

Counterfactual Thinking in Psychology: From Cognitive Mechanisms to Clinical Practice

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ABSTRACT

Counterfactual thinking refers to the cognitive process of mentally simulating alternatives to events that have already occurred. This article provides a narrative review of the concept, examining its theoretical foundations, triggers, functional value, and clinical implications. Special attention is given to the distinction between upward and downward counterfactuals, as well as to the major explanatory frameworks, including norm theory and motivational accounts. The review highlights that counterfactual thinking is more likely to emerge in situations perceived as unusual, emotionally significant, and controllable. While this cognitive process may support learning, decision-making, and future preparation, it may also contribute to maladaptive rumination, guilt, and emotional distress, particularly after traumatic events such as accidents, bereavement, illness, sexual violence, and post-traumatic stress disorder. The article further discusses the relevance of counterfactual thinking for psychological adjustment, including its relationship with resilience, posttraumatic growth, and recovery. Finally, it examines the clinical implications of counterfactual thought patterns, emphasizing their value in cognitive-behavioral therapy and acceptance-based approaches when addressing guilt, trauma, and self-blame. Overall, the review shows that counterfactual thinking is a complex cognitive mechanism with both adaptive and maladaptive potential, making it highly relevant for contemporary psychological theory and clinical practice.

Keywords: Counterfactual Thinking; Cognitive Psychology; Decision Making; Trauma; PTSD

Introduction

The present review emerged from preliminary exploratory work examining counterfactual thinking in response to traumatic scenarios, highlighting the need for a broader synthesis of the literature on trauma and psychological adjustment.

Counterfactual thinking refers to a cognitive process in which individuals mentally construct alternative outcomes to events that have already occurred, typically through conditional statements such as “if only...” or “what if...”. This form of thinking is especially common after negative or unexpected events, when people imagine how the outcome might have been different. Roese and Olson describe counterfactual thinking as a core mechanism involved in judgment, emotional regulation, and decision-making. It allows individuals to compare reality with an imagined alternative, thereby making it a relevant topic in cognitive psychology [1]. Counterfactual thoughts are usually classified as upward or downward. Upward counterfactuals involve imagining a better possible outcome than the one that actually occurred, such as “If I had done X, the result would have been better.” These thoughts are often associated with regret, guilt, and self-criticism.

Downward counterfactuals, on the other hand, involve imagining a worse outcome, which can produce relief or gratitude, for example, “It could have been much worse.” This distinction is important because it helps explain why counterfactual thinking can have both adaptive and maladaptive consequences [2].

Theoretical Perspectives

In the 1995 study by Medvec, Madey, and Gilovich, it was proven that athletes who win the bronze medal resort to top-down counterfactual thinking, that is, “At least I’m on the podium.” Athletes who receive the silver medal, on the other hand, resort to bottom-up counterfactual thinking because they were closer to achieving first place [3]. Two principles guide the formulation of counterfactual thoughts. The truth principle, in which individuals tend to imagine different outcomes that appear more plausible and aligned with reality, and the parsimony principle, which allows subjects to focus on only a few possibilities, are generally closer to the event that occurred due to limitations of working memory [4]. Regarding their function, we can divide these thoughts into two structures: the affective and the preparatory. The affective function is characterized by feelings of relief in

the face of imagined alternative situations to events that have already occurred. It differs by the idealization of thoughts such as: “it could have been worse” or “it wasn’t so bad after all.” The preparatory function guides individuals to act differently in similar situations that may arise in the future by reflecting on past attitudes [5].

Counterfactual thoughts arise more regularly in abnormal (irregular) events rather than in predefined routines. That is, the creation of counterfactual thoughts primarily focuses on attitudes that deviate from the norm. In addition, people tend to generate more negative thoughts when they choose to take some action than when they choose not to. Finally, people tend to imagine alternative scenarios when they feel they are in control [5,6]. Two major frameworks help explain why counterfactual thoughts emerge. The first is norm theory, proposed by Kahneman and Miller, which argues that people compare actual events with mentally constructed alternatives based on expectations, norms, and perceived typicality. When an outcome is perceived as abnormal or inconsistent with expectations, counterfactual thinking becomes more likely. In this sense, the more an event deviates from what is considered normal, the more likely it is to trigger alternate scenarios [4]. Furthermore, this theory introduces the term mutability, which refers to the ease with which one can imagine alternatives in an event. In this, some events are perceived as easy to predict, while others are perceived as more difficult, for example, an unexpected accident or factors outside the individual’s control [7,8]. The second is the motivational theory of counterfactual thinking, which emphasizes the emotional and self-regulatory functions of these thoughts. This perspective suggests that people generate counterfactuals not only to understand what happened but also to restore a sense of control, protect self-esteem, and prepare for future situations. In this framework, emotionally significant events tend to elicit stronger counterfactual thinking because they create a stronger need for meaning and psychological adjustment [9]. In general, situations with a greater emotional impact generate more counterfactual thoughts. For example, failing to get into university generates a greater emotional loss, so it is common for individuals to generate more thoughts of the type “if I had studied more, I could have gotten in”. This type of thinking helps produce a sense of control over situations that have already happened, since the subject believes that, with a small behavior change, the outcome could have been different. In addition, this type of thinking favors self-esteem and ensures psychological and emotional stability. It is important to emphasize that the motivational model does not replace normative theory. On the contrary, they complement each other and help to explain what counterfactual thinking is [9].

Functional Value of Counterfactual Thinking

Counterfactual thinking has both affective and preparatory functions. Its affective function lies in its capacity to help individuals process emotions such as regret, disappointment, or relief. By imagining how things might have turned out differently, people can experience

emotional release or, in some cases, intensify negative emotions. Its preparatory function, in contrast, supports learning and future planning by helping individuals identify which actions could have led to better outcomes. Counterfactual thinking is often considered useful in decision-making and performance improvement [1]. This dual role explains why counterfactual thinking can be adaptive in some contexts and harmful in others. In educational or professional settings, reflecting on errors may promote learning and motivation. However, in trauma-related contexts, excessive counterfactual thinking may contribute to guilt, rumination, and psychological distress. For example, in posttraumatic stress disorder, counterfactual comparisons are often associated with persistent self-blame and emotional suffering. Thus, the function of this cognitive process depends heavily on the context in which it appears [10].

Conditions that Trigger Counterfactual Thinking

The literature suggests that counterfactual thinking is more likely to arise in situations perceived as unusual, emotionally intense, or controllable. Individuals are more prone to generate such thoughts when they believe that the outcome could have been prevented through a different decision or action. Events that involve personal responsibility or identifiable points of intervention tend to stimulate more counterfactual reflection, especially when the situation is seen as avoidable [11]. McCloy and Byrne showed that controllable events are particularly effective in eliciting counterfactual thoughts because people are more likely to ask themselves what they could have done differently. Similarly, Kahneman and Miller’s norm theory predicts that abnormal events and unexpected outcomes make counterfactual generation easier, since they stand out more sharply against what is mentally expected. Together, these findings suggest that control and abnormality are central triggers of counterfactual reasoning [8].

To observe counterfactual thinking in response to different narrative conditions, people can be exposed to stories featuring a protagonist across four scenarios that vary along two dimensions: normality versus abnormality and controllability versus uncontrollability. Participants are asked to write spontaneous counterfactual thoughts. In contrast, others complete a questionnaire designed to assess the perceived mutability of the event and the extent to which the protagonist could have acted differently. People can generate more counterfactual thoughts in scenarios where the outcome appeared preventable or controllable, especially when a warning had been given. In contrast, scenarios perceived as more routine or less controllable can elicit fewer such thoughts.

Applications in Psychology

Counterfactual thinking has several practical applications across psychology and related fields. In decision-making, it helps individuals evaluate past outcomes and refine future choices. In educational and performance contexts, it can support learning by encouraging people to reflect on mistakes and improve subsequent behavior. Roeser and

colleagues have shown that counterfactual reflection may even enhance motivation after poor performance, since it creates a cognitive bridge between failure and future effort [9].

The process is also relevant in sports psychology, where athletes often use counterfactual thinking to analyze errors, refine strategies, and prepare for future competitions [3]. In clinical psychology, counterfactual thinking can be both useful and problematic. It may help patients reframe events and reduce excessive self-blame, but it can also intensify guilt and rumination, especially in individuals dealing with trauma, grief, or posttraumatic stress disorder. For this reason, therapists may use counterfactual exploration carefully, helping patients distinguish realistic responsibility from distorted self-criticism [10-13].

Counterfactual Thinking Following Traumatic Events

Counterfactual thinking is especially salient after traumatic events, when individuals attempt to reconstruct what might have happened differently mentally. In these contexts, the thought pattern often takes the form of “if only” or “what if,” reflecting an effort to identify missed opportunities, preventability, and personal responsibility. Although counterfactual thinking can sometimes support meaning-making, it is also frequently associated with emotional distress, especially when the event is perceived as avoidable or when the individual feels partially responsible for its occurrence. Traumatic experiences such as accidents, bereavement, serious illness, sexual violence, and posttraumatic stress disorder are all contexts in which counterfactual thinking may become particularly intense and psychologically significant [12,13]. In the case of accidents, individuals often replay the sequence of events in an effort to identify a single decision or omission that might have changed the outcome. This tendency is common after road accidents, workplace injuries, or falls, where people may focus on missed warnings, delayed reactions, or alternative actions that might have prevented harm. Such thoughts can be adaptive when they encourage future caution, but they often become harmful when they lead to persistent self-blame and guilt [13]. Bereavement is another context in which counterfactual thinking frequently emerges. After the death of a loved one, individuals may imagine different medical decisions, earlier interventions, or alternative circumstances that might have prolonged life or prevented death. These thoughts can complicate grieving, particularly when the death was sudden, unexpected, or medically ambiguous. Rather than easing distress, repeated mental revisiting of possible alternatives may intensify regret and make acceptance more difficult [12]. In the context of illness, counterfactual thinking often centers on prevention. People may wonder whether different health behaviors, earlier medical consultations, or more attentive self-care could have prevented the illness or reduced its severity. It is especially common in chronic or serious conditions, where the meaning of the diagnosis may be emotionally overwhelming. While such thoughts may motivate treatment adherence or lifestyle change, they can also foster shame, helplessness,

and a distorted sense of personal blame, especially when the illness was not actually controllable [8]. Sexual violence represents one of the most painful contexts for counterfactual thinking. Survivors may repeatedly ask what they should have done differently, such as avoiding a place, trusting their intuition, or responding differently. These thoughts are often driven by a need to restore control over an experience that was profoundly disempowering.

However, in this context, counterfactual thinking can be particularly damaging because it may reinforce victim-blaming, self-criticism, and traumatic guilt. Therapeutic work often needs to challenge these interpretations and accurately reframe responsibility, placing it on the perpetrator rather than the survivor [10]. Posttraumatic stress disorder is strongly linked to counterfactual thinking, especially when trauma memories are persistent and intrusive. Individuals with PTSD often engage in repeated mental simulations of how the traumatic event could have unfolded differently, which may amplify shame, guilt, and rumination. In some cases, these thoughts are tied to moral injury or survivor’s guilt, where the person feels that a different action might have saved someone else or prevented harm. Although such reasoning may reflect an attempt to regain control, it frequently maintains distress rather than resolving it [13].

Counterfactual Thinking and Psychological Adjustment

Counterfactual thinking plays a complex role in psychological adjustment after trauma. On one hand, it can become part of maladaptive rumination, especially when the individual repeatedly returns to the same imagined alternatives without reaching emotional resolution. This form of repetitive thinking is linked to prolonged distress, impaired coping, and difficulty integrating the event into a coherent life narrative. When counterfactual thoughts become rigid and self-critical, they may prevent recovery by keeping the person psychologically anchored to the traumatic moment. On the other hand, counterfactual thinking can also contribute to psychological growth when it is used reflectively and flexibly [14]. In some cases, people use these thoughts to identify lessons, adjust future behavior, and strengthen coping strategies. This process may support posttraumatic growth by helping the individual derive meaning from adversity, recognize personal strengths, or reconsider priorities. The key difference lies in whether the thinking remains open and constructive or becomes repetitive and punitive. Counterfactual thinking is also related to resilience. Individuals with greater resilience may be better able to transform “what if” thoughts into practical learning rather than self-blame. They may acknowledge that an event could have unfolded differently while still accepting the limits of control and uncertainty.

This more balanced interpretation can reduce emotional burden and support adaptive coping. In this sense, resilience does not eliminate counterfactual thinking, but it shapes how the person uses it psychologically. Emotional recovery often depends on this distinction [15]. When counterfactual thoughts are acknowledged, contextual-

ized, and integrated into a broader understanding of the event, they may support healing. When they remain unresolved and self-directed, they can prolong suffering. Therapeutic approaches, therefore, often aim not to suppress counterfactual thinking entirely but to help individuals reframe it in ways that reduce guilt, restore agency, and support emotional adjustment. Research has shown that traumatic events perceived as controllable often elicit stronger counterfactual thoughts centered on preventability and personal responsibility [9,16].

Consider a situation in which an individual experiences a traumatic event after making a seemingly avoidable decision. Such scenarios frequently trigger upward counterfactual thoughts (“If only I had...”), which may increase feelings of guilt and regret while also influencing perceptions of responsibility [5,6]. Traumatic narratives often contain identifiable points of perceived controllability. For instance, events involving ignored warnings, delayed decisions, or deviations from routine are especially likely to generate counterfactual reflections focused on alternative outcomes. Traumatic events involving interpersonal violence may elicit counterfactual thoughts that focus on the victim’s actions, thereby contributing to processes of self-blame and victim blaming [10,11].

Clinical Implications

Counterfactual thinking has important clinical implications because it can be either adaptive or maladaptive depending on its frequency, content, and function. In therapy, the key task is not to eliminate counterfactual thoughts, but to understand when they help the person make sense of experience and when they reinforce distress.

When Counterfactual Thinking Helps

Counterfactual thinking can be helpful when it supports learning, problem-solving, and future preparation. In this form, the person reflects on what happened, identifies modifiable factors, and uses that insight to make more adaptive choices later. It can also help clients regain a sense of agency after failure or loss, especially when the thoughts are realistic and not excessively self-critical. For example, a client may conclude, “Next time I will ask for support earlier,” rather than “Everything is my fault.” In this sense, counterfactual thinking can contribute to insight and behavioral change.

When it Becomes Problematic

Counterfactual thinking becomes clinically concerning when it turns repetitive, rigid, and emotionally punishing. It is especially likely after trauma, bereavement, illness, or interpersonal violence, when the person repeatedly replays the event and imagines how it could have been avoided. At this point, counterfactual thinking may become part of rumination, guilt, shame, and self-blame. It can also maintain symptoms of anxiety, depression, and PTSD by keeping the person mentally trapped in the past rather than oriented toward recovery. The more the thought pattern becomes “if only I had...,” the more it

may function as a source of psychological suffering rather than adaptive reflection.

From a Cognitive Behavioral (CBT) perspective, counterfactual thoughts are useful because they reveal the client’s interpretations, assumptions, and distorted beliefs about responsibility and control. CBT can help identify unrealistic or exaggerated counterfactuals, test their evidence and replace them with more balanced appraisals [17,18]. It is particularly important when clients overestimate their control over traumatic events or wrongly assume that a different action would certainly have changed the outcome. CBT also helps reduce cognitive distortions such as personalization, catastrophizing, and hindsight bias [19]. The therapist works on both the content of the thought and the emotional consequences attached to it.

Acceptance and commitment therapy (ACT) approaches the issue differently. Rather than challenging the truth of the counterfactual thought directly, ACT focuses on the client’s relationship to the thought. The goal is to reduce cognitive fusion, increase psychological flexibility, and help the person notice that a thought is not the same as a fact. It can be especially useful when clients are stuck in guilt-based mental loops that cannot be fully resolved by logic alone. ACT encourages acceptance of painful internal experiences, while helping the person commit to actions guided by values rather than by avoidance or self-punishment. In trauma-related contexts, this can be particularly powerful because it helps clients move forward without needing to “solve” the past. In work with guilt and trauma, counterfactual thinking must be handled carefully. Many trauma survivors believe they should have foreseen, prevented, or stopped what happened, even when they had little or no control. Therapy should validate the emotional reality of the guilt while gently challenging distorted responsibility. A useful clinical aim is to distinguish between realistic responsibility, which can support learning, and unjustified self-blame, which usually deepens suffering. Interventions may include cognitive restructuring, compassion-focused work, narrative approaches, and trauma-informed stabilization. When handled well, counterfactual thinking can become part of meaning-making and recovery; when mishandled, it can sustain shame and prevent healing [11].

Conclusion

Counterfactual thinking is a central cognitive process in psychology because it helps explain how people interpret negative events, regulate emotion, and learn from the past. The literature shows that it is especially likely to emerge in controllable, emotionally significant, and abnormal situations. While it can support adaptation, learning, and decision-making, it may also contribute to guilt, regret, and distress when it becomes excessive or rigid. The article reviewed here illustrates these dynamics and reinforces the importance of counterfactual thinking as both a theoretical and applied topic in cognitive psychology [16].

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