	20%	<i>n</i> = 32
True memory after imagination (fourth event)	55%	<i>n</i> = 89
Detailed true report (fourth event)	72%	<i>n</i> = 116
True belief (fifth event)	25%	<i>n</i> = 40
True memory (fifth event)	48%	<i>n</i> = 78
True belief after imagination (fifth event)	22%	<i>n</i> = 35
True memory after imagination (first event)	49%	<i>n</i> = 79
Detailed true report (fifth event)	68%	<i>n</i> = 109

3.2.3. False Beliefs and Memories for Single and Repeated Events

Secondly, the levels of false beliefs and memories, along with their statistical differences between the single and repeated groups, were examined while disregarding the influence of mood groups (refer to Table 8). This means that both the Single and Repeated groups encompassed participants who experienced both negative and positive moods due to the manipulation. Based on the analyses, the amounts of false belief formation did not show significant differences across the event frequency groups, $\chi^2(1) = 2.79$, $p = .10$, Cramer's $V = .13$. Similarly, there was no statistically significant effect observed after the imagination instruction, $\chi^2(1) = .43$, $p = .61$, Cramer's $V = .09$.

When considering the formation of false memories, there was no statistically significant effect both before the imagination instruction, $\chi^2(1) = .05$, $p = .82$, Cramer's $V = .04$, and after the imagination instruction, $\chi^2(1) = .00$, $p = 1.00$, Cramer's $V = .08$.

Lastly, an examination was conducted on participants who provided additional details while holding false beliefs or false memories. Once again, there was no statistically significant effect of event frequency on the formation of false statements with additional details, $\chi^2(1) = .82$, $p = .37$, Cramer's $V = .07$.

Table 8.

Percentage and Number of False Beliefs and Memories as a Function of Conditions in Single and Repeated Groups

Memory Type	Single	Repeated
False belief	3 (4%; 3/83)	8 (10%; 8/78)
No false belief	80 (96%; 80/83)	70 (90%; 70/78)
False belief after imagination	3 (4%; 3/83)	6 (8%; 6/78)
No false belief after imagination	80 (96%; 80/83)	72 (92%; 72/78)
False memory	6 (7%; 6/83)	4 (5%; 4/78)
No false memory	77 (93%; 77/83)	74 (95%; 74/78)
False memory after imagination	5 (6%; 5/83)	5 (6%; 5/78)
No false memory after imagination	78 (94%; 78/83)	73 (94%; 73/78)
Detailed false report	7 (8%; 7/83)	10 (13%; 10/78)
No detailed false report	76 (92%; 76/83)	68 (87%; 68/78)

Moreover, when examining false belief and false memory simultaneously as levels of a single factor, there was also no statistically significant effect of the Single and Repeated groups on the foundation of false belief and memory, $\chi^2(2) = 2.98$, $p = .23$, Cramer's $V = .14$. Interestingly, after the imagination instructions, the effect, which was expected to slightly increase, was found to decrease further, but probably due to chance, $\chi^2(2) = 1.30$, $p = .52$, Cramer's $V = .09$.

Because of the sample size violation in Chi-squared Tests (i.e., at least one cell has an expected count smaller than 5), some of the statistics reported here are based on χ^2 continuity correction.

As a general yet important note concerning this section, it should be remembered that these analyses were conducted by disregarding the impact of mood. Hence, the potential influence that the mood-inducing video shown to the participants might have had on the overall procedure (e.g., a possible confounding variable) remains unknown.

3.2.4. False Beliefs and Memories for Negative and Positive Mood Induction Groups

As a third step, the amounts of false beliefs and memories, as well as their statistical variances across the negative and positive groups, were examined by disregarding the impact of event frequency groups (refer to Table 9). In other words, the groups were categorized into negative and positive, irrespective of the event frequency. Both single and repeated event frequencies existed within the negative group, and the same applied to the positive group.

According to the analyses, there was an almost statistically significant difference in false belief formation across the mood groups, $\chi^2(1) = 3.83$, $p = .05$, Cramer's $V = .15$. As can be observed in Table 9, the formation of false beliefs was higher in the negative group than in the positive group. However, this difference disappeared after the imagination instruction. Interestingly and unexpectedly, there was a decrease in the number of participants who formed false beliefs without transitioning into false memory formation, $\chi^2(1) = .23$, $p = .63$, Cramer's $V = .06$.

When it comes to the formation of false memories, there was also no statistically significant effect both before the imagination instruction, $\chi^2(1) = .19$, $p = .67$, Cramer's $V = .03$, and after the imagination instruction, $\chi^2(1) = .19$, $p = .67$, Cramer's $V = .03$. There was neither a rise nor a fall in false memory formation after the instruction.

In the final aspect, participants who provided additional details while having false beliefs or false memories were examined. Once again, there was no statistically significant effect of mood on the formation of false statements with additional details, $\chi^2(1) = .22$, $p = .64$, Cramer's $V = .04$.

Table 9.

Percentage and Number of False Beliefs and Memories as a Function of Conditions in Negative and Positive Groups

Memory Type	Negative	Positive
False belief	9 (10%; 9/86)	2 (3%; 2/75)
No false belief	77 (90%; 77/86)	73 (97%; 73/75)
False belief after imagination	6 (7%; 6/86)	3 (4%; 3/75)
No false belief after imagination	80 (93%; 80/86)	72 (96%; 72/75)
False memory	6 (7%; 6/86)	4 (5%; 4/75)
No false memory	80 (93%; 80/86)	71 (95%; 71/75)
False memory after imagination	6 (7%; 6/86)	4 (5%; 4/75)
No false memory after imagination	80 (93%; 80/86)	71 (95%; 71/75)
Detailed false report	10 (12%; 10/86)	7 (9%; 7/75)
No detailed false report	76 (88%; 76/86)	68 (91%; 68/75)

Furthermore, when examining false belief and false memory simultaneously as levels of one variable, there was also no statistically significant effect of the Negative and Positive moods on false belief and memory foundation, $\chi^2(2) = 4.15$, $p = .13$, Cramer's $V = .16$. After imagination instructions, there was a same case again, $\chi^2(2) = 0.91$, $p = .64$, Cramer's $V = .08$.

Due to the sample size violation of Chi Squared Tests (i.e., at least one cell has an expected count smaller than 5), some of the statistics reported here are based on χ^2 continuity correction.

It should be noted that in this section, the frequency of events was ignored, and the analysis was based on mood groups. The possible impact of event frequencies on the analysis is unknown. On the other hand, considering that the frequency of events can vary widely in the formation of a natural false memory that can be experienced in real life, while mood falls on

the negative or positive spectrum, it is an important finding that false belief formation was significantly higher in negative groups than in positive ones.

3.2.5. False Belief and Memories Between Groups

Lastly, the quantities of false beliefs and memories, along with their statistical variances across the four groups, were examined (refer to Table 10). This examination encompassed the predefined categories of randomly assigned groups, as detailed in the research methodology (i.e., Single-Positive, Single-Negative, Repeated-Positive, Repeated-Negative), concerning the formation of false beliefs and memories. According to the analyses, no statistically significant difference was observed in false belief formation among the groups, $\chi^2(3) = 6.62$, $p = .09$, Cramer's $V = .20$. Despite this non-significant result, given the moderate effect size, it is reasonable to conjecture that with a larger sample size, a statistically significant distinction between the groups might emerge. After the imagination instruction, any potential significant effect, if present, was further diminished, $\chi^2(3) = 2.00$, $p = .57$, Cramer's $V = .11$.

Regarding the formation of false memories, there was no statistically significant effect, both before the imagination instruction ($\chi^2(3) = .88$, $p = .83$, Cramer's $V = .07$) and after the imagination instruction ($\chi^2(3) = .20$, $p = .98$, Cramer's $V = .03$).

An examination was also conducted on participants who provided additional details while having a false belief or false memories. Once again, there was no statistically significant effect of mood on the formation of false statements with additional details ($\chi^2(3) = 1.07$, $p = .78$, Cramer's $V = .08$).

Table 10.

Percentage and Number of False Beliefs and Memories as a Function of Conditions Between Groups

Memory Type	Single Positive	Single Negative	Repeated Positive	Repeated Negative
False belief	0 (0%; 0/39)	3 (7%; 3/44)	2 (6%; 2/36)	6 (14%; 6/42)
No false belief	39 (100%; 39/39)	41 (93%; 41/44)	34 (94%; 34/36)	36 (86%; 36/42)
False belief after imagination	1 (3%; 1/39)	2 (5%; 2/44)	2 (6%; 2/36)	4 (10%; 4/42)
No false belief after imagination	38 (97%; 38/39)	42 (95%; 42/44)	34 (94%; 34/36)	38 (90%; 38/42)
False memory	2 (5%; 2/39)	4 (9%; 4/44)	2 (6%; 2/36)	2 (5%; 2/42)
No false memory	37 (95%; 37/39)	40 (91%; 40/44)	34 (94%; 34/36)	40 (95%; 40/42)
False memory after imagination	2 (5%; 2/39)	3 (7%; 3/44)	2 (6%; 2/36)	3 (7%; 3/42)
No false memory after imagination	37 (95%; 37/39)	41 (93%; 41/44)	34 (94%; 34/36)	39 (93%; 39/42)
Detailed false report	3 (8%; 3/39)	4 (9%; 4/44)	4 (11%; 4/36)	6 (14%; 6/42)
No detailed false report	36 (92%; 36/39)	40 (91%; 40/44)	32 (89%; 32/36)	36 (86%; 36/42)

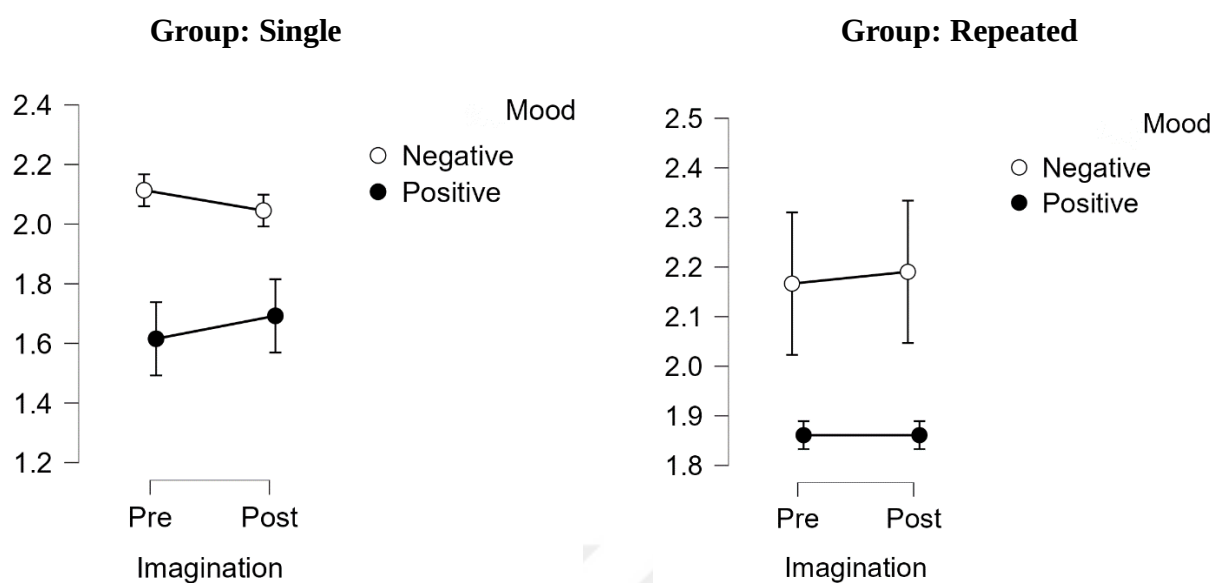
Lastly, when false belief and false memory were examined simultaneously as levels of one factor, there was also no statistically significant effect of the groups ($\chi^2(6) = 7.51, p = .28$, Cramer's $V = .15$). The same situation persisted after imagination instructions ($\chi^2(6) = 2.26, p = .89$, Cramer's $V = .08$). Finally, it's important to note that the relationship between the two grouping variables and any potential interaction remains unknown.

3.2.6. Exploratory Analyses

In this section, belief and recollection ratings were examined separately as an alternative approach to the previous analyses. To investigate their variations across the groups, a 2x2x2 mixed ANOVA design was conducted. This three-way mixed ANOVA design comprised three factors, with two of them being between-subjects variables (Event frequency and Mood), while one being a within-subject variable (Imagination). All factors had two levels (Single vs. Repeated & Positive vs. Negative & Pre and Post).

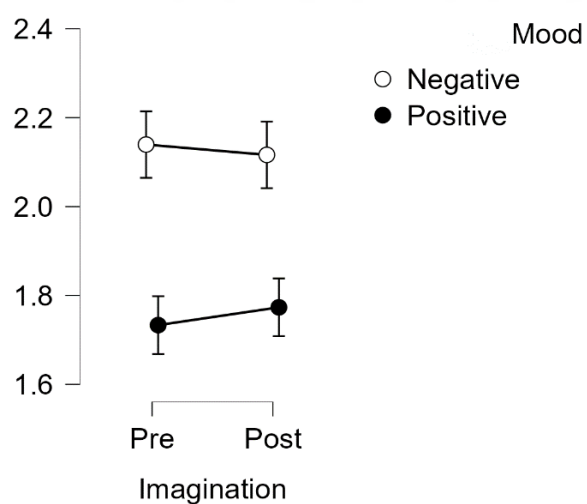
The initial analysis indicated that, for the main effect of mood on belief ratings, the between-subjects effects table presented a small F -statistic that was not statistically significant ($p = .26$), with a negligible effect size (0.07). Consequently, regardless of event frequency and imagination instruction, there was no significant difference in belief ratings between positive and negative moods. This similar situation was also applicable for the main effects of event frequency ($p = .64$) and imagination ($p = .91$). Additionally, none of the four interaction effects demonstrated statistical significance (all $p > .56$). Descriptive plots of the analysis are presented in Figure 1 and Figure 2. Although the score differences were small, there was no overlap between the scores. Therefore, the lack of significant results might be attributed to the sample size.

Figure 1. *Descriptive Plots of Belief Ratings Between Event Frequency Groups*



Note. Means of scores for Negative and Positive Mood across event frequency are shown for both imagination conditions. The standard error of the mean is indicated by error bars.

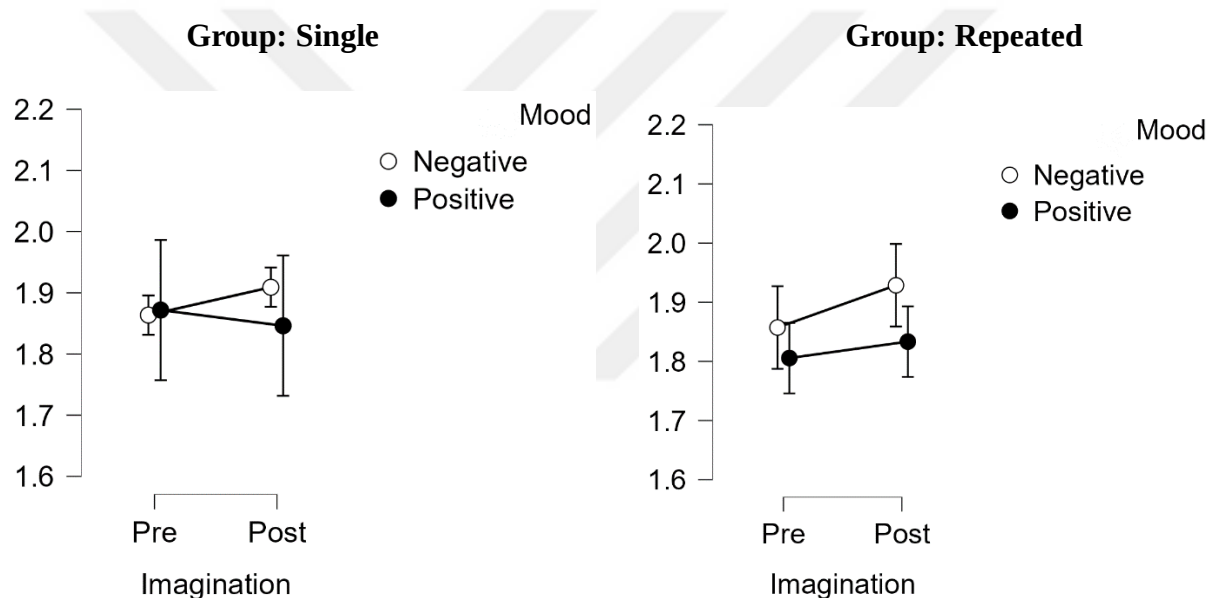
Figure 2. *Descriptive Plot of Belief Ratings Between Mood Groups*



Note. Means of scores for Negative and Positive Mood are shown for both imagination conditions. The standard error of the mean is indicated by error bars.

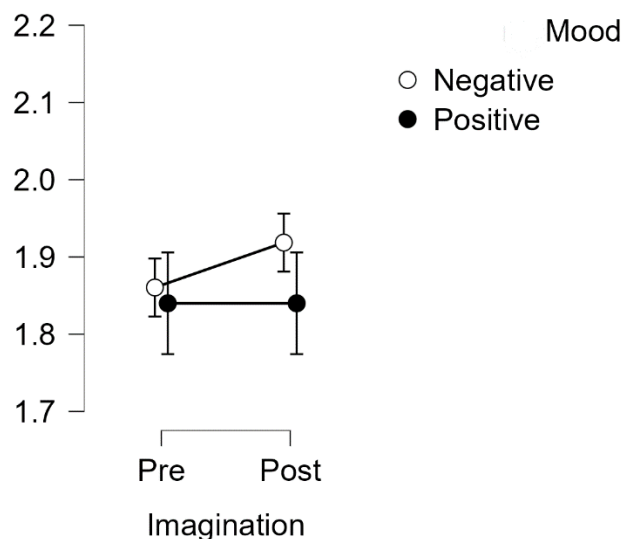
According to the results of the second mixed ANOVA, the main effect of mood on recollection ratings was examined. The between-subjects effects table presented a small F -statistic that was not statistically significant ($p = .87$). Therefore, regardless of event frequency and imagination instruction, there was no significant difference between positive and negative moods concerning recollection ratings. A similar scenario was observed for the main effects of event frequency ($p = .96$) and imagination ($p = .57$). Furthermore, there was no statistically significant effect for any of the four interaction effects (all $p > .58$). Descriptive plots of the analysis can be found in Figure 3 and Figure 4.

Figure 3. *Descriptive Plots of Recollection Ratings Between Event Frequency Groups*



Note. Means of scores for Negative and Positive Mood across event frequency are shown for both imagination conditions. The standard error of the mean is indicated by error bars.

Figure 4. *Descriptive Plot of Recollection Ratings Between Mood Groups*



Note. Means of scores for Negative and Positive Mood are shown for both imagination conditions. The standard error of the mean is indicated by error bars.

Additionally, the word count of detailed false reports provided by the participants was examined to determine if there were differences between the Single group ($M = 1.80$, $SD = 7.58$) and the Repeated group ($M = 1.31$, $SD = 3.61$), as well as between the Negative group ($M = 1.78$, $SD = 6.01$) and the Positive group ($M = 1.31$, $SD = 5.98$). A Mann–Whitney U test was conducted, revealing no statistically significant effect for event frequency ($U = 3067$, $p = .30$) or mood ($U = 3343$, $p = .47$).

Lastly, an examination was conducted to determine whether participants correctly identified the false event and the level of certainty they had in their choice. Among the participants, 58% ($n = 93$) accurately identified the false event, while 42% ($n = 68$) chose one of their actual memories as the false event or indicated uncertainty. According to the contingency table results, the Repeated group was more successful in identifying the false event compared to the Single group, and this difference in selection was statistically significant between the groups, $\chi^2(4) = 11.04$, $p = .03$, Cramer's $V = .26$.

Interestingly, only 10 out of the 68 participants who chose a genuine memory as the false event mentioned that they were uncertain or guessed, while the remaining 58 participants expressed a (near) certainty in their choice. Nevertheless, the χ^2 statistic ($\chi^2(2) = 8.27$, $p = .02$) indicated a significant association between correctly identifying the false event and the certainty

of the selection, with a moderate effect size, Cramer's $V = .23$. This implies that participants who correctly identified the false event were more assured in their decision compared to those who selected true events, as observed from the percentages within rows of the contingency tables.

Furthermore, the level of certainty in participants' choices showed no distinction between the event frequency groups, $t(159) = 1.14$, $p = .26$, Cohen's $d = .18$, and the mood groups, $t(159) = 0.82$, $p = .42$, Cohen's $d = .13$.

3.3. Analysis of All Data

In this section, an analysis was conducted on all data, encompassing both replication and experimental groups. Several reasons underlie this analysis. The first reason is to report the occurrences of false belief and false memory among the total participants, which consisted of 310 individuals with an average age of 31 years ($SD = 9.36$, range = 18 to 66 years). The second reason is to explore the impact of mood from a distinct perspective. Specifically, mood was not delineated based on the experimental groups as in the preceding section. Instead, participants were categorized into negative, positive, and neutral mood states based on their perceived mood, independent of the video they watched (mood manipulation groups).

The rationale behind conducting this analysis is that participants might have been exposed to a strongly negative or positive stimulus just moments before completing the questionnaire in their real lives, yet this may not always alter their emotional state. Within this dataset, participants provided responses regarding their mood manipulation control, irrespective of their assigned experimental group. Due to these considerations, the examination aimed to ascertain whether defining mood according to these self-reported statements yielded any alterations.

3.3.1. Percentages of False Beliefs and False Memories

Once again, the overall percentages of false belief and memory induction were examined across all data. All percentages of memories, encompassing those before and after the imagination technique, including true ones, are detailed in Table 11. Drawing insights from the data in Table 11, the rates of successful implantation of false beliefs and false memories varied between 5% and 11% among the total 310 participants. Additionally, the percentages of true events were evaluated, and their rates ranged between 18% and 71%. Notably, these percentages tended to be higher than the percentages associated with false beliefs and false memories.

Table 11.*Percentage and Number of Participants Producing Different Memory Types*

Memory Type	Percentage	Numbers
False belief	7%	$n = 21$
False memory	7%	$n = 22$
False belief after imagination	5%	$n = 16$
False memory after imagination	7%	$n = 23$
Detailed false report	11%	$n = 34$
True belief (first event)	22%	$n = 68$
True memory (first event)	50%	$n = 154$
True belief after imagination (first event)	18%	$n = 57$
True memory after imagination (first event)	51%	$n = 159$
Detailed true report (first event)	65%	$n = 201$
True belief (second event)	27%	$n = 83$
True memory (second event)	48%	$n = 148$
True belief after imagination (second event)	21%	$n = 66$
True memory after imagination (second event)	52%	$n = 160$
Detailed true report (second event)	71%	$n = 220$
True belief (fourth event)	23%	$n = 72$
True memory (fourth event)	50%	$n = 156$
True belief after imagination (fourth event)	21%	$n = 64$
True memory after imagination (fourth event)	52%	$n = 161$
Detailed true report (fourth event)	70%	$n = 216$
True belief (fifth event)	24%	$n = 75$
True memory (fifth event)	47%	$n = 146$
True belief after imagination (fifth event)	22%	$n = 69$
True memory after imagination (first event)	47%	$n = 145$
Detailed true report (fifth event)	67%	$n = 207$

When examining the provided details of the false event, it is intriguing to note that there were 29 additional participants beyond the reported number in Table 11 (i.e., $n = 34$) who provided additional details about the false event. However, their belief and recollection ratings

would not align with the category conditions (i.e., false belief or false memory) based on the scoring rules of the original study, leading to their exclusion from these categories. Nonetheless, even though they did not strictly fit into the false belief or false memory category based on belief and recollection scores within the specified range, it can still be inferred that a certain degree of false memory or false belief might have existed in 68 out of the 310 participants, considering their provision of details about their experience of the false event. An example story of the false event from the original category is provided below:

I went to the swimming pool with my friends. Everyone was swimming normally. I was resting by the pool, tired. At the insistence of my friends, I entered the pool again, but I must have made a sudden move upon which my swimsuit fell off. Luckily no one saw it and I was able to fix it right away and continue as if nothing happened.

3.3.2. False Beliefs and Memories for Single and Repeated Events

As a second step, the quantities of false beliefs and memories and their statistical differences across the single and repeated groups have been examined by disregarding the influence of mood. According to the Chi Square analysis, there was no statistically significant difference between the event frequency groups before and after imagination in both false belief and false memory formation (all $p > .13$). The same was true for participants who provided additional details ($p = .65$). Not all statistics were presented to avoid repetition of similar results.

3.3.3. False Beliefs and Memories for Negative, Positive, and Neutral Moods

As a third step, the quantities of false beliefs and memories and their statistical differences across the negative, positive, and neutral moods, based on the participants' statements, were examined by disregarding the effect of event frequency groups. According to the Chi Square analysis, there was no statistically significant difference between the moods of the participants before and after imagination, in both false belief and false memory formation (all $p > .23$). The same held true for participants who provided additional details ($p = .65$). Not all statistics were provided to avoid repetition of similar results.

3.3.4. False Belief and Memories Between Groups

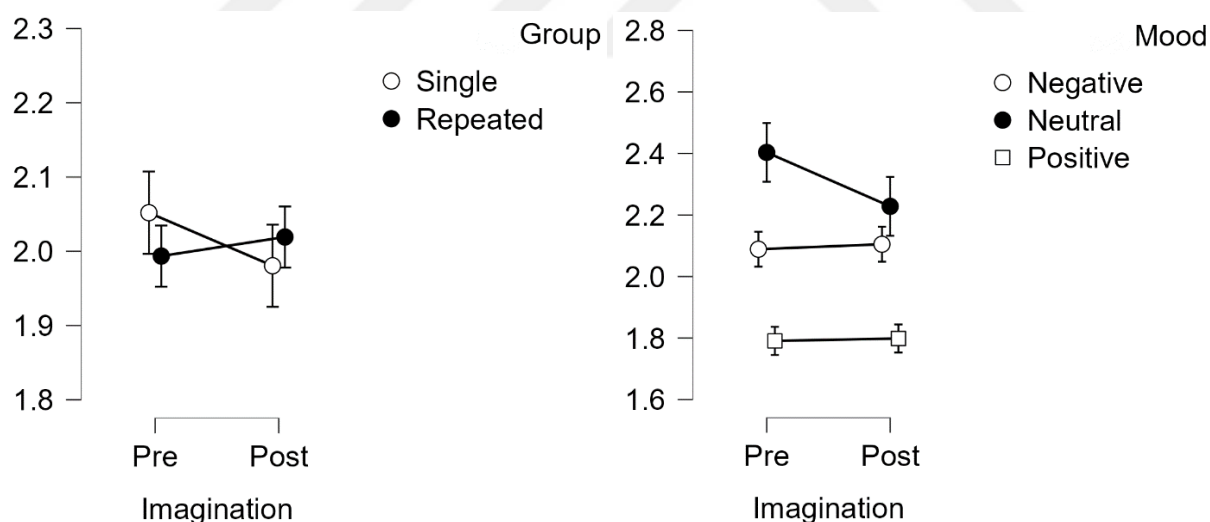
Lastly, the quantities of false beliefs and memories, as well as their statistical differences across the six groups, were examined. This involved investigating the categories of random assignment groups outlined in the research's methodology (i.e., Single-Positive, Single-Negative, Single-Replication, Repeated-Positive, Repeated-Negative, Repeated-Replication) in

terms of the formation of false beliefs and memories. According to the Chi Square analysis, there were no statistically significant differences between the experimental groups before and after imagination, in both false belief and false memory formation (all $p > .46$). The same applied to participants who provided additional details ($p = .87$). Not all statistics were provided to avoid redundancy in reporting similar results.

3.3.5. Exploratory Analyses

In this section, belief and recollection ratings were examined separately as an alternative approach to previous analyses. To examine their differences across the groups, a 2 (Condition: Single vs. Repeated) $\times$ 2 (Imagination: Pre vs. Post) $\times$ 3 (Condition: Positive vs. Negative vs. Neutral) design mixed ANOVA was conducted. In the initial analysis of belief ratings, no statistically significant effects were found among the main effects (all $p > .22$). Similarly, there were no statistically significant effects for any of the four interaction effects (all $p > .12$). Refer to Figure 3 and Figure 4 for descriptive plots of the analysis.

Figure 5. *Descriptive Plots of Belief Ratings of Condition Groups*

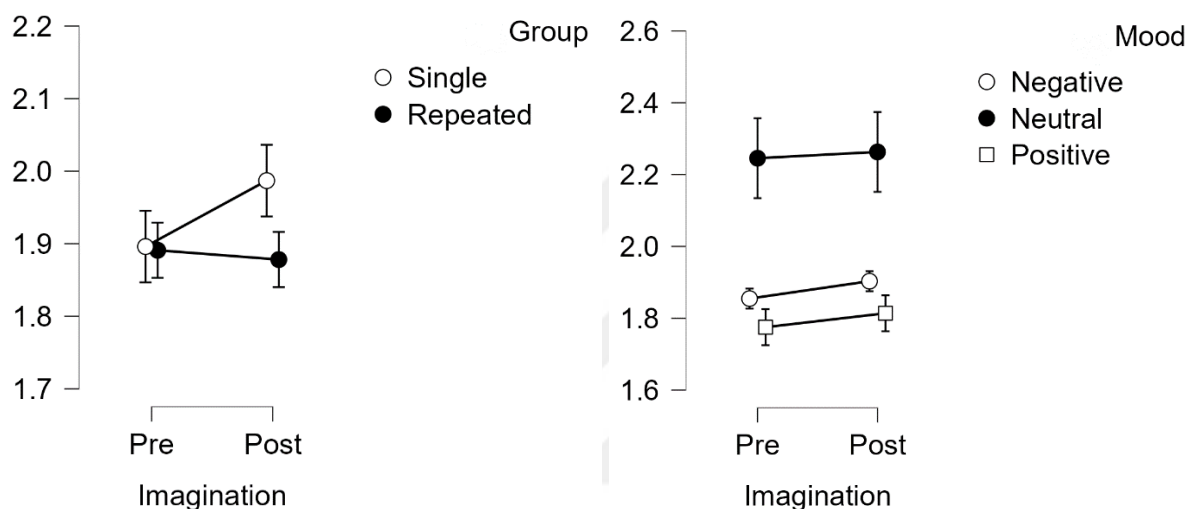


Note. Means of scores for Negative, Positive, and Neutral Mood are shown for both imagination conditions. The standard error of the mean is indicated by error bars.

In line with the second set of mixed ANOVA results for recollection ratings, once again, no statistically significant effects were observed among the main effects (all $p > .32$). An interaction effect that was nearly significant emerged between imagination and event frequency,

$p = .08$. This implies that the differences in recollection ratings between before and after imagination might be influenced by the event frequency to some extent. Following the imagination of the false event, the mean recollection ratings increased in the single event frequency groups compared to before, while the opposite occurred in the repeated event frequency groups (refer to Figure 6). There were no other statistically significant effects among the four interaction effects (all $p > .08$).

Figure 6. Descriptive Plots of Recollection Ratings of Condition Groups



Note. Means of scores for Negative and Positive Mood across event frequency are shown for both imagination conditions. The standard error of the mean is indicated by error bars.

Additionally, the word count of detailed false reports provided by the participants was examined to determine whether it differed among the Single ($M = 1.30$, $SD = 5.58$) and Repeated ($M = 1.90$, $SD = 7.07$) groups, and also the Negative ($M = 2.17$, $SD = 7.77$), Positive ($M = 1.22$, $SD = 5.30$), and Neutral Groups ($M = 1.23$, $SD = 5.89$). A Mann–Whitney U test was conducted, indicating that there was no statistically significant effect for event frequency, $U = 11615$, $p = .36$. Furthermore, an independent one-way ANOVA was performed, revealing that there was no statistically significant effect for mood either, $F(2, 307) = 33.12$, $p = .46$.

Finally, an examination was conducted to determine whether the participants correctly identified the false event and the level of certainty they had in their choice. Among the participants, 56% ($n = 174$) accurately identified the false event, while 44% ($n = 136$) either

selected one of their true memories as the false event or indicated uncertainty. The results from the contingency tables revealed that the Repeated group was more successful in identifying the false event compared to the Single group, and this distinction was statistically significant between the groups ($\chi^2(4) = 14.69, p < .01$, Cramer's $V = .22$).

An intriguing observation was made among the 136 participants who incorrectly chose a true memory as the false event: only 24 of them admitted to being unsure by saying, "I'm not sure, I guessed," while the remaining 112 participants were (almost) certain of their choice. However, the χ^2 statistic ($\chi^2(2) = 22.94, p < .001$) indicated a significant association between the accurate identification of the false event and the certainty of the selection, with a moderate effect size (Cramer's $V = .27$). This implies that participants who correctly identified the false event were notably more certain about their decision when compared to those who selected true events, as evident from the percentage distribution within rows of the contingency tables.

The level of certainty in participants' choices showed no difference between the event frequency groups, $t(1308) = 0.83, p = .34$, Cohen's $d = .05$, nor between the mood groups, $F(2, 307) = 0.18, p = .68$.

4. DISCUSSION

4.1. Overview of the Study in General

In general, it was observed that the statistically significant results, especially concerning false memory induction, were slightly lower than expected compared to the induction rates reported in previous false memory studies. In general, around 30% of narratives collected from participants have been identified as false memories, according to a mega analysis of false memory implantations rates from different studies (Scoboria et al., 2017). There might be several reasons for this discrepancy: from the simplest explanation, such as the data collection procedure not being followed exactly as intended, or the lack of incentives for the participants, to more complex factors like unknown or understudied variables that could affect false autobiographical memory induction, such as cultural or language differences.

However, there are some important findings from the present study. As was the case in the Results section, the discussion will also be divided into sections focusing on replication, mood induction groups, and the analysis of all data. This division will allow for a more effective discussion of the separate hypotheses and results.

4.2. Replication

Overall, it is probably accurate to say that the replication of the original study was only partially successful (Otgaar et al., 2022). On one hand, the original study reported false belief and false memory induction rates ranging from 9% to 30%, while the present study achieved success rates of 4% to 12%. Similarly, the percentages of true events ranged from 33% to 83% in the original study, whereas the present study observed percentages of 22% to 76% for true events. Notably, not only the false belief and false memory percentages were lower, but the belief and recollection rates for true events were also lower in this sample. These lower overall belief and recollection rates for both true and false events made it difficult to classify them as false beliefs or memories, and as a result, they could not be categorized as detailed false reports either. However, there were 10 additional participants who provided further details about the false event, but their ratings did not satisfy the category conditions. If these participants were included in the percentages, the false memory induction rates would increase to a maximum of 22% instead of 12%, bringing them closer to the original study's induction range.

Based on statistical analysis results, the present study has failed to replicate the results of the original study, which found a statistically significant effect of false belief creation in event frequency groups. The original study observed that false beliefs were more easily found

in single groups than in repeated groups, and this effect increased after imagination instructions. However, in the present study, such an effect was not observed. The occurrence of false beliefs and false memories was equally probable in both the Single and Repeated groups. The same is true for the participants who had a false belief or memory and provided additional details that were inconsistent with the original study. Additionally, for false memories, there was no difference between the event frequency groups both before and after the imagination instructions, which is consistent with the original study.

The results of the present study were mostly consistent with the those of the original study. In the mixed ANOVA, there was no statistically significant effect of belief and recollection ratings across groups. The provided word counts of the two groups in the independent samples *t*-test were initially found to be significant, but upon further examination with the Mann-Whitney *U* test, the difference disappeared due to a violation of normality. Interestingly, just over half of the participants were able to detect the false event ($N = 60$), while analyses based on recall and belief scores did not yield significant results. Moreover, it was particularly intriguing that out of the remaining 44 participants who identified one of the true events as false, 33 of them were almost certain about their decision. This finding is consistent with the original study.

One addition to the original study's findings is that regardless of the number of participants who made a correct identification, they were significantly more certain about their decision. This certainty did not differ between event frequency groups.

There might be several ways to interpret the findings and differences from the original study, but the three most salient ones were selected. First, the data were collected from a general sample, which included primary school graduates as well as PhD students, rather than solely university students. The effect of education level might influence the results since a significant majority of induction studies have been conducted among university students. For example, the lower belief and recollection ratings, even when additional details about the false event were present, might be attributed to participants carefully reading and following instructions at a more basic level, resulting in non-significant results of false belief creation between event frequency groups.

Secondly, the original study included participants with a mean age of 22, ranging from 18 to 30. In contrast, the mean age of the 104 participants in replication study was 31 years ($SD = 8.76$, range = 18 to 61 years). This discrepancy might have originated from the age of the

sample. When considering this difference, it may appear that the complete replication rules were violated, given that the sample characteristics were different. Well, I suppose they were. However, despite this notable difference, there were still successful inductions, albeit at a lower rate. The study had a large sample size and a representative population, not limited to college students, suggesting that these results might have greater generalizability. After all, false memory is a notion that can be induced among all populations, and no one is immune to memory distortions; it can even occur in daily life situations (Wang et al., 2018).

Thirdly and, most importantly, given that the present study was conducted in a completely different culture, the results of the study need to be examined from this perspective as well. For example, to closely replicate the original study, the false event (critical event) remained unchanged, involving "going to a swimming pool and that your swimming trunks fell off." However, in Turkish culture, especially among individuals with a mean age of 31, going to the swimming pool was an uncommon activity during their childhood, which was nearly 20 years ago. This inference is based on both common sense and the notes from participants who correctly rejected the false event. Some participants mentioned in the open-ended question that they had never gone to a swimming pool during their childhood.

According to the literature, there exists a relationship between recollection rejection and the rejection of misinformation (Moore & Lampinen, 2016). Recollection rejection refers to the act of dismissing an item based on a clear and vivid memory of a different event that logically contradicts it, and it is used as a metacognitive strategy to reduce false recognition (Gallo, 2004). Moore and Lampinen (2016) investigated whether recollection rejection is used to reject misinformation by examining the misinformation acceptance rates in the misinformation paradigm, and they studied the effects of contradictory and additive misinformation on the rejection of misinformation. According to their results, participants spontaneously utilized recollection rejection to reject both types of misinformation, with a higher tendency to do so for contradictory misinformation. Additionally, shorter delays before encountering misinformation led participants to be more likely to use recollection rejection to reject contradictory misinformation.

Thus, it is plausible to say that the suggested critical event was a contradictory misinformation for our sample characteristics. It directly contradicted their life experiences, and they likely employed recollection rejection by recalling their never-occurred swimming pool experience to reject the false suggestion and prevent false memories. Moreover, the scale presented immediately after the false suggestion and the short time facilitated the probability

of rejecting contradictory misinformation for this sample. If they had never gone to a swimming pool during their childhood, or even seen one, it was almost impossible to induce this implausible memory. Nevertheless, there were still some success rates.

4.3. Mood Induction Groups

When it comes to the mood induction groups, one distinctive addition to the original study was the assessment of the success of the mood manipulation. As a first step, the effectiveness of the mood manipulation material designed for this study examined. The analyses showed that the mood manipulation was successful in manipulating mood, with a very strong effect size in the Chi-squared test (Lee, 2016). Also, it was evident that the negative mood manipulation was more effective than the positive mood induction by examining the contingency tables and within-rows. Further proportion analyses revealed that the success rates of mood induction ranged between 70% and 85% at a 99% confidence interval. This positive outcome of the present study suggests that the mood induction material can be utilized in future studies.

The same analyses as in the original study were repeated here, along with some additional ones. According to the Chi-squared test results, the occurrence of false memories was equally probable in both the Positive and Negative mood groups. However, one significant result emerged. Irrespective of the event frequency groups, the amount of false belief creation was statistically significantly higher in the Negative mood induction groups than in the Positive mood induction groups. This finding aligns with the general literature (Kersten et al., 2021). For instance, in DRM, a negative mood state resulted in higher 'remember' judgments for negative-emotion critical lures (Knott & Thorley, 2014; Zhang et al., 2017). In this study, the false event can also be considered as a negatively valenced event since it includes embarrassment. Moreover, there is evidence that certain psychopathologies, such as depression and PTSD, facilitate the creation of false memories due to persistent negative mood states (Bookbinder & Brainerd, 2016) and make individuals more susceptible to suggestions (Scoboria et al., 2017). Furthermore, since these analyses were conducted by ignoring the effect of event frequencies, this presents a significant contribution to the literature. It provides evidence that, regardless of the event frequencies, a negative mood is more susceptible to false belief creation compared to a positive mood. This finding is relevant to the ongoing discussion about the limitations of false memory studies that mainly concentrate on events occurring singularly, whereas instances like childhood sexual abuse frequently manifest in multiple cases

(Blizard & Shaw, 2019; Otgaar et al., 2022). For these reasons, this finding is an important contribution to the existing literature.

However, after the imagination instruction, this effect surprisingly disappears. This is an unexpected result since previous studies have shown that the effect of imagination can change autobiographical beliefs and successfully create false autobiographical memories (Mazzoni & Memon, 2003). While some studies argue that even bizarre or unfamiliar actions, such as "balancing a spoon on your nose," can be induced using the imagination inflation procedure (Li et al., 2020), the situation here might have been even more unlikely than balancing a spoon on their noses. This could be a reason for the failure or lack of success of the imagination instruction in general. It is possible that when a completely impossible event (for the present group of some participants) is imagined, the imagination inflation works in the opposite way. This could be a research question for future studies and is worth examining.

Another possibility is that the initial result might have been a false positive, and this could be the reason for the later insignificance. However, this does not explain the general tendency of the decrease in false beliefs and false memories rates after imagination instructions, not only in this particular result but also in most of the other analyses including all data analyses.

In exploratory analyses, there was also no significant effect of mood on belief and recollection ratings in general, according to the mixed ANOVA results. When the descriptive plots are examined, although it is not statistically significant, there is a visual difference between the means of mood conditions, and this difference persists when the data is divided into event frequency groups. It might not necessarily indicate anything conclusive, but with a different sample size or using a different coding mechanism, it might potentially become significant (Shaw, 2018). Since various significant coding strategies have been adopted in different studies, the resulting ranges of false memories vary. Additionally, when examining the error bars of confidence intervals (CI), it is noteworthy that there were no overlaps between groups; however, there were also no statistically significant results, which is intriguing. Therefore, it might be reasonable to suggest that a range of estimates exists for an unknown parameter.

In general, despite the successful implantation of the intended mood through mood induction materials and the exclusion of unsuccessful data from the analyses, why were most of the results insignificant? One possible explanation might be the effect of arousal. According to the literature, while the effect of positive and negative mood on false memory creation is

well-established, there is also an effect of arousal (van Damme, 2013). Some studies even argue that the actual effect is due to arousal rather than the valence of the mood, and high arousal makes people more susceptible to false memory creation than low arousal (Corson & Verrier, 2007).

In the present study, an effort was made to control for the effect of arousal by balancing the selected images' arousal rates around the midpoint of the 7-point Likert scale, which is considered a neutral arousal level (4). However, there might still be an unknown effect of arousal since the specific arousal effects of the combined mood-inducing images and music are not controlled in the present study. For instance, when the selected images and music were presented together, they may have created different arousal rates, and this possibility was not addressed in the study.

Furthermore, the question assessing participants' mood only focused on assessing positivity and negativity right before the procedure, as these were the intended moods to induce. Other emotions such as hope, or fear were not assessed before the study. According to the literature, pregoal emotions like fear, disgust, hope, desire, and anger have high motivational intensity regardless of their positive or negative valence, and they narrow people's attention, making them more vulnerable to misinformation (van Damme et al., 2017). On the other hand, happiness and sadness are described as postgoal emotions with lower motivational intensity, which broadens people's attention to peripheral details and results in less vulnerability to misinformation and false suggestions.

Based on these findings, whether participants had experienced any pregoal emotions remains unknown. Also, it may be suggested that the created mood valences might have made participants more resistant to false suggestions.

In conclusion, there are several potential factors that could have contributed to the lack of significant results in the study, such as the interplay between mood and arousal, and the potential influence of other emotions not assessed in the study. Further research and exploration are needed to better understand the complexities of mood induction and its impact on false memory creation.

4.4. Analysis of All Data

In this part, all the data were analyzed together, and mood groups were assigned based on the participants' own statements (their perceived mood) rather than the manipulation groups.

The reason for doing this is to examine all the data in terms of false belief and memory creation. The important point is that not all people were exposed to the same procedure, as some of them were in the mood induction groups and watched a positive or negative video. In this context, considering their ratings of belief and recollection might not allow for a direct comparison of groups of people under the same conditions. However, in real life, they might have been exposed to similar inputs just before completing the survey because the procedure was not a controlled design in a laboratory setting; rather, it was an online procedure. So, in that way, it is reasonable to examine them all together.

There are a total of 310 participants. If the numbers are based on the original categories, there are 39 participants who developed false beliefs or false memories. However, if we consider the additional details provided regardless of the category conditions (refer to the “Data Analytical Approach and Scoring” section), there are 29 more people who provided additional details about the false event. In other words, it might be appropriate to say that there were 68 people (22%) who developed some degree of false belief or false memory overall, and this might be the reason for producing some recollections. This range aligns with the current literature on average.

However, there is something else that needs to be considered when interpreting these results. Not only were the false beliefs and memories fewer than expected compared to the original study, but the true beliefs and memories were also fewer than the original study. This is something to consider for future research – why was this the case for this population? Perhaps the belief and memory categorization systems do not work as intended in this population, since in almost all analyses, there were twice as many people who provided additional details but did not fall into the specified categories. Or perhaps, even though the Belief in Occurrence and Recollection Ratings Scales are one of the most used scales in this research area (Otgaar et al., 2022; Scoboria et.al., 2014; Scoboria et al., 2004), it is not a perfect fit to measure false memory creation in this population. Alternatively, its adaptation and translation into Turkish from English may not have been as accurate compared to the original version.

In the statistical analyses, there were no statistically significant results for both the Chi-squared tests and mixed ANOVA results, regarding both the event frequency groups and the negative and positive mood groups. The important point to note is that in the analysis of only the experimental groups, participants in the negative mood were more prone to false autobiographical belief formation than those in the positive mood. However, it could not be observed this effect in the analysis of the entire dataset. One possible reason for this situation

could be an uncontrolled video effect. It is plausible that the impact of the negative video watched was experienced more intensely than the negative mood participants felt whether they watched the video or not and declared at that moment. Additionally, some of the people declared that they felt negative, but at the same time, they watched the positive video. The effect of the positive video might have been stronger than they realized, and they could have reported their feelings from three minutes earlier automatically (before watching the video).

4.5. Clinical Implications

The most significant clinical implication is that individuals in a negative mood are more susceptible to develop false autobiographical beliefs, with far-reaching consequences (refer to the “Relevance with and Significance of False Memory in Clinical Psychology” section). These effects can impact criminal cases and lawsuits with false eyewitness testimonies, false confessions, or unfounded claims of childhood sexual abuse (Nash & Wade, 2009; Otgaar et al., Wade et al., 2010). Especially noteworthy are the recovered or repressed memories from childhood related to abuse, which hold great relevance in clinical applications and psychotherapy settings, often emerging during therapy sessions rather than spontaneously (Loftus, 1993).

When people step into a clinical environment seeking treatment, they are likely to have experienced events that negatively impacted them in some way, or at least they might have confusion about certain aspects. During this process, they can experience a wide range of emotions and sensations, from joy to sadness, hope to despair, excitement to anger. Thus, when they experience relatively negative emotions (Bookbinder & Brainerd, 2016) or feel high motivational intensity (van Damme et al., 2017), they become more receptive to misinformation and sensitive to cue-related words that they consider as real, even without necessarily having psychopathology.

Moreover, specific psychopathologies, such as depression and PTSD, are particularly susceptible to cognitive biases and false memories due to their persistent negative mood states (Bookbinder & Brainerd, 2016), as they are among the most common conditions that negatively impact memory (Burriss et al., 2008). For instance, a meta-analysis of 147 recall and recognition studies involving clinically depressed individuals revealed that depression leads to memory impairment (Burt et al., 1995). Additionally, in cases of comorbid depression and anxiety, both immediate recall and subsequent retrieval of new information are adversely affected (Kizilbash et al., 2002). When the retrieval of new information is negatively impacted,

false beliefs or false memories can easily fill gaps in the narrative, especially when experiencing a persistent negative mood state. Encouragingly, recent findings indicate that Metacognitive Training for Depression (D-MCT) has been effective in reducing false memory occurrence in depression after four weeks compared to baseline, particularly in cognitive biases and errors characterized by high individual confidence levels (Moritz et al., 2018).

Furthermore, current research suggests that individuals with social anxiety disorder, who undergo social stress, may be more susceptible to memory distortions (Cody et al., 2015). Individuals simultaneously dealing with borderline personality disorder and PTSD exhibit a greater occurrence of false memories for word lists related to these conditions compared to those with only PTSD (Miano et al., 2022). Additionally, a history of trauma and PTSD makes people more susceptible to false memories when they encounter information related to their experiences (Otgaar et al., 2017). Certain medical conditions, such as coexisting HIV and PTSD, can also contribute to attentional bias and an inclination towards false memory (Mashayekhi et al., 2023). To alleviate the effects of memory impairment associated with PTSD and thereby diminish vulnerability to the creation of false beliefs and memories, strategies and protocols centered on memory consolidation and reconsolidation could be incorporated into PTSD treatment methodologies. This could encompass the implementation of cognitive task memory interference procedures involving memory reactivation (MR) to address intrusive memories, as well as the utilization of the Reconsolidation of Traumatic Memories (RTM) technique to address the symptoms of PTSD (Astill Wright et al., 2021).

As an interesting addition on the other side of the contributor psychopathologies, individuals with elevated psychopathy traits, particularly fearless dominance (FD), do not exhibit a widespread emotional memory impairment. Instead, they seem to process negative information differently from individuals with low psychopathic traits, resulting in reduced susceptibility to generating false memories for negative events according to recent research (Mirandola et al., 2023).

When all the given evidence is considered, the dangers of being open to suggestion while experiencing negative emotions or having certain psychopathologies become evident, especially when these occur in a psychotherapy room. Inside the therapy room, clinicians bear the greatest responsibility in managing what transpires during sessions and face the risk of unintentionally leading clients to develop false beliefs or false memories, often through seemingly innocent leading or suggestive questions aimed at understanding a situation, event, or traumatic experience. To avoid such scenarios, clinicians must be mindful of the words they

use, the gestures they express, and the questions they ask when dealing with active traumatic experiences or depression. Additionally, integrating effective cognitive techniques practiced in reducing false memories and cognitive biases within psychopathologies, such as Metacognitive Training for Depression (D-MCT) (Moritz et al., 2018), or implementing memory consolidation/reconsolidation strategies for the treating PTSD (Astill Wright et al., 2021) could enhance the effectiveness of ongoing interventions while simultaneously diminishing the likelihood of false belief and false memory development. Otherwise, the negative consequences may not be limited to just one person, one lawsuit, or one therapy environment, but rather expand to impact society at large.

4.6. Limitations and Future Recommendation

To begin with the general limitations, one of them might be the age and education level diversity. While this could have advantages, such as generalizing the results, there might also be unknown disadvantages. For instance, there might be some neurological conditions among the participants, especially among those of advanced age, and neurological or psychiatric diseases like amnesia or depression could be highly relevant to memory processing (Fossard et al., 2016; Hu et al., 2023). Therefore, if the study were to be replicated, the population criteria should be carefully considered.

Secondly, the use of the Belief and Recollection Scale in this population seemed to yield lower ratings for both false and true events. As support for this, even some participants gave low ratings on the scale that could not be categorized as false belief or false memory; they provided additional details about the false event, indicating that they thought they had experienced it. Perhaps using a different scale or adapting the scale in a different format, such as using a 5-point Likert scale instead of 8, might be more appropriate.

Third, the false event suggested as real might have been particularly difficult to induce as a false memory in this population, for the reasons explained earlier. Using a procedure with a different and more plausible memory might increase the induction rates to the expected range (Scoboria et al., 2004). As a further recommendation, the procedure could be repeated using both a bizarre and common event as a false event to observe the difference in induction ratings and the nature of false events.

Fourth, in this population, it seems that the imagination instruction decreased the plausibility of the suggested false event for most of the analyses to some degree, although it was small. This could be related to the selected false event or the characteristics of the

population. While imagination is a powerful method to develop belief in a never-occurred event, it might have an opposite effect in certain situations, or there might be a negative correlation between the likelihood of an event for an individual or population and the effect of imagination. It could either increase the effect of suggestion by visualizing or decrease the effect of suggestion and make individuals more resistant to it by imagining a highly unlikely event for them and thinking, "no way it happened to me." The exact explanations or reasons for this are unknown, making it a very interesting future research question.

In terms of the mood manipulation, the design of materials for mood induction was successful in inducing positive and negative moods, which can be considered a success in itself. However, despite this success, the effects of moods on false memory creation were found to be small compared to previous studies. There might be several reasons for this, but the first plausible one is the effect of arousal along with the mood. For future research, controlling not only the mood but also the arousal might yield different results.

Secondly, the effect of the positivity or negativity of autobiographical memory was discussed earlier (refer to the "Mood and Autobiographical Memory" section). That is, not only the mood of the individual during recall affects the information retrieved, but also the emotional valence of the information or memory influences how the materials will be remembered, as their nature, phenomenology, distribution, vividness, encoding mechanisms, and cognitive processes differ (García-Bajos & Migueles, 2013; Talarico & Rubin, 2003). When considering this, both the valence of the false event and true events might influence the induction rates.

The random selection and distribution of the true events in the second survey aimed to decrease and control this effect, but the suggested false event could be considered negative due to its involvement of embarrassment for many people, and this most probably had an effect on the success of the false suggestion. Additionally, even though the true events were randomly selected from the first survey and placed in the second survey randomly, some events were more commonly experienced, such as going to a theme park, than others, such as going to Disneyland Paris and meeting a favorite figure. Thus, more experienced events naturally occurred in the second survey more often. All events were recalled and imagined as a necessity of the design, and there were two events before the false event. Therefore, their valences might also influence the mood and cognitive processes of the participants and consequently affect the success of false memory implantation.

As far as is known, the valences of the autobiographical memories that will be recalled and induced are not generally considered in false memory research. For future research, the possible effect of the negativity or positivity of the memory could also be taken into consideration.

Lastly, there were too many variables in the present study, and their interactions were unknown, especially in the mood induction part. There were single and repeated event frequencies, imagination instructions before and after, and positive and negative mood groups. It can be said that examining mood groups, imagination instructions, and event frequencies together is not suitable, as it resulted in a seriously meaningless outcome. As far as is known, this is the first research to attempt this, but it failed. The study might be replicated using a simpler design with fewer variables.

4.7. Conclusion

In the present study, a new false memory implantation method has been replicated in the Turkish culture. The replication was partially successful. Despite the rates being lower than those in the original study, we were able to successfully implant some degree of false autobiographical beliefs and false autobiographical memories in the participants. However, the event frequency groups did not differ in the creation of false autobiographical beliefs, which did not align with the original study. Interestingly, in some parts, even though it was not statistically significant, the repeated groups had higher implantation rates than the single groups. Other findings are aligned with the original study.

In addition to the replication of the original study, the effect of mood on the creation of false beliefs and memories were also investigated. The aim was to measure any differences in false autobiographical belief and false autobiographical memory implantation rates across the positive and negative mood groups. Accordingly, individuals in the negative mood were found to be more prone to create false autobiographical beliefs than individuals in the positive mood. This finding is consistent with the literature. The mood induction materials designed for this study successfully induced the intended moods for the participants and can be used in future research.

Lastly, it can be said that the most significant feature of the study is its large sample size. To the best of our knowledge, no other false memory implantation study has ever reached this magnitude of sample size. The nonsignificant results seem to have important implications when considering this fact. The conditions under which autobiographical memory is open or

resistant to suggestion have been better understood, and from the courtroom to the psychotherapy room, there is beneficial guidance to be taken into consideration.



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Appendix 1: Informed Consent Form

BİLGİLENDİRİLMİŞ ONAM FORMU – Anket 1

Bu araştırma Yeditepe Üniversitesi Klinik Psikoloji Yüksek Lisans Programı bünyesinde Prof. Dr. İsmail Ercan Alp danışmanlığında Kevser Köksal Yasak tarafından tez araştırması kapsamında yürütülmektedir. Bu form sizi araştırma koşulları hakkında bilgilendirmek için hazırlanmıştır.

Çalışmanın Amacı Nedir?

Çalışmanın amacı bazı duygu durumları, önceden yaşamış olabileceğiniz bazı olayları ve anıları incelemektir.

Bize Nasıl Yardımcı Olmanızı İsteyeceğiz?

Araştırmaya katılmayı kabul ederseniz, araştırmanın birinci kısmında size **çocukluğunuzda** başınıza gelmiş olabilecek birkaç olay sorulacak. Bir hafta sonra, **eğer seçilirseniz** bu çalışmanın ikinci anketini alacaksınız.

Birazdan size e-posta adresiniz de sorulacak. Bunu sormamızın nedeni size ikinci anketi gönderebilmek içindir ve bu bilgiler sadece bu amaçla kullanılacaktır. Daha sonra, e-posta adresiniz anonimliğin garanti edilebileceği kişisel bir kodla değiştirilecektir.

Çalışmanın amacına ulaşması için sizden beklenen, bütün sorulara eksiksiz, kimsenin baskısı veya telkini altında olmadan, size en uygun gelen biçimde açık yüreklilikle yanıt vermenizdir.

Anketin tamamlanması sadece 5 dakika kadar sürecektir.

Katılımla ilgili bilmeniz gerekenler:

Bu çalışmaya katılmak tamamen gönüllülük esasına dayalıdır. Herhangi bir yaptırıma veya cezaya maruz kalmadan çalışmaya katılmayı reddedebilir veya çalışmayı bırakabilirsiniz. Çalışma dahilinde kimlik bilgileriniz toplanmayacaktır.

Sağladığımız diğer veriler yalnızca araştırma dâhilinde kullanılacak ve anonim olarak kaydedilecektir. Elde edilecek bilgiler araştırmacılar tarafından toplu halde değerlendirilecek ve bilimsel yayımlarda rapor edilmek için kullanılacaktır.

Olası faydalar ve riskler:

Çalışmaya katılmanız durumunda literatüre bu konu hakkında destek sağlayarak veri eklememize yardımcı olacaksınız.

Anket, genel olarak kişisel rahatsızlık verecek sorular içermemektedir. Ancak katılım sırasında içeriklerden ya da herhangi başka bir nedenden ötürü kendinizi rahatsız hissederseniz cevaplama işini yarıda bırakıp çıkmakta serbestsiniz. İhtiyaç duymanız halinde araştırmacıyla iletişime geçebilirsiniz veya üniversitenin psikolojik danışmanlık birimine başvurabilirsiniz.

Araştırmayla ilgili daha fazla bilgi almak isterseniz:

Çalışmayla ilgili soru ve yorumlarınızı araştırmacıya iletebilirsiniz.

Bu bilgilendirilmiş onam belgesini okudum ve anladım. Bu araştırmaya katılmayı hür irademle kabul ediyorum. Bilgilerimin gizli tutulacağını ve istediğim zaman araştırmadan ayrılabilirim farkındayım.

BİLGİLENDİRİLMİŞ ONAM FORMU – Anket 2

Bu araştırma Yeditepe Üniversitesi Klinik Psikoloji Yüksek Lisans Programı bünyesinde Prof. Dr. İsmail Ercan Alp danışmanlığında Kevser Köksal Yasak tarafından tez araştırması kapsamında yürütülmektedir. Bu form sizi araştırma koşulları hakkında bilgilendirmek için hazırlanmıştır.

Çalışmanın Amacı Nedir?

Çalışmanın amacı bazı duygu durumları, önceden yaşamış olabileceğiniz bazı olayları ve anıları incelemektir.

Bize Nasıl Yardımcı Olmanızı İsteyeceğiz?

Bu çalışmaya katıldığınız için teşekkür ederiz. Bir hafta önce, yirmi olayı çocukluğunuzda yaşayıp yaşamadığınızı ve evet ise kaç kez yaşadığınızı belirtmeniz gerekiyordu. Bu ikinci anketimizde, yaşadığınızı belirttiğiniz bazı olaylar biraz daha derinlemesine incelenecektir. Bazı olaylar için somut olarak anılarınız sorulacaktır.

Anketin tamamlanması yaklaşık 15 dakika kadar sürecektir.

Çalışmanın amacına ulaşması için sizden beklenen, bütün sorulara eksiksiz, kimsenin baskısı veya telkini altında olmadan, size en uygun gelen biçimde açık yüreklilikle yanıt vermenizdir.

Katılıminızla ilgili bilmeniz gerekenler:

Bu çalışmaya katılmak tamamen gönüllülük esasına dayalıdır. Herhangi bir yaptırıma veya cezaya maruz kalmadan çalışmaya katılmayı reddedebilir veya çalışmayı bırakabilirsiniz. Çalışma dahilinde kimlik bilgileriniz toplanmayacaktır.

Sağladığınız diğer veriler yalnızca araştırma dâhilinde kullanılacak ve anonim olarak kaydedilecektir. Elde edilecek bilgiler araştırmacılar tarafından toplu halde değerlendirilecek ve bilimsel yayımlarda rapor edilmek için kullanılacaktır.

Olası faydalar ve riskler:

Çalışmaya katılmanız durumunda literatüre bu konu hakkında destek sağlayarak veri eklememize yardımcı olacaksınız.

Anket, genel olarak kişisel rahatsızlık verecek sorular içermemektedir. Ancak, araştırma sürecinde sizde kaygı, stres ya da rahatsızlık uyandırabilecek birtakım görüntüler izletilebilir. Bunların sizin üzerinizde uzun süreli olumsuz etki oluşturması beklenmemektedir. Ancak katılım sırasında içeriklerden ya da herhangi başka bir nedenden ötürü kendinizi rahatsız hissederseniz cevaplama işini yarıda bırakıp çıkmakta serbestsiniz. İhtiyaç duymanız halinde araştırmacıyla iletişime geçebilir veya üniversitenin psikolojik danışmanlık birimine başvurabilirsiniz.

Araştırmayla ilgili daha fazla bilgi almak isterseniz:

Çalışmayla ilgili soru ve yorumlarınızı araştırmacıya iletebilirsiniz.

Bu bilgilendirilmiş onam belgesini okudum ve anladım. Bu araştırmaya katılmayı hür irademle kabul ediyorum. Bilgilerimin gizli tutulacağını ve istediğim zaman araştırmadan ayrılabilceğimin farkındayım.

Appendix 2: Demographic Information Form

Demografik Bilgi Formu

Lütfen aşağıda yer alan kişisel bilgileriniz ile ilgili soruları cevaplayınız.

Yaşınız:

Cinsiyetiniz: Kadın () Erkek () Diğer () Belirtmek istemiyorum ()

Eğitim durumu: İlkokul mezunu () Ortaokul mezunu () Lise mezunu () Üniversite öğrencisi () Üniversite mezunu () Yüksek Lisans ve/veya Doktora öğrencisi () Yüksek Lisans ve/veya Doktora mezunu ()

Eğer üniversite öğrencisiyseniz lütfen eğitim gördüğünüz bölümü belirtiniz. Eğer üniversite mezunu iseniz mezun olduğunuz bölümü yazabilirsiniz (İkisi de değilseniz hayır yazabilirsiniz):

E-posta adresiniz (Lütfen aktif olarak kullandığınız geçerli bir e-posta adresi yazınız.

Kullandığınız herhangi bir e-posta adresini yazabilirsiniz. Çalışmanın ikinci kısmına seçilirseniz bir hafta sonra size bu e-posta adresi üzerinden ikinci anket linki gönderilecektir.):

Kendi kişisel kodunuzu kendiniz oluşturun: Doğduğunuz ayın doğdunuz günü + annenizin isminin baş harfi + babanızın isminin baş harfi + ilkokul öğretmeninizin isminin baş harfi (Örnek: 15AKT)

Bu kod verilerinizi anonim olarak saklamak için kullanılacaktır. En geç ikinci anket linkini aldığınız andan itibaren e-posta adresiniz silinecek ve bu kodla değiştirilecektir:

...

Appendix 3: The List of Events

Originals

1. Going to a theme park
2. Experiencing a car crash
3. Going to a swimming pool and that your swimming trunks fell off
4. Being hospitalized and undergoing surgery
5. Having a tooth extracted by a dentist
6. Building camps with friends
7. Going ice skating on natural ice in the winter
8. Going camping with your family in tents
9. Falling off your bike as a child and wounded yourself
10. Having a verbal fight with your friends at school
11. Going on a hot air balloon ride
12. Going to Disneyland Paris and meeting your favorite figure
13. Breaking something valuable in a store
14. Going to a doctor to suture a wound
15. Falling off the trampoline and broke something
16. A plaster of a broken arm or leg written full by classmates, family, etc.
17. Going on a skiing holiday
18. Experiencing a move to another place
19. Going to a fair and going into an attraction
20. Going to a national theme park

Translations

1. Lunaparka gitmek

2. Araba kazası yaşamak
3. Yüzme havuzuna gitmeniz ve mayonuzun düşmesi
4. Hastaneye kaldırılmak ve ameliyat olmak
5. Diş hekimi tarafından dişinin çekilmesi
6. Arkadaşlarıyla kamp kurmak
7. Kış mevsiminde doğal buz üzerinde buz pateni yapmak
8. Ailenizle çadır kampına gitmek
9. Çocukken bisikletten düşüp kendini yaralamak
10. Okulda arkadaşlarıyla sözlü kavga etmek
11. Sıcak hava balonu gezisine çıkmak
12. Disneyland Paris'e gitmek ve en sevdiğin figürle tanışmak
13. Bir mağazada değerli bir şeyi kırmak
14. Bir yaraya dikiş attırmak için doktora gitmek
15. Trambolinden düşmek ve bir yerini kırmak
16. Kırık bir kol veya bacak alçısına sınıf arkadaşları, aile vb. tarafından her yerine yazı yazılması
17. Kayak tatiline gitmek
18. Başka bir yere taşınma deneyimi yaşamak
19. Bir festivale gitmek ve orada bir etkinliğe katılmak
20. Ulusal bir tema parkına gitmek

Appendix 4: Belief in Occurrence and Recollection Ratings Scales

Original

Five events are listed here that you previously indicated that you had experienced them once. For every event, you have to indicate your **belief*** in the event, so how likely it is that you personally experienced the event, with 1 as this did not happen to me and 8 as I am completely confident that this happened to me.

Also, your memory about the event is asked, with 1 as I do not recall this event and 8 as I remember this event completely.

***Belief and recollection are different constructs. For example, people believe to be born but do not have any recollection/memory of being born. However, for most events (for example your last holiday), you both believe and remember that the event occurred.**

Next, write down everything you can remember about the event.

Event 1/2/4/5: X.

Belief: 1 = definitely did not happen 8 = definitely did happen

Recollection: 1 = no memory of event at all 8 = clear and complete memory of event

	1	2	3	4	5	6	7	8
Belief in Event	☐	☐	☐	☐	☐	☐	☐	☐
Recollection of Event	☐	☐	☐	☐	☐	☐	☐	☐

Imagination technique: with this technique memories can be improved. Close your eyes and try to imagine that the event took place. Go back to the place where it happened. Who is with you?

When did it happen? What are you feeling?

Now, again fill in the scale.

	1	2	3	4	5	6	7	8
Belief in Event	☐	☐	☐	☐	☐	☐	☐	☐
Recollection of Event	☐	☐	☐	☐	☐	☐	☐	☐

Which details can you remember about the event?

Event 3: You indicated that you experienced that when you went to a swimming pool your swimming trunks fell off.

Belief: 1 = definitely did not happen 8 = definitely did happen

Recollection: 1 = no memory of event at all 8 = clear and complete memory of event

	1	2	3	4	5	6	7	8
Belief in Event	☐	☐	☐	☐	☐	☐	☐	☐
Recollection of Event	☐	☐	☐	☐	☐	☐	☐	☐

Imagination technique: with this technique memories can be improved. Close your eyes and try to imagine that the event took place. Go back to the place where it happened. Who is with you? When did it happen? What are you feeling?

Now, again fill in the scale.

	1	2	3	4	5	6	7	8
Belief in Event	☐	☐	☐	☐	☐	☐	☐	☐
Recollection of Event	☐	☐	☐	☐	☐	☐	☐	☐

Which details can you remember about the event?

(At the end of the ratings of all events)

1 event out of five was not experienced by you. Can you tell which event it was?

☐ Event 1

☐ Event 2

☐ Event 3

☐ Event 4

☐ Event 5

☐ I don't know.

Hayal gücü tekniği: Bu teknikle anılara erişim artırılabilir. Gözlerinizi kapatın ve olayın gerçekleştiğini hayal etmeye çalışın. Olayın olduğu yere geri dönün. Yanınızda kim var? Olay ne zaman oldu? Ne hissediyorsunuz?

Şimdi ölçeği tekrar doldurun.

	1	2	3	4	5	6	7	8
Olaya İnanç	☐	☐	☐	☐	☐	☐	☐	☐
Olayı Hatırlama / Anımsama	☐	☐	☐	☐	☐	☐	☐	☐

Olayla ilgili hangi detayları hatırlayabiliyorsunuz?

Olay 3: Yüzme havuzuna gittiğinizde mayonuzun düşmesi olayını bir kez yaşadığınızı belirtmişsiniz.

İnanç: 1 = Kesinlikle benim başıma gelmedi 8 = Kesinlikle benim başıma geldi

Hatırlama/Anımsama: 1 = Olaya dair hiçbir anım yok 8 = Olaya dair açık ve eksiksiz anım var

	1	2	3	4	5	6	7	8
Olaya İnanç	☐	☐	☐	☐	☐	☐	☐	☐
Olayı Hatırlama / Anımsama	☐	☐	☐	☐	☐	☐	☐	☐

Hayal gücü tekniği: Bu teknikle anılara erişim artırılabilir. Gözlerinizi kapatın ve olayın gerçekleştiğini hayal etmeye çalışın. Olayın olduğu yere geri dönün. Yanınızda kim var? Olay ne zaman oldu? Ne hissediyorsunuz?

Şimdi ölçeği tekrar doldurun.

	1	2	3	4	5	6	7	8
Olaya İnanç	☐	☐	☐	☐	☐	☐	☐	☐
Olayı Hatırlama / Anımsama	☐	☐	☐	☐	☐	☐	☐	☐

Olayla ilgili hangi detayları hatırlayabiliyorsunuz?

(Tüm olayların derecelendirmelerinin sonunda)

Beş olaydan 1'i sizin tarafınızdan yaşanmadı. Hangi olay olduğunu söyleyebilir misiniz?

- ☐ Olay 1
- ☐ Olay 2
- ☐ Olay 3
- ☐ Olay 4
- ☐ Olay 5
- ☐ Bilmiyorum

Cevabınızdan ne kadar eminsiniz?

- ☐ Çok eminim
- ☐ Biraz eminim
- ☐ Emin değilim, tahmin ettim

Önceki anketteki olayları kimseyle konuştunuz mu?

- ☐ Evet
- ☐ Hayır

Appendix 5: Debriefing.

Original

Thank you very much for your participation to this study.

Event number 3 was not experienced by you in your childhood but, however a false suggestion.

The primary goal of the study was not presented from the start. The real aim of the study was to see whether people go along with a false suggestion about an event in their childhood. The researchers are trying to investigate whether people can create false memories for events in their childhood. With the videos you have watched, it has been tried to understand whether positive or negative mood influences whether you agree with this false suggestion. It is thought that a better understanding of its possible relationship will contribute to the literature.

The data and study result you provide within the scope of the study will be protected within the framework of scientific and professional ethical principles, the results will be interpreted collectively and shared as collective information only for scientific publication purposes.

We wish you not to share detailed information about the study with other people you know to participate in the study so that the study can progress properly.

Thank you again for your valuable participation.

You can contact the names below to learn the results of the research or to get more information.

Translation

Araştırmamıza katıldığınız için size çok teşekkür ederiz.

3 numaralı olay (yüzme havuzuna gitmeniz ve mayonuzun düşmesi) çocukluğunuzda sizin tarafınızdan deneyimlenmedi, yanlış bir önerme olarak verildi.

Bu çalışmanın birincil amacı başlangıçta size sunulmadı. Çalışmanın asıl amacı, insanların çocukluklarındaki bir olayla ilgili yanlış bir önermeye katılıp katılmadıklarını görmektir. Araştırmacılar, insanların çocukluklarındaki olaylar için sahte anılar yaratıp yaratamayacaklarını araştırmaya çalışıyorlar. İzlemiş olduğunuz videolar ile de pozitif ya da negatif ruh halinin bu yanlış önermeye katılıp katılmama konusunda bir etkisinin olup olmadığı anlaşılmaya çalışıldı. Olası ilişkisinin daha iyi anlaşılmasının literatüre katkı sağlayacağı düşünülmektedir.

Çalışma kapsamında sağladığınız veriler ve çalışma sonuçları bilimsel ve mesleki etik ilkeleri çerçevesinde korunacak, sonuçlar toplu olarak yorumlanıp yalnızca bilimsel yayın amacıyla toplu bilgiler halinde paylaşılacaktır.

Çalışmanın sağlıklı ilerleyebilmesi için çalışmaya katılacağını bildiğiniz diğer kişilerle çalışma ile ilgili detaylı bilgi paylaşımında bulunmamanızı dileriz.

Değerli katılımınız için tekrar çok teşekkür ederiz.

Araştırmanın sonuçlarını öğrenmek ya da daha fazla bilgi almak için aşağıdaki isimlere başvurabilirsiniz.

