Thought Suppression and the Subjective Experience of Remembering Traumatic Events

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Abstract

Suppressing thoughts often leads to their hyperaccessibility in mind, and people who suppress thoughts of traumatic events experience depression and anxiety. In the current study, I investigated whether the suppression of thoughts of traumatic memories might be related to the memories' "vividness" or "closeness," which might account for the relation between suppression and depression and anxiety. Specifically, I predicted that, compared to participants using other coping strategies, participants who suppressed memories of a trauma would see those memories from the first-person perspective, feel that those memories were temporally closer, and report higher levels of depression and anxiety. Participants reported the characteristics of their memories of negative events, rated their depression, anxiety, and self-esteem levels, and indicated their typical thought control techniques. Analyses revealed that although suppression was related to higher levels of depression and anxiety and lower levels of self-esteem, suppression was unrelated to memory perspective and subjective temporal distance. Limitations of the present study are discussed.

Thought Suppression and the Subjective Experience of Remembering Traumatic Events

One way to deal with a negative thought or memory is to put it out of mind. People remove specific thoughts from consciousness by actively choosing to think about something else. This process of avoiding an unwanted thought by attempting to block it from consciousness is called thought suppression. Thought suppression is a common coping strategy by which people seek to avoid the negative feelings associated with thinking about a highly negative event or experience. Since recalling a negative event can make people feel depressed and anxious, many individuals attempt to avoid depressive feelings by distracting themselves from the source of those feelings (Wegner, Schneider, Carter, & White, 1987). Unfortunately, research shows that thought suppression has a paradoxical effect: Suppressing a thought actually makes people more likely to think about that specific thought. As a result of this paradoxical effect, suppression of a negative thought leads to more depressive symptomology and more frequent thought intrusions than does rumination (Baum, Cohen, & Hall, 1993; Borton, Markowitz, & Dieterich, 2005; Wenzlaff, Wegner, & Klein, 1991). Though numerous studies have examined the frequency with which unwanted thoughts recur and the psychological impact of these recurring thoughts, few have examined changes that may occur in the thought itself as a result of suppression. The purpose of the present study was to assess whether suppressing the memory of a negative personal event could affect the perspective from which the memory was seen and also how close the memory felt to the present time.

The Rebound Effect

Individuals who suppress a thought often experience that thought more frequently than do individuals who express (think, talk, or write about) it. This phenomenon is known as the *rebound effect* and was first explored by Wegner, Schneider, Carter, and White (1987). The

experimenters first asked all participants to bring the image of a white bear to mind. Next, they asked half of the participants to suppress the thought of the white bear while speaking their thoughts aloud in a stream of consciousness fashion for five minutes. The other group of participants was also instructed to speak aloud for five minutes, but during this period they were instructed to think about the white bear. Participants in both conditions were told to ring a bell each time they thought about a white bear. The results of this experiment showed that participants in the suppression condition thought about a white bear more than once per minute during the suppression period, indicating that their attempt to suppress the thought was unsuccessful. Furthermore, during a period of free expression that followed the suppression period, participants in the suppression condition spoke more about a white bear than did participants in the expression condition, who had never suppressed the thought. Wegner et al.'s (1987) results suggest that trying to suppress a thought may actually bring the thought to mind more often than if no suppression attempt is made. Not only did participants who suppressed experience the thought of a white bear frequently during suppression, but they also had more to say about white bears once they were allowed to express their thoughts.

Ironic Processes Theory

According to Wegner (1994), the paradoxical effects of thought suppression result from the cognitive processes underlying mental control. Individuals use mental control when they actively choose what to think about and what to avoid thinking about, and this control allows them to change a mental state. Wegner (1994) suggests that changing a mental state (e.g., by suppressing an unwanted thought) involves two processes: one to make the change and one to monitor the success of the change. The first of these two processes, the *operating process*, is intentionally engaged and searches for and activates thoughts that will create the desired mental

state. For example, if an individual wants to think optimistically about a new job, the operating

process will activate thoughts about the positive aspects of that job. At the same time, an

unconscious process, the *monitoring process*, searches for thoughts that would signal a failure in

the operating process. For example, if the operating process has brought the positive

characteristics of the job into consciousness but has not eliminated the negative thoughts about

the job, then it has failed to change the individual's mental state. The monitoring process detects

this failure by searching for the negative thoughts in the individual's consciousness. This

process is important because if it detects that the mental state has not been changed, it can initiate

the operating process to try again.

The monitoring process keeps working even after the operating process has finished,

constantly searching for unwanted thoughts so that the operating process can be re-initiated when

necessary. This constant searching, however, keeps the mind sensitive to the exact thoughts that

the individual is trying to avoid. Just like the operating process, the monitoring process activates

the thoughts that it finds during its search, making it likely that these thoughts will intrude into

consciousness. As Wegner explains, a person cannot avoid a thought without knowing what that

thought is, and in order to identify that thought the person must be conscious of it. This

underlying paradox of mental control leads to the paradoxical effects of thought suppression.

Wegner's (1994) theory of ironic mental control processes, though it can apply to any

attempted mental change, provides a strong theory for the underlying process of thought

suppression. During suppression, the operating process searches for any items that are not the

thought that the person wishes to suppress; these items are called distracters. At the same time,

the monitoring process searches for the unwanted thought's presence, thereby keeping the

thought active. As a result of this constant activation, the suppressed thought may intrude into

consciousness more frequently. The ironic result of mental control can be especially pronounced during thought suppression if the individual does not have specific distracters on which to focus. In this case, a mental state is being avoided instead of created. When the operating process creates a mental state, it activates specific thoughts that will contribute to the new state. When this process works to avoid a mental state, however, it can activate any thought except those that contribute to the unwanted mental state. In this case the operating process's search will be difficult and the monitoring process's search will easily identify and activate items from the suppressed state. Therefore, when people try to avoid a specific thought without having another specific thought to replace it, the monitoring process may be generally more successful than the operating process. The results of Wegner et al. (1987) support this claim. In Experiment 2, the experimenters provided one suppression group with a specific distracter thought (a red Volkswagen) to focus on whenever the thought of a white bear intruded into consciousness. The other suppression group was not given a specific distracter on which to focus. Though participants in both suppression conditions reported frequent thought intrusions, participants who used the specific distracter were less preoccupied with white bears during the expression period. This finding indicates that attempts to change a mental state are more effective when people actively search for replacement thoughts instead of trying to generally avoid some other thought.

Researchers have recently assessed the validity of Wegner's theory of ironic control processes by examining the brain activity that underlies cognitive functioning. Wyland, Kelley, Macrae, Gordon, and Heatherton (2003) used functional magnetic resonance imaging to record activity in different brain regions during three tasks: suppressing one particular thought, suppressing all thoughts, or thinking freely. Participants' suppression, both of a specific thought

or of all thoughts, activated the anterior cingulate, a brain region involved in monitoring task performance by searching for the presence of interfering thoughts.

Thought Suppression and Mood

Some memory theorists claim that when a thought is encoded (stored in memory), contextual information associated with that thought is also encoded (Neath & Surprenant, 2003). Research has shown that a thought and its contextual information can be so strongly associated within the memory system that reinstating the context will lead to better remembering of the thought. One piece of contextual information is a person's mood at the time of encoding. Though a specific mood can be associated with any normal thought or memory, Wenzlaff, Wegner, and Klein (1991) hypothesized that thought suppression creates a particularly strong bond between thoughts and mood. The experimenters reasoned that when people attempt to suppress thoughts, they search for any item that could distract them, a process the authors called *unfocused self-distraction*. When the unwanted thought rebounds despite distraction efforts, a distracter is discarded and a new one is chosen. Each failed distracter may become associated with the unwanted thought and could actually serve as a reminder of the thought. Another important aspect of unfocused self-distraction is that the distracter thoughts that people choose are usually strongly related to people's current moods: a person in a bad mood will likely pick negative thoughts for distracters, whereas someone in a good mood will probably choose positive distracters (Wenzlaff, Wegner, & Roper, 1988). Because a specific mood is associated with the distracters and the distracters serve as reminders of the unwanted thought, a person's mood can become highly associated with an unwanted thought.

In their experiment, Wenzlaff, Wegner, and Klein (1991) asked one group of participants to suppress and another to express thoughts about a white bear. During this period of either

suppression or expression, the experimenters played music to induce either a positive or negative mood. Finally, participants in both groups were asked to think about a white bear, and the experimenters played music to induce either the same or a different mood in each participant group. The researchers expected that suppression and mood would interact so that participants who had originally suppressed and then expressed in the same mood would show the greatest rebound effect. The results showed that although there was a rebound effect for all participants who suppressed, there was a greater rebound effect for participants who suppressed and expressed thoughts in the same mood. Whereas Experiment 1 showed that inducing a mood can produce an associated thought, Experiment 2 examined whether asking participants to recall a thought induced an associated mood. The results showed that participants who experienced one mood during suppression of the thought later experienced the same mood while expressing the thought. Taken together, these two experiments demonstrated that thought suppression creates a strong association between the thought and mood state, such that activating the thought induces the mood and activating the mood induces the thought. The bonding of unwanted thoughts with a specific mood may be a crucial aspect of the relationship between depression and intrusive thoughts. Depressed individuals will likely choose distracters congruent with their negative mood, unintentionally forming associations between general negative thoughts and a specific unwanted thought. The unwanted thought, then, will reinstate a depressed mood whenever it intrudes into consciousness.

Wenzlaff et al. (1991) showed how strongly mood can influence and bring about thought intrusions. Brewin and Smart (2005) showed that a negative mood can result in more thought intrusions even for individuals who are good at suppressing thoughts. These researchers discovered that individuals with greater working memory capacities experience fewer thought

intrusions during suppression than do those with smaller working memory capacities. However, inducing a negative mood increased the rebound effect for all participants, regardless of working memory capacity. These findings support the idea that a negative mood activates a network of negative thoughts that even the strongest inhibitory control process cannot overcome.

The Suppression of Personal Thoughts

The thought suppression phenomena discussed thus far have resulted from the study of suppressing random, personally irrelevant thoughts. Although this experimental research provides a framework for understanding the processes underlying thought suppression, most of these experiments do not have real world applications. Most people have no reason to suppress the thought of a white bear. Instead, people use thought suppression as a strategy for coping with personally relevant, upsetting thoughts. Though Wegner's theory of ironic mental control processes may also underlie the suppression of personally relevant thoughts, research on this type of thought suppression reveals serious implications for psychological well-being.

Kelly and Kahn (1994) directly compared the suppression of personally relevant intrusive thoughts to the suppression of random thoughts. The experimenters posed two main questions: How does the rebound effect differ when the unwanted thought is personally relevant (e.g., a traumatic event) instead of personally irrelevant and random (e.g., a white bear)? Since people have experience with their personal intrusive thoughts, do they develop strategies that overcome the rebound effect and help them successfully suppress unwanted thoughts? In addition to answering these two questions, the experimenters wanted to assess the role of negative metacognitions (thinking about thinking) in the development of obsessional thinking. Previous studies have shown that a person's failure to suppress a thought can lead to negative metacognitions and feelings of being unable to control one's own thoughts. These negative

metacognitions may lead to stronger attempts at suppression, which could result in further failures and eventually the development of an obsession with the unwanted thought. Overall, Kelly and Kahn aimed to assess the practical implications of thought suppression research in real world situations.

In Experiment 1, participants either first suppressed then expressed or first expressed then suppressed a personal intrusive thought. Half of the participants in each of these conditions suppressed a positive thought and the other half suppressed a negative thought. As in previous studies, suppression attempts were not completely successful, showing that personal thoughts intrude during suppression, just as random thoughts do. Contrary to previous findings, however, there was a *reverse* rebound effect during the expression period. Participants who first suppressed personal intrusive thoughts and then expressed them experienced the thoughts fewer times during expression than did those participants who first expressed and then suppressed those thoughts. This effect differed depending on the valence of the suppressed thought: Although participants suppressing negative and positive thoughts reported the same number of intrusions during suppression, participants who suppressed a negative thought experienced the thought less frequently during expression than did participants who suppressed a positive thought. The reverse rebound effect found for suppressing negative thoughts implies that suppression may be an effective coping strategy for dealing with negative personal thoughts. The experimenters suggested that perhaps participants had previous experience distracting themselves from unwanted thoughts, and that such experience leads to successful suppression.

In Experiment 2, the researchers directly compared the suppression of personal intrusive thoughts with the suppression of a random thought. The results showed that participants had more difficulty suppressing the thought of a white bear than suppressing their personal thoughts,

and during expression, participants thought about white bears more than personal thoughts. In other words, there was a rebound effect found for the white bear condition but not for the personal intrusive thoughts condition. These findings suggest that effective distraction may be an important element of people's ability to suppress thoughts. Participants suppressing the white bear thought did not have any prior experience suppressing that thought, so they would have relied on distracters from inside the experimental environment. Since the thought of a white bear was also part of the experimental environment, the thought and the distracters would become associated very easily, leading to a strong rebound effect during the expression period (because there were numerous cues associated with a white bear). Participants who suppressed personal thoughts, however, had practice with those thoughts and likely relied on distracters outside of the experimental environment to suppress those thoughts. Since none of the environmental cues became associated with the personal thoughts, these participants did not experience a rebound effect during the expression period. The use of distracters outside of a current environment may be the key to successfully suppressing unwanted thoughts. In support of this suggestion, Wegner et al. (1987) showed in Experiment 2 that when participants were given a specific distracter to replace the to-be-suppressed thought, they were less preoccupied with the thought during expression. When suppressing personally relevant intrusive thoughts, people may be successful because they have specific, reliable distracters to which they can turn.

The Negative Effects of Thought Suppression

Even if individuals experience success in suppressing unwanted personal thoughts, using suppression may be a maladaptive coping strategy. Although participants in Kelly and Kahn (1994) who suppressed personal thoughts experienced these thoughts less frequently during expression, they still experienced thought intrusions during suppression. The intrusion of

unwanted thoughts into consciousness could have numerous negative results, such as feelings of

failure about one's ability to control personal thoughts (Kelly & Kahn, 1994), the inducement of

a negative mood (Wenzlaff, Wegner, & Klein, 1991), and even feelings of anxiety and stress

(Baum, Cohen, & Hall, 1993; Borton, Markowitz, & Dietrich, 2005). These various side effects

of attempting to suppress negative thoughts are closely related with stress, anxiety, and even

depression in some individuals.

Baum, Cohen, and Hall (1993) assessed the impact of intrusive memories on chronic

stress among people living near the Three-Mile Island (TMI) nuclear power station. The

accident at TMI in 1979 resulted in the release of radioactive gas and the sudden dislocation of

nearby residents. While power plant employees and government officials worked to re-stabilize

the reactor core, nearby residents were given conflicting information as to the danger of the

situation. The actual disaster and the following weeks of confusion resulted in chronic stress for

many people living near TMI. Baum et al. (1993) used self-report measures of stress and

collected task performance data over the course of 9 years for 54 people living within 5 miles of

TMI and 32 people living 80 miles from TMI. People living closer to TMI reported more

physiological symptoms, somatic distress, depression, and anxiety than did control subjects, and

also performed more poorly on a proofreading task. Over the course of the study, those

participants who reported more intrusive thoughts about the accident despite their attempts to

suppress these thoughts had more symptoms of chronic stress, whereas participants living close

to TMI who reported fewer intrusive thoughts showed stress levels close to those of control

subjects. The difference in stress levels for people living close to the disaster site was related to

the number of intrusive thoughts that they experienced, suggesting that thought suppression is a

crucial contributor to chronic stress. Comparisons of intrusive memories over time showed that

these memories had less of an impact on stress soon after the event, but their influence on stress increased with time. People who used thought suppression as a technique for coping with the TMI disaster actually became more strongly influenced by memories of the event as time passed, suggesting that attempting to suppress thoughts of the event made individuals less able to cope with these thoughts. This paradoxical effect of thought suppression influenced depression, anxiety, and chronic stress, and also had negative effects on cognitive ability and physical health.

Thought suppression can also have negative effects on self-esteem, which may contribute to depression. Negative thoughts about the self may be particularly difficult to cope with because these thoughts are imbedded in the self-view, and having negative feelings about oneself can affect many aspects of cognition. Suppressing negative self-referent thoughts may be extremely difficult because each thought is associated with a number of other negative thoughts about the self; because of these associations, one thought's intrusion may activate a number of other negative thoughts. Attempting to suppress a negative thought about the self, then, can bring forth a number of other negative thoughts that have a detrimental effect on how people feel about themselves. Borton, Markowitz, and Dieterich (2005) found that participants who suppressed their negative self-referent thoughts experienced more anxiety, depression, and lower state self-esteem. The results also showed that suppressing different types of thoughts has different consequences. Participants who suppressed depressing thoughts reported more depression, participants who suppressed anxiety-related thoughts reported more anxiety, and participants suppressing shame related thoughts reported lower state self-esteem. These findings suggest that suppressing a personally referent negative thought does activate a network of related negative thoughts, inducing the exact emotional state that the individual was trying to avoid.

Suppressing negative thoughts may also alter immunological functioning. Numerous studies have found evidence to support the use of disclosure as an effective and adaptive strategy for coping with trauma, one that results not only in decreased worry and rumination but also in healthier functioning of the immune system (Pennebaker, 1995). If expressing one's thoughts and emotions about a negative experience leads to better health, then it is plausible that suppressing one's thoughts and emotions about a negative experience could lead to poor health. Some research suggests that thought suppression may indeed influence physiology, even regardless of its cognitive influence. Wegner and Gold (1995) examined participants' cognitive and physical reactions to suppressing or expressing thoughts about a past close relationship. Participants were asked to think about an old flame for whom they still had feelings (a "hot flame") or an old flame whom they no longer desired (a "cold flame"). After thinking about the old flame, half of the participants suppressed thoughts about the flame and the other half suppressed thoughts about the Statue of Liberty. The researchers examined the frequency and emotionality of participants' thoughts as well as changes in their skin conductance level. The results showed that suppression did not affect how frequently participants in the hot-flame condition thought about the flame, but it did affect the level of arousal these participants experienced. In the cold-flame condition, participants who suppressed experienced thoughts about the flame more frequently than did participants who did not suppress, but these two groups did not experience different physical responses. Petrie, Booth, and Pennebaker (1998) suggest that people who suppress emotional thoughts (e.g., the hot-flame participants in Wegner & Gold's study) experience an emotional rebound instead of a cognitive rebound once the suppression period has ended. The authors hypothesized that this emotional and physical rebound may lead to impaired immunological functioning and eventually to poor health. In

Petrie et al.'s study, participants either suppressed or expressed thoughts about emotional or neutral stories over the course of three days. Participants in the suppression conditions reported stable levels of tension over the course of the experiment whereas participants in the neutral conditions experienced drops in tension over the three days. Though participants reported having more difficulty suppressing emotional rather than neutral thoughts, all participants who suppressed experienced a drop in certain immune system variables. This finding shows that regardless of the content of the thought, suppression may have negative physiological consequences that could potentially compound the severity of the previously discussed psychological consequences of thought suppression.

Rumination as an Effect of Suppression

The psychological and physiological pathologies that researchers associate with thought suppression could be influenced by the use of other thought control techniques. Individuals who suppress unwanted thoughts in order to deal with negative experiences may use suppression in conjunction with other strategies, such as distraction or rumination. Some research has in fact shown that individuals ruminate on unwanted thoughts after they have stopped attempting to suppress those thoughts (Wenzlaff & Luxton, 2003). Rumination is a thought control technique by which people focus attention on a repetitive thought and its causes and consequences. Although this type of mental control seems directly opposed to thought suppression, rumination may be a result of the intrusive thoughts experienced during thought suppression. Wegner and Lane (1995) proposed the preoccupation model of secrecy to show how a thought that is kept secret (through suppression) can become the target of excessive attention and rumination. The authors explain that thought intrusions that result from suppression failures or the rebound effect lead a thought to become highly activated in the mind. When attempts to suppress are stopped or

undermined by cognitive load, the thought remains highly activated in consciousness, leading to focused attention and rumination. Although suppression and rumination involve opposite mental processes and goals, some people may use both to deal with negative thoughts.

Rumination produces the same pathologies, such as depression and anxiety, as suppression does. Depressed individuals are particularly likely to ruminate on their depressed mood, thereby worsening their depression. Nolen-Hoeksema, Morrow, and Fredrickson (1993) asked depressed individuals to record the duration and severity of their depressive episodes for 30 days, and to report their typical use of rumination and distraction to cope with these episodes. Participants who engaged in rumination about a depressive episode had longer lasting episodes than did participants who did not engage in rumination. In fact, the number of ruminative responses participants used for each depressive episode predicted the duration of that episode. Rumination was shown to increase the duration of a depressive episode regardless of the initial severity of the episode. These findings show that using rumination as a coping strategy actually exacerbates the negative effects of the initial problem.

Whereas rumination leads to many negative effects, such as depression, low self-esteem, and so forth, thought suppression can lead to rumination. Wenzlaff and Luxton (2003) surveyed individuals who were high or low suppressors. The researchers found that high suppressors reported more rumination on their unwanted thoughts, especially when they had undergone a period of stress. High suppressors who had experienced a period of stress also reported the most symptoms of depression. These findings suggest that participants who engaged in the most rumination and experienced more symptoms of depression were those who had originally tried the hardest to suppress their unwanted thoughts. The relationship between suppression and

rumination, though they are contradictory mental control strategies, may create a cycle that makes unwanted thoughts unavoidable.

Memory Phenomena

The negative personal thoughts that people attempt to suppress may be evaluations of the self, knowledge about the self, or they may be memories of events in the individual's past. A memory of a negative or traumatic event is a negative thought, and can be suppressed, but some of the basic characteristics of memories could make the suppression process complicated. Memories of autobiographical events do not always reflect the exact events, and these memories can become altered or exaggerated over time (Merckelbach, Muris, Horselenberg, & Rassin, 1998; Ross & Wilson, 2002; Wegner, Quillian, & Houston, 1996). All memories are essentially reconstructed from small pieces of information: People take the specific details that they do remember and fill in the rest of a memory with information that logically fits the situation. Memories can be recalled out of order, information can be added or changed, and false memories can be created and accepted as true (Neath & Surprenant, 2003). Considering how fragile memories are when they are merely being recalled, it is probable that memories undergo significant alteration during a complex mental process such as thought suppression. Because thought suppression can make a memory hyperaccessible, the processes of remembering and reconstructing a memory must engage every time the memory intrudes into consciousness. Thus, the more a memory is suppressed and the more reconstructions a memory undergoes, the more likely the basic characteristics of that memory are to be altered. These alterations may be particularly important when considering two specific memory phenomena: subjective temporal distance and memory perspective. Thought suppression may interact with basic memory qualities to make people feel that a memory is temporally closer and to make people see a memory from a

first-person perspective. These changes in closeness and perspective may mediate the relationship between thought suppression and its previously discussed negative consequences.

Autobiographical memories have basic qualities, such as vividness and amount of detail, that influence people's moods during remembering. An important quality is memory valence: whether the memory is of a positive, negative, or neutral event. D'Argembeau, Comblain, and Van der Linden (2003) showed that positive, negative, and neutral autobiographical memories each have specific memory qualities. Participants recalled two memories of each valence and rated each memory on contextual details (information they knew) and amount of sensorial details (sensory information they could recall). Participants also indicated whether they "see" the memory through their own eyes (field perspective) or "see" it as if they were watching themselves in the memory (observer perspective). The results showed that positive memories contained more sensorial details than did neutral or negative memories, neither of which differed significantly from the other. Participants reported that, compared to neutral events, both positive and negative events were recalled more often from a field perspective, indicating that more emotion in a memory is correlated with viewing that memory from the field perspective rather than the observer perspective. Although there were generally more details for positive memories, participants had the best sense of time for when negative events occurred and also reported that these memories had more familiar settings than did positive or neutral memories. The different characteristics of positive and negative memories suggest that the valence of a memory determines how it is remembered. Negative memories were less detailed but participants' certainty about when negative events occurred implies that these memories were still very significant to participants. The lack of detail in negative memories may be the result of people's avoiding thinking about these memories, which suggests that strategies for coping with

negative memories may influence the characteristics of the memories themselves. Regardless of the level of detail, emotional memories were often remembered from a first-person perspective, suggesting that memories may depend more on a person's feeling about the memory than on the actual events that the memory reflects. In fact, the actual events that underlie a memory can easily become distorted, possibly making the memory seem much worse than the actual event.

Catastrophizing

Even the most memorable or most traumatic experiences in a person's life are subject to revision. In the case of traumatic memories, research has shown that this revision tends to make the memory of a traumatic event worse than the event itself, a process called catastrophizing. Merckelbach, Muris, Horselenberg, and Rassin (1998) referred to this process as the "worse case scenario" phenomenon, and studied its effect on memories of personal traumatic events. Participants described traumatic events and then compared their experience of remembering with an objective evaluation of the actual event. Of those participants who described traumatic events that had occurred within the past three years, 22% reported that their descriptions were worse case scenarios of what actually happened to them. These participants also reported more flashback characteristics, meaning that the memory was easily triggered and induced negative affect, and experienced a higher frequency of thought intrusions than did those participants who reported that their memories reflected what really happened. Although not all traumatic memories are "worse case scenarios," those that are exaggerated intrude more often and cause more negative affect than do accurate memories of traumas.

Though the exaggeration of negative memories and the failure to suppress these memories are related, it is unclear whether thought intrusions lead to catastrophizing or whether catastrophizing results in more frequent thought intrusions. Though the direction of this

relationship is unknown, research has shown that thought suppression leads to catastrophizing in the physical experience of pain. Sullivan, Rouse, Bishop, and Johnston (1997) had participants in an experimental condition attempt to suppress all thoughts of an impending painful procedure, whereas a control group was not given any thought control instructions. The painful procedure involved having participants immerse their non-dominant arm in ice water for one minute. Participants also completed the Beck Depression Inventory, the State-Trait Anxiety Scale, and the Pain Catastrophizing Scale. Participants in the suppression condition reported significantly more pain than did the control group after 20 seconds of immersion, and the number of thought intrusions experienced mediated this effect. The more often thoughts about the impending procedure intruded into consciousness, the more pain participants reported feeling after 20 seconds of ice-water immersion. These results suggest that attempting to suppress unwanted thoughts not only increases the frequency with which these thoughts intrude, but also makes them seem more extreme than they really are.

Memory Perspective

The perspective from which a memory is recalled (field or observer) can depend on the age of the memory and the emotional intensity associated with the memory (Neath & Surprenant, 2003). More recent memories are usually recalled from the field perspective because people still feel like they are a part of recent events. Older memories are usually recalled from the observer perspective because people do not identify strongly with past selves. Emotionality influences memory perspective such that more emotional memories are usually remembered in the field perspective. These general findings about memory perspective reveal that perspective can be changed for specific memories. As time passes and an event becomes more distant, the

perspective for that memory may switch from field to observer. This change in perspective may also signal a change in the importance of the memory to an individual.

Robinson and Swanson (1993) conducted two experiments that examined whether people could actively change the perspective by which they saw memories and whether changing the perspective would affect the emotional qualities of the memory. Because more recent and more emotional memories are both generally viewed from the field perspective (D'Argembeau et al., 2003), the authors reasoned that switching from field to observer perspective might affect how emotional memories seem to participants. The authors also hypothesized that changing memory perspective would be more difficult for older memories or memories with less specific details than for more recent or vivid memories. In Experiment 1, participants recalled memories from several periods of their lives and reinstated their original perspectives; the experimental group then changed to the opposite perspective. Most recent memories initially had the field perspective and most older memories initially had the observer perspective, replicating previous research. Participants who changed their memory perspective rated this change as significantly harder and less stable than reinstating the initial perspective, especially if the memory was older or less vivid. Participants' difficulty in changing memory perspective suggests that perspective is closely related to or possibly cues other aspects of the memory, such as vividness and emotionality.

Building from Experiment 1, the authors reasoned that memory perspectives are implicit descriptions for how a memory should be recalled: what facts will be remembered, what emotions will be felt, and so forth. Thus, if the memory perspective is changed, the affect experienced with the memory should change as well. In Experiment 2, participants recalled a number of personal experiences, evaluated them on vividness and emotionality, and reported the

memory perspective. Two weeks later, half of the participants changed memory perspective for the same memories and re-evaluated them, while the other half re-evaluated their memories but kept the initial perspective. Initial tests showed that affect for recent field memories was more intense and more salient to participants than affect for recent observer memories, replicating previous research. More importantly, results showed that changing from a field to an observer perspective decreased the intensity and the awareness of affect for their memories, but changing from an observer to a field perspective did not significantly change participants' experience of affect. These findings suggest that affect is part of the information of a memory, and thus affect can be reduced by changing to an observer perspective but cannot be created by changing to a field perspective. When considering initial memory perspective, however, the findings show that the field perspective relates to experiencing more affect at the time of recall than does the observer perspective.

Memory perspective and its relationship with affect may be a factor in the negative results of suppressing traumatic memories. People are likely to suppress highly emotional traumatic memories, which may be recalled from the first-person perspective regardless of memory age. If these memories are suppressed, each intrusion into consciousness will induce the affect related to the memory, and people may also feel that they are reliving the memory because they see it through their own eyes. As noted earlier, the rebound of negative affect associated with intrusive memories could maintain a depressed mood in people who are attempting to suppress their memories. Thus, it is likely that individuals who view their traumatic memories from the field perspective will experience depression and will also feel as if they are reliving their memories. These effects of memory perspective may be exacerbated by individuals' use of thought suppression to cope with their traumatic memories.

Subjective Temporal Distance

Memory perspective is closely related to another memory phenomenon: subjective temporal distance, which refers to people's assessment of how long ago an event occurred and how far they feel that event is from the present. Judgments of subjective distance in memories have been related to how much the memory is related to an individual's current self-view. People who feel closer to past events are probably still strongly influenced by those events, whereas people who feel distant from past events may have changed their self-views and therefore are not as affected by events in their past. Ross and Wilson (2002) conducted a study based on the theory of temporal self-appraisal, which is that people consider past selves as different people altogether in order to enhance their current selves. In other words, people enhance earlier selves that feel close and disparage earlier selves that feel distant, thereby manipulating temporal distance to maintain a positive self-view. Earlier selves feel distant or close based on how congruent they are with the perceived current self. Ross and Wilson examined the relationship between temporal distance and self-esteem, and assessed whether the frequency of recalling a memory affected subjective distance, regardless of actual temporal distance. In Study 1, high self-esteem participants reported increased subjective distance as the social success of their high school selves decreased: the less successful these participants were in high school, the further they felt from their high-school selves. In Study 2, participants felt farther away from academic courses in which they had done poorly than from those in which they had done well, regardless of how long ago they actually had taken the course. Also, participants who reported greater frequency of thoughts about the course felt closer to that course, whether they had performed well in it or not. This finding has important implications for the relationship between thought suppression and subjective temporal distance. If experiencing

thoughts frequently makes people feel closer to those thoughts, then suppressing memories – which results in their increased frequency – may also increase their felt closeness, regardless of when the actual event occurred. This closeness may make people feel that these events are still relevant to their current self-views, which may contribute to the depression and anxiety found in those who use suppression to cope with unwanted thoughts. Holman and Silver (1998) found that participants who generally focused attention on the past, rather than the present or future, experienced levels of distress comparable to those of psychiatric inpatients. The increased frequency with which people experience their unwanted memories after suppression may contribute to the attentional focus on the past discussed by Holman and Silver, and thus suppression may indirectly result in changes in subjective temporal distance. If thought suppression leads to attentional focus on the past, then this focus may make traumatic memories seem closer to the present than they really are. It is likely that individuals who feel closer to their memories of traumatic events will experience more depression and anxiety than will individuals who feel that their negative memories are more distant, and that suppressing these negative memories will exacerbate the effects of subjective temporal distance.

One possible explanation for the phenomenon of subjective temporal distance is that suppressing the memory of an event distorts the chronology of the event. When the memory of a suppressed event intrudes into memory, individuals suppress it again quickly, meaning that only a fragment of the whole event intruded into consciousness. It is likely that the most negative or salient aspects of the event will intrude, regardless of how they fit into the memory chronologically. The distorted chronology of the memory may make it more difficult for the individual to recall exactly when the event happened, and it may also make the most negative parts of the memory seem the closest in time. Wegner, Quillian, and Houston (1996) proposed

the scene activation hypothesis to account for the phenomenon of memory reordering. According to this hypothesis, thought suppression makes specific, isolated memories highly accessible, leading to a snapshot likeness of the memory of the whole event. The memory of the event can be out of sequence or some parts of it may be forgotten because they are not as highly accessible as the parts that intrude into consciousness. Those highly accessible pieces of the whole memory may influence subjective temporal distance and may also explain other suppression-related phenomena. For example, Rassin, Merckelbach, and Muris (2001) found that participants' memories of recent traumatic events had become the "worst case scenario" within the weeks immediately after the event. According to participants' self-reports, suppression of these memories was related to the hyperaccessibility of intrusive thoughts, the frequency of intrusions, a perceived snap-shot likeness for the event, and self-reported memory-loss. Taken together, Wegner et al. (1996) and Rassin et al. (2001) show that suppressing a memory distorts that memory, making the most salient aspects of it seem more catastrophic and closer in time than other aspects of the memory. These studies show that thought suppression can have strong influence on memory characteristics.

Present Study

In the present study, I examined the relationship between thought suppression and alterations in memory. I surveyed participants about their most negative experiences, asking them to report when the event occurred, how vivid the memory was, the frequency with which they recalled the event, how close the event felt, and the perspective from which they viewed the memory. Participants also reported their current levels of depression, anxiety, and self-esteem, gave the frequency with which they experienced certain physical and psychological symptoms, and rated how frequently they used specific thought control techniques. I expected that using

thought suppression as a coping strategy would affect the way in which people experienced memories of negative or upsetting events. Specifically, I hypothesized that suppressing the memory of a traumatic event would make that event feel "closer" and more vivid and would increase the likelihood that the memory would be recalled from the first-person perspective. Because both closeness of a memory and experiencing memory in the first-person are related to greater affect, I expected that participants who rated their memories as closer and who saw them through the field perspective would also report more symptoms of depression and anxiety and lower self-esteem than would participants who rated their memories as farther and who saw them through the observer perspective.

<div align="center">Method</div>

Participants

One hundred and ninety-five students (80 male, 114 female) in an introductory psychology course at Hamilton College participated in this study as part of a mass testing procedure. Participants' ages ranged from 17 to 20 years ($M = 18.24$, $SD = .66$). No compensation was offered for completion of the study.

Procedure

Participants read and signed a consent form before completing this study, and also completed a demographics questionnaire on which they indicated their gender, age, and ethnicity. The questionnaires were included with several other measures in a mass-testing packet. Participants completed the packet as an activity during class-time. The packets were distributed and collected within the classroom setting, and participants could choose either not to participate or to have their data excluded from analysis. The order of the questionnaires for this study was as follows: the Beck Depression Inventory (Beck & Beck, 1972), the State Trait

Anxiety Questionnaire (Spielberger, 1983), the Rosenberg Self-Esteem Scale (Rosenberg, 1965),

the Brief Symptom Inventory (Derogatis, 1993), the Negative Event Questionnaire, the Negative

Event Thought Control Questionnaire (Wells & Davies, 1994), and finally the demographics

sheet. The order was the same for all participants.

Materials

Beck Depression Inventory (BDI), Short Form (Beck & Beck, 1972). The BDI is a

reliable and valid measure of depressive symptoms (Sprinkle et al., 2002). This questionnaire

had 13 items, each relating to a facet in depression (e.g., dissatisfaction, fatigability, and changes

in appetite). We eliminated the item about suicidal thoughts so that participants' confidentiality

could be maintained. For each item, participants described how they felt at the current time by

selecting one of four items of increasing severity. The statements were numbered from 0 to 3,

with 3 corresponding to the most depressive statement (e.g., "I am dissatisfied with everything")

and 0 corresponding to the least depressive statement (e.g., "I am not particularly dissatisfied").

Participants were given the option of circling more than one statement in each category if they

felt that two statements applied equally well.

State-Trait Anxiety Inventory (STAI; Spielberger, 1983). The STAI is a reliable general

measure of anxiety (for a review, see Barnes, Harp, & Jung, 2002). Participants rated how they

generally feel by indicating how frequently each of 20 statements (e.g., "I feel secure," "I feel

like crying") accurately described their feelings. For each statement, A corresponded to "Almost

never," B to "Sometimes," C to "Often," and D to "Almost always."

Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965). The RSES is a highly valid

measure of trait self-esteem (Greenberger, Chen, Dmitrieva, & Farruggia, 2003). Participants

indicated their agreement with 10 statements by circling the appropriate number on a 4-point

Likert-type scale (1 = "Strongly Agree," 4 = "Strongly Disagree"). Half of the items were statements of low-self-esteem ("At times I think I am no good at all"), and the other items were reverse-scored ("On the whole, I am satisfied with myself").

Brief Symptom Inventory (BSI; Derogatis, 1993). The BSI is a highly consistent and reliable measure of general symptomology (Boulet & Boss, 1991). Participants indicated how much they were distressed by each of 17 symptoms within the past week. Symptoms included physical problems (e.g., faintness or dizziness, pains in heart or chest) as well as symptoms of depression (e.g., feeling lonely, feelings of worthlessness) and symptoms of anxiety (e.g., nervousness or shakiness inside, spells of terror or panic). Participants indicated how frequently they experienced each symptom by circling the appropriate number on a 5-point scale (0 = "Not at all," 4 = "Extremely").

Negative Event Questionnaire. This questionnaire was developed specifically for the purposes of this study. Participants called to mind the most negative or upsetting event they had experienced in their lifetime, and described the details and sequence of the event without reporting their emotions or feelings at the time of the event. Next, participants reported the month and year in which the event occurred and rated on a scale of 1 ("not at all certain") to 5 ("extremely certain") how certain they were that the event occurred during the reported month and year. Participants next responded to items regarding the memory perspective from which the event is typically recalled and subjective temporal distance to the event (feelings of closeness to the event). Participants indicated whether they see the event from a first-person perspective (through their own eyes) or from a third-person perspective (from an observer's point of view). On a scale of 0 ("not at all true") to 4 ("very true"), participants indicated the extent to which they feel they are reliving the event when they remember it. Participants rated how close the

event feels on two scales from 1 ("feels like yesterday" or "feels very close") to 10 ("feels very far away" or "feels very distant"). On the next question, participants indicated how frequently they had thought about the event in the past month (1 = "almost never," 10 = "almost all the time"), and on the last question they indicated how frequently others had brought up the event in the past month.

Thought Control Questionnaire (TCQ; Wells & Davies, 1994). On this questionnaire, participants' reported their common techniques for controlling thoughts about their negative events. The TCQ included 26 statements that represented 5 techniques: distraction (e.g., "I do something that I enjoy"), expression (e.g., "I talk about the experience with others"), suppression (e.g., "I try not to think about the experience"), rumination (e.g., "I think about how bad I feel about the experience") and also the difficulty of avoiding thoughts (e.g., "My thoughts keep going back to what happened"). Participants indicated how frequently they typically engage in each technique for dealing with thoughts of their negative event by circling the appropriate number on a 4-point scale ranging from 1 ("never") to 4 ("almost always").

<div align="center">Results</div>

Coding of Negative Events

Two coders categorized participants' negative events based on whom the event most directly involved, for example, the participant, a family member, a friend, or a pet (see Appendix for coding manual). Subcategories revealed what occurrences the event involved, for example, a death, an illness or injury, or a break-up. The coding manual included a separate category for events related to the September 11th attacks on the World Trade Center because so many participants wrote about this event. A final category was created for highly unusual events or events that could not fit into any of the other categories. Inter-rater reliability was high (percent

agreement = 80%). Coding disagreements were resolved through discussion. Most events primarily involved a person other than the self. See Table 1 for percentages of thoughts of each type.

The coding manual also included a rating scale for how traumatic the event was, how much detail was reported, and in what verb tense the event was reported. The trauma and detail scales ranged from 1(not at all traumatic/not at all detailed) to 4 (very traumatic/very detailed). Agreement between the two coders was high both for trauma (intraclass correlation coefficient= .87) and detail (intraclass correlation coefficient= .75). The coders determined whether an event was reported in the present tense (e.g., "My grandfather dying") or in the past tense (e.g., "My grandfather died"). Agreement between the two coders for this rating was 100%.

Suppression as a Predictor of Negative Outcomes

I conducted a series of hierarchical linear regressions to test the relationship between thought suppression and other dependent measures while controlling for the influence of the other thought control techniques (distraction, expression, and rumination). Because trauma level was expected to predict the dependent variables, trauma ratings and the interaction between trauma and thought suppression were also included in the regressions. Thus, Distraction (Cronbach's α = .81), Expression (Cronbach's α = .79), and Rumination (Cronbach's α = .75) subscales of the Thought Control Questionnaire were entered in Step 1 and the Suppression subscale (Cronbach's α = .87), the trauma rating, and the suppression by trauma interaction were entered in Step 2. All predictors were centered around the mean prior to being entered into the regression equation.

With respect to frequency with which participants thought about the negative thought in the previous month, rumination, distraction, and expression together accounted for 17.6% of the

Table 1

Negative Event Categories and Frequencies

Type of Event	Frequency	Percent
Event involved self (more than others)		
Attempted suicide	3	1.5
Injury/Illness	8	4.1
Sports-related	9	4.6
Self was victim of crime/assault	6	3.1
Self caused event	8	4.1
Others express negative view towards self (criticize/insult)	9	4.6
Event involved close other (more than self)		
Suicide/attempted suicide	7	3.6
Death of:		
Parent/sibling	8	4.1
Grandparent	23	11.8
Other family member/friend	16	8.2
Illness of:		
Grandparent	3	1.5
Parent/sibling	8	4.1
Other family member/friend	1	0.5
Other event involving:		
Grandparent	2	1.0
Parent/sibling	9	4.6
Other family member/friend	2	1.0
Relational aggression (other was emotionally abusive)	8	4.1
Romantic relationship (e.g., break-up, cheating)	21	10.8
Event involved pet	5	2.6
September 11th		
Death in family	2	1.0
Death of close other	1	0.5
General negative experience	8	4.1
	18	9.2
Unusual/uncodeable		
Total	185	94.9
Missing	10	5.1
Total	195	100.0

variance. The variables entered in Step 2 of the equation significantly predicted frequency above and beyond the variables in Step 1, $R^2_{change} = .04$, F_{change} (3, 176) = 2.95, $p < .04$. How traumatic the event was predicted the frequency with which participants thought about the event in the month before the present study, $\beta = .19$, t (187) = 2.90, $p < .01$. Participants whose negative event was rated as more traumatic thought about those events more frequently within the past month than did participants whose negative event was rated as less traumatic. Neither suppression nor the suppression by trauma interaction predicted the frequency with which participants thought about the event in the month before the present study. The lack of an effect for suppression on thought frequency contradicts previous research that has shown a thought to intrude into consciousness more often after suppression attempts, and suggests that participants in the present study may have become successful at using suppression to avoid thinking about their traumatic events.

With respect to scores on the Beck Depression Inventory (Cronbach's $\alpha = .83$), rumination, distraction, and expression together accounted for 8.6% of the variance. The variables entered in Step 2 of the equation significantly predicted BDI scores above and beyond the variables in Step 1, $R^2_{change} = .05$, F_{change} (3, 177) = 3.28, $p < .03$. How traumatic participants' negative events were predicted scores on the BDI, $\beta = .17$, t (191) = 2.46, $p < .02$. Participants whose negative event was rated as more traumatic experienced higher levels of depression than did participants whose negative event was rated as less traumatic. Neither suppression nor the suppression by trauma interaction predicted participants' scores on the BDI.

With respect to scores on the State-Trait Anxiety Inventory (Cronbach's $\alpha = .92$), rumination, distraction, and expression together accounted for 11.2% of the variance. The variables entered in Step 2 of the equation significantly predicted STAI scores above and beyond

the variables in Step 1, R^2_{change} = .074, F_{change} (3, 177) = 5.32, $p < .003$. Participants' use of

suppression as a thought control technique predicted STAI scores, β= .33, t (184) = 3.94, $p <$

.001. As predicted, participants who reported using thought suppression to cope with their

negative events experienced higher levels of anxiety than did participants who did not report

using suppression. Neither trauma ratings nor the suppression by trauma interaction predicted

participants' scores on the STAI.

With respect to scores on the Rosenberg Self-Esteem Scale (Cronbach's α = .91),

rumination, distraction, and expression together accounted for 7.0% of the variance. The

variables entered in Step 2 of the equation significantly predicted scores on the RSES above and

beyond the variables in Step 1, R^2_{change} = .04, F_{change} (3, 177) = 2.67, $p < .05$. Participants' use of

suppression as a thought control technique predicted RSES scores, β= -.22, t (184) = -2.63, $p <$

.01. As predicted, participants who reported using thought suppression to cope with their

negative events experienced lower levels of self-esteem than did participants who did not report

using suppression. Neither trauma ratings nor the suppression by trauma interaction predicted

participants' scores on the RSES.

With respect to scores on the Brief Symptom Inventory (Cronbach's α = .90),

rumination, distraction, and expression together accounted for 12.6% of the variance. The

variables entered in Step 2 of the equation significantly predicted BSI scores above and beyond

the variables in Step 1, R^2_{change} = .093, F_{change} (3, 177) =7.00, $p < .001$. Participants' use of

suppression as a thought control technique predicted BSI scores, β= .33, t (191) = 4.02, $p < .001$.

As predicted, participants who reported using thought suppression to cope with their negative

events reported experiencing more symptoms overall than did participants who did not report

using suppression. Neither trauma ratings nor the suppression by trauma interaction predicted participants' scores on the BSI.

With respect to scores on the Somatization subscale of the BSI (Cronbach's α = .77), rumination, distraction, and expression together accounted for 11.6% of the variance. The variables entered in Step 2 of the equation significantly predicted scores on the Somatization subscale above and beyond the variables in Step 1, R^2_{change} = .04, F_{change} (3, 177) = 2.96, p < .04. Trauma ratings predicted Somatization scores, β= .15, t (184) = 2.15, p < .04. Participants whose negative event was rated as more traumatic experienced reported more frequent physical symptoms than did participants whose negative event was rated as less traumatic. Neither suppression nor the suppression by trauma interaction predicted participants' Somatization scores.

With respect to scores on the Depression subscale of the BSI (Cronbach's α = .86), rumination, distraction, and expression together accounted for 10.3% of the variance. The variables entered in Step 2 of the equation significantly predicted scores on the Depression subscale above and beyond the variables in Step 1, R^2_{change} = .08, F_{change} (3, 177) = 5.72, p < .002. Participants' use of suppression as a thought control technique predicted Depression scores, β= .31, t (184) = 3.85, p < .001. As predicted, participants who reported using thought suppression to cope with their negative events reported more frequent symptoms of depression than did participants who did not report using suppression. Neither trauma ratings nor the suppression by trauma interaction predicted participants' Depression scores.

With respect to scores on the Anxiety subscale of the BSI (Cronbach's α = .80), rumination, distraction, and expression together accounted for 7.4% of the variance. The variables entered in Step 2 of the equation significantly predicted scores on the Anxiety subscale

above and beyond the variables in Step 1, R^2_{change} = .01, F_{change} (3, 177) = 7.08, p < .001.

Participants' use of suppression as a thought control technique predicted Anxiety scores, β= .35,

t (184) = 4.27, p < .001. As predicted, participants who reported using thought suppression to

cope with their negative events reported more frequent symptoms of anxiety than did participants

who did not report using suppression. Neither trauma ratings nor the suppression by trauma

interaction predicted participants' Anxiety scores.

I next examined whether suppression predicted characteristics of participants' memories

of their negative event. I hypothesized that memory characteristics would mediate the

relationship between thought suppression and negative outcomes, and I therefore expected that

memory characteristics (subjective temporal distance, feeling of reliving the event, and field vs.

observer perspective) would be related to participants' use of thought suppression as well as to

the negative outcomes assessed in this study. I conducted a linear regression to test the

relationship between subjective temporal distance and suppression while controlling for the other

thought control techniques. With respect to subjective temporal distance, rumination, distraction,

and expression together accounted for 10.5% of the variance. The variables entered in Step 2 of

the equation significantly predicted subjective temporal distance above and beyond the variables

in Step 1, R^2_{change} = .05, F_{change} (3, 176) = 3.55, p < .02. Although use of suppression did not

predict STD, trauma ratings did, β= -.14, t (183) = -1.98, p = .05. Participants whose negative

event was rated as more traumatic felt that the event was closer to the present than did

participants whose negative event was rated as less traumatic. In addition, the suppression by

trauma interaction was significant, β= .14, t (183) = 1.98, p < .05. As illustrated in Figure 1,

contrary to the hypotheses, participants whose negative event was rated as highly traumatic and

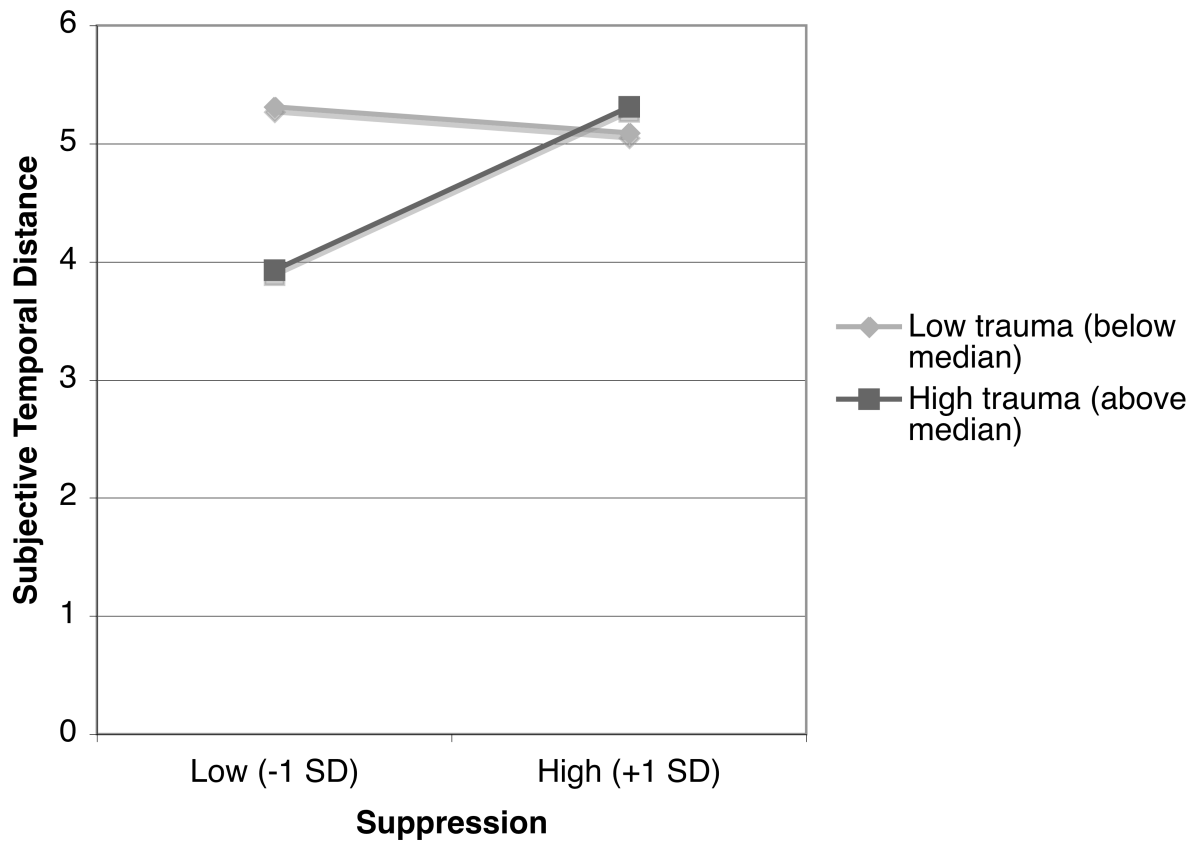who used thought suppression as a coping technique felt that those events were further from the present.

Figure 1. Subjective temporal distance as a function of suppression tendency and trauma rating.

I next conducted a linear regression to test the relationship between the extent to which participants felt like they were reliving the event when they remembered it and the use of thought suppression. With respect to reliving, rumination, distraction, and expression together accounted for 16.9% of the variance. The variables entered in Step 2 of the equation did not significantly predict reliving above and beyond the variables in Step 1, $R^2_{change} = .05$, $F_{change} (3, 43) = .89$, *ns*.

Neither suppression, nor trauma, nor the suppression by trauma interaction predicted the extent to which participants felt like they were reliving the event.

Finally, I conducted a logistic regression to determine whether participants' use of suppression predicted memory perspective when controlling for other thought control strategies. Results indicated that the overall model was not significant (-2 Log Likelihood = 57.91; χ^2 (3) = 3.11, *ns*). Participants' use of suppression did not predict the perspective from which the memory of the event was viewed.

Relationships Between Memory Variables and Outcome Measures

I next tested the relationship among the various memory measures and between the memory measures and the outcome variables. An independent samples t-test revealed no significant relationship between memory perspective (1st vs. 3rd person) and subjective temporal distance, t (182) = -1.63, *ns*. A second independent samples t-test revealed no significant relationship between memory perspective and the BDI, the STAI, the RSES, the BSI (overall and subscales), how traumatic the event was, or the age of the memory, ts (181 to 183) < |1.63|, *ns*. Surprisingly, the perspective from which participants viewed the memory of their negative events did not relate to any of the other variables in this study.

Rumination as a Predictor of Negative Outcomes

Based on research indicating that thought suppression can lead to rumination (Wegner & Lane, 1995; Wenzlaff & Luxton, 2003), I expected that rumination would have a strong relationship with depression, anxiety, self-esteem, and symptoms. I conducted a series of hierarchical linear regressions to test the relationship between rumination and other measures while controlling for the influence of the other thought control techniques (distraction, expression, and suppression). Because trauma level was expected to predict the dependent

variables, the interaction between trauma and rumination was also included in the regressions. Thus, the Distraction, Expression, and Suppression subscales of the Thought Control Questionnaire were entered into Step 1 and the Rumination subscale and the rumination by trauma interaction were entered in Step 2. Again, all predictors were centered around the mean prior to being entered into the regression equation.

With respect to frequency with which participants thought about the negative thought in the previous month, suppression, distraction, and expression together accounted for 10% of the variance. The variables entered in Step 2 of the equation significantly predicted frequency above and beyond the variables in Step 1, R^2_{change} = .21, F_{change} (3, 176) = 15.32, $p < .001$. The use of rumination as a thought control technique predicted the frequency with which participants thought about the event in the month before the present study, β= .40, t (186) = 5.80, $p < .001$. Consistent with previous research, participants who used rumination to cope with their negative events thought about the negative event more frequently within the past month than did participants who did not report using rumination. The rumination by trauma interaction did not predict the frequency with which participants thought about their negative events in the month prior to the present study.

With respect to scores on the BDI, suppression, distraction, and expression together accounted for 2.3% of the variance. The variables entered in Step 2 of the equation significantly predicted BDI scores above and beyond the variables in Step 1, R^2_{change} = .13, F_{change} (3, 177) = 8.75, $p < .001$. The use of rumination also predicted participants' scores on the BDI, β= .28, t (190) = 3.92, $p < .001$. Participants who reported using rumination to cope with their negative events reported higher levels of depression than participants who did not report using rumination. The rumination by trauma interaction did not predict participants' BDI scores.

With respect to scores on the STAI, suppression, distraction, and expression together accounted for 6.7% of the variance. The variables entered in Step 2 of the equation significantly predicted STAI scores above and beyond the variables in Step 1, $R^2_{change} = .12$, $F_{change} (3, 177) = 8.56$, $p < .001$. The use of rumination as a thought control technique predicted participants' scores on the STAI, $\beta = .33$, $t (190) = 4.76$, $p < .001$. Participants who reported using rumination to cope with their negative events reported higher levels of anxiety than did participants who did not report using rumination. The rumination by trauma interaction did not predict participants' STAI scores.

With respect to scores on the RSES, suppression, distraction, and expression together accounted for 6.1% of the variance. The variables entered in Step 2 of the equation significantly predicted RSES scores above and beyond the variables in Step 1, $R^2_{change} = .04$, $F_{change} (3, 177) = 2.83$, $p < .05$. The use of rumination as a thought control technique predicted participants' scores on the RSES, $\beta = -.20$, $t (190) = -2.80$, $p < .01$. Participants who reported using rumination to cope with their negative events reported lower levels of self-esteem than did participants who did not report using rumination. The rumination by trauma interaction did not predict participants' RSES scores.

With respect to scores on the BSI, suppression, distraction, and expression together accounted for 6.0% of the variance. The variables entered in Step 2 of the equation significantly predicted BSI scores above and beyond the variables in Step 1, $R^2_{change} = .17$, $F_{change} (3, 177) = 12.56$, $p < .001$. The use of rumination as a thought control technique predicted participants' scores on the BSI, $\beta = .38$, $t (190) = 5.55$, $p < .001$. Participants who reported using rumination to cope with their negative events reported more symptoms than did participants who did not report using rumination. The rumination by trauma interaction did not predict participants' BSI scores.

With respect to scores on the Somatization subscale of the BSI, suppression, distraction, and expression together accounted for 1.3% of the variance. The variables entered in Step 2 of the equation significantly predicted Somatization scores above and beyond the variables in Step 1, R^2_{change} = .15, F_{change} (3, 177) = 10.43, $p < .001$. The use of rumination as a thought control technique predicted participants' scores on the Somatization subscale of the BSI, β= .37, t (190) = 5.20, $p < .001$. Participants who reported using rumination to cope with their negative events reported more frequent physical symptoms than did participants who did not report using rumination. The rumination by trauma interaction did not predict participants' Somatization scores.

With respect to scores on the Depression subscale of the BSI, suppression, distraction, and expression together accounted for 6.5% of the variance. The variables entered in Step 2 of the equation significantly predicted Depression scores above and beyond the variables in Step 1, R^2_{change} = .12, F_{change} (3, 177) = 8.84, $p < .001$. The use of rumination as a thought control technique predicted participants' scores on the Depression subscale of the BSI, β= .33, t (190) = 4.80, $p < .001$. Participants who reported using rumination to cope with their negative events reported more frequent symptoms of depression than did participants who did not report using rumination. The rumination by trauma interaction did not predict participants' Depression scores.

With respect to scores on the Anxiety subscale of the BSI, suppression, distraction, and expression together accounted for 7.6% of the variance. The variables entered in Step 2 of the equation significantly predicted Anxiety scores above and beyond the variables in Step 1, R^2_{change} = .11, F_{change} (3, 177) = 7.55, $p < .001$. The use of rumination as a thought control technique predicted participants' scores on the Anxiety subscale of the BSI, β= .28, t (190) = 3.96, $p <$

.001. Participants who reported using rumination to cope with their negative events reported more frequent symptoms of anxiety than did participants who did not report using rumination. The rumination by trauma interaction did not predict participants' Anxiety scores.

I conducted a linear regression to test the relationship between rumination and subjective temporal distance while controlling for the other thought control techniques. With respect to subjective temporal distance, suppression, distraction, and expression together accounted for 2.1% of the variance. The variables entered in Step 2 of the equation significantly predicted subjective temporal distance above and beyond the variables in Step 1, R^2_{change} = .12, F_{change} (3, 176) = 8.45, $p < .001$. The use of rumination as a thought control technique predicted participants' ratings of subjective temporal distance, β= -.34, t (186) = -4.69, $p < .001$. Participants who reported using rumination to cope with their negative events felt that those events were closer to the present. The rumination by trauma interaction did not predict participants' ratings of subjective temporal distance.

I next conducted a linear regression to test the relationship between the extent to which participants felt like they were reliving the event when they remembered it and the two thought control techniques. With respect to feelings of reliving a memory, suppression, distraction, and expression together accounted for 1.6% of the variance. The variables entered in Step 2 of the equation significantly predicted reliving above and beyond the variables in Step 1, R^2_{change} = .13, F_{change} (3, 176) = 8.88, $p < .001$. The use of rumination predicted participants' feelings of reliving the event, β= .36, t (184) = 4.92, $p < .001$. Participants who reported using rumination as a thought control technique felt that they were reliving the negative event when they remembered it. The rumination by trauma interaction did not predict participants' feelings of reliving the negative event when they remembered it.

I conducted a logistic regression to determine whether participants' use of rumination predicted memory perspective when controlling for other thought control strategies. Results indicated that the overall model was not significant (-2 Log Likelihood = 225.34; χ^2 (1) = .10, *ns*). Participants' use of rumination did not predict the memory perspective from which the event was viewed.

Discussion

In the present study, participants who used thought suppression to cope with thoughts about a negative event reported high anxiety, low self-esteem, and more frequent symptoms of depression and anxiety. These findings support my hypotheses, replicate previous research on the negative effects of thought suppression (Baum, Cohen, & Hall, 1993; Borton, Markowitz, & Dietrich, 2005; Kelly & Kahn, 1994; Wenzlaff, Wegner, & Klein, 1991), and suggest that thought suppression is a maladaptive coping strategy. However, high suppressors in the present study did not report thinking about their negative events more frequently than did low suppressors. This finding contradicts previous findings of increased frequency of intrusive thoughts during and after thought suppression (e.g., Kelly & Kahn, 1994; Rassin, Merckelbach, & Muris, 2001; Wegner, 1994; Wegner & Gold, 1995). These results could have occurred because participants were inaccurate judges of thought frequency over the course of a month, or because the participants in the present study may be able to successfully suppress memories of personal events. As Kelly and Kahn (1994) posited, the participants may have had practice suppressing their unwanted memories and may have identified specific distracters to facilitate suppression. The finding that suppression was unrelated to thought frequency is particularly interesting because even though participants successfully suppressed their thoughts they still reported high depression and anxiety and low self-esteem. It seems that the process of

suppression itself, not only suppression failures, led to the negative consequences associated with attempting to suppress unwanted thoughts.

The analyses did not support my hypothesis that suppressing the thought of a traumatic event would make that event feel closer to the present. The use of thought suppression was unrelated to how close participants felt to the event. The trauma ratings for events were related to subjective temporal distance, such that participants who reported highly traumatic negative events felt that their recalled events were closer to the present than did participants who reported less traumatic negative events. However, participants who reported highly traumatic events and used thought suppression as a coping technique felt that their recalled events were very distant. This surprising finding implies that participants in the present study were particularly successful at using thought suppression to distance themselves from an especially traumatic negative event. The suppression of highly negative memories, then, caused them to feel further removed in time because suppression did not increase thought frequency among our participants. I expected that thought suppression would increase the frequency with which participants thought about their negative events, and that the higher frequency of thoughts about the events would make the events feel more recent. Since thought suppression did not increase participants' thoughts about the negative events in the present study, it seems that participants were able to successfully distance themselves from those events by using suppression.

I also found that participants who used rumination to cope with thoughts about a negative event reported high levels of depression and anxiety, low self-esteem, and frequent physical symptoms and symptoms of depression and anxiety. Participants who used rumination also felt like they were reliving the event when they remembered it and thought about the event more frequently within the past month. These results support my hypotheses, replicate previous

findings of rumination's negative effects (Nolen-Hoeksema, Morrow, & Fredrickson, 1993; Wenzlaff & Luxton, 2003), and suggest that it is also a maladaptive coping strategy.

Memory perspective was not related to any thought control technique, any negative effects, or even the trauma ratings of the negative events. This finding is disappointing and inconsistent with other research in the area of memory perspective. Talarico, LaBar, and Rubin (2004) examined the effects of emotional intensity, memory valence, and memory age on a number of memory characteristics, including memory perspective. Their analyses showed that memory age was the most reliable predictor of perspective and that emotional intensity reliably predicted perspective such that more intensely emotional memories were seen from the field perspective. In the present study, trauma ratings and feelings of reliving a negative event could indicate the intensity of emotion associated with that event, and yet neither of these measures was related to memory perspective. These results may be due to some of the limitations of the present study: Participants did not provide their own ratings for how traumatic their negative events were, and they did not report the level of emotional intensity associated with memories of their negative events. It is possible that the intensity of emotion that participants feel when remembering negative events is related to the perspective from which they remember those events, but the present research does not show this relationship. Future research in the area of thought suppression and memory qualities should rely on participants' self-reported memory characteristics.

Limitations

A number of limitations in the present study may have contributed to the lack of findings for subjective temporal distance and memory perspective. A major limitation was that I did not ask participants enough questions about the characteristics of their memories or the events that

they reported. The ratings of how traumatic the event was were crucial to the analyses because they related to participants' use of thought suppression and predicted thought frequency, depression levels, and the frequency of physical symptoms. However, these ratings were made by coders, who decided which events seemed more traumatic than others. The coders did not know how traumatic an event was for a participant and thus could not give an accurate measure of trauma. Trauma is a subjective experience, and the same event (e.g., a grandparent's death) can have a different impact on different individuals. In future studies of self-reported personal events, participants should rate how traumatic the event was for them.

Coders also rated the amount of detail reported by participants. This measure was misguided because it reflected only how much the participant was willing to write about the event and not how much detail there was in the actual memories of events. In future studies, participants should report how much detail their memory of the event contains because the level of detail in a memory may be related to how close the memory feels and whether the participants feel as though they are reliving the events when they recall them. Participants should also provide ratings for the intensity of emotion they experience when they recall the event because, as previously discussed, emotional intensity may predict memory characteristics such as perspective.

A final limitation of this study was that participants reported events from too large a span of time. One participant reported an event from when he was two months old (for which he could not possibly have a memory), and another participant reported an event from the day before the study was conducted. The broad range of memory age may account for the finding that memory perspective was unrelated to any other measure. As Talarico et al. (2004) showed, memory age is the best predictor of perspective, and the range of memory ages in the present

study could have obscured any other predictors of memory perspective. If participants had only reported recent memories, any differences in memory perspective would have been due to factors other than memory age, such as the level of trauma of the event or the emotional intensity of the memory. By placing a time limit on participants' recalled events, future researchers can not only ensure that participants have actual memories for those events, but they may be able to find a relationship between memory perspective and thought suppression.

Future Research

The present study lays the foundation for further research on the relationship between thought suppression and memory characteristics. Any research in this area should involve more self-reported memory characteristics because only the participants themselves can provide accurate information about how they remember certain events. Researchers should ask participants to report not only memory qualities (e.g., perspective, amount of detail) and their subjective experience of remembering (e.g., subjective temporal distance, emotional intensity), but also information about the source of the memory (e.g., how traumatic the event was, how emotionally intense it was at the time). Researchers should also gather more information about participants' use of thought suppression. Participants in the present study successfully suppressed their negative memories, and different levels of success of the suppression technique may lead to different effects on memory characteristics. In order to assess how successful suppression is achieved, researchers should also ask suppressors about their suppression strategies (e.g., do they use specific distracters?).

The present study points to another interesting area of research: the relationship between thought suppression and rumination. Wenzlaff and Luxton (2003) showed that high suppressors reported high levels of rumination after they had undergone a period of stress. The present study

supports Wenzlaff and Luxton's explanation that when thought suppression fails, the unwanted thought remains in consciousness and receives excessive attentional focus. I did not find that participants who typically suppressed their unwanted memories also ruminated on them. This finding could be because the participants in my study successfully suppressed their memories, and thus did not have intrusive thoughts on which to ruminate. I did, however, find that suppression and rumination both reliably predicted levels of depression, anxiety, self-esteem, and the frequency of experiencing certain symptoms. These findings suggest that although suppression and rumination are both maladaptive coping techniques, they do not always occur together. Future research should examine the cognitive processes that cause the consciousness to switch from ignoring a thought to focusing on it excessively.

Concluding Remarks

The purpose of the present study was to assess how the process of suppressing a thought might alter the basic qualities of that thought. Although I did not find that thought suppression predicted changes in subjective temporal distance or memory perspective, the null findings may have resulted from methodological problems. This study not only provides evidence for the harmful effects of thought suppression but also explores a new direction for thought suppression research. Although research has shown that thought suppression can lead to depression, anxiety, and low self-esteem, future studies should examine the processes that mediate this relationship. Although there was no conclusive evidence, the present study identified memory characteristics as a possible mediator of the relationship between thought suppression and harmful pathologies, and provides a framework for future research in this direction.

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Appendix

Coding Manual

Event involved self (involved self more than others) (**1**)
- Attempted suicide (**1a**)
- Injury/Illness (**1b**)
- Sports-related (**1c**)
- Self was victim of crime/assault (**1d**)
- Self caused event (**1e**)
- Others express negative view towards self (criticize/insult) (**1f**)

Event involved close other (involved other more than self) (**2**)
- Suicide/attempted suicide (**2a**)
- Death of: (**2b**)
  • Parent/sibling (**2b1**)
  • Grandparent (**2b2**)
  • Other family member/friend (**2b3**)
- Illness of: (**2c**)
  • Grandparent (**2c1**)
  • Parent/sibling (**2c2**)
  • Other family member/friend (**2c3**)
- Other event involving: (**2d**)
  • Grandparent (**2d1**)
  • Parent/sibling (**2d2**)
  • Other family member/friend (**2d3**)
- Relational aggression (other was emotionally abusive) (**2e**)
- Romantic relationship (e.g., break-up, cheating) (**2f**)
- Event involved pet (**2g**)

September 11th (**4**)
- Death in family (**4a**)
- Death of close other (**4b**)
- General negative experience (**4c**)

Unusual/Uncodeable (**5**)

Appendix (cont'd)

1. How traumatic do you think this event was for the participant?

Not at all traumatic   Slightly traumatic   Moderately traumatic   Very traumatic

    1   2   3   4

2.   How detailed was the participant's description of the event?

  Not at all detailed   Slightly detailed   Moderately detailed   Very detailed

    1   2   3   4

3.   Did the participant describe the event in the present tense (e.g., "friend committing suicide"), or in the past tense (e.g., "friend committed suicide")?
1._____ present tense
2._____ past tense