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Death-Primed Memory Suppression

A THESIS

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MASTER'S THESIS

By

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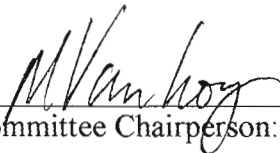
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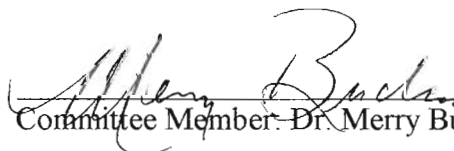
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Death-Primed Memory Suppression

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Abstract

Suppression of undesirable thoughts is conscious, motivated forgetting. Participants (17 males, 37 females) performed a computer-based, five-phase, study-recall-suppress-test-recognize task. Left-hand primes consisted of 22 nonwords (BLAY). Right-hand targets included 6 death (SLAY), 6 neutral (CLAY), and 6 nonword prime matches (BLAY). Half of the suppression trials ($n=36$) were “Think,” and half “No-Think.” Participants responded to a prime in green font (BLAY) by pronouncing the target (SLAY). Participants responded to a prime in red font (BLIED) by not pronouncing or thinking about the target. Participants significantly suppressed more nonword target items compared to death-related prime-target pairs, and with more suppression confidence. If death-primed words produce mortality salience, suppression of death-related targets should have occurred more compared to the other two conditions.

Death-Primed Memory Suppression

Humans have thoughts regarding all aspects of life, and typically have control over those thoughts. For example, a person can change his or her mind, think in new ways, formulate new ideas, and shift attention from one thought to the next (Wegner, 1989). It seems as though humans have control over thoughts; however, try not thinking about something. This task is difficult for most because of the seeming permanence of the unwanted thought. Interestingly, people who are motivated to forget can apparently sometimes do so. Many reasons arise as to why a person wishes to forget. For example, an undesirable thought may interfere with day-to-day work, causes anxiety, loss of sleep, or simply it is annoying (Wood, 2005). In the extreme cases, potential suppressors are the victims of physical, verbal, or sexual abuse, or have visions of a loved one dying, that may cause impairments in all aspects of the experiencer's life. Because people cannot control life's events, the ability to forget might be a helpful coping strategy.

This motivated forgetting comes in two forms: unconscious, as in the controversial and contentious repressed memory literature, and conscious, as in the attempted suppression of undesirable thoughts (Bjork, Bjork, & Anderson, 1998). Thought suppression is an effortful process, uses cognitive control, and requires conscious initiation, often perhaps to regulate emotions when undesirable thoughts yield unpleasant emotions (Wegner, 1989). Therefore, "it requires people to override or stop the retrieval process to impair later retention" (Anderson, Ochsner, Kuhl, Cooper, Robertson, Gabrieli, Glover, & Gabrieli, 2004, p. 232). This active process recruits areas of the brain that putatively carries out executive control functions. Wegner and Gold's (1995) defensive suppression hypothesis suggested a plausible mechanism for the suppression of emotional thoughts and was supported by real world and experimental evidence.

Thought suppression has implications for patients and therapists. Implications for the patient include alleviating stress, physical pain, and emotional pain, and other side effects from

the memory of the traumatic event. On a secondary level, implications exist for the family, friends, and therapists who work with the patient, seeing the healing of the patient and coping with the event, and reducing the worry and distress caused by seeing the victim relive the trauma. Overall, thought suppression, if possible, may be an effective coping mechanism that helps produce happier, healthier lives.

The current work developed an experimental analogue of suppressed memories in which participants performed a five-phase, computer-based, study-recall-suppress-test-recognize task that used 22 prime-target pairs. If death-primed words produce mortality salience (Bjork, et al., 1998), the death-primed condition ought to suppress more target items than the other two conditions. The following paper highlights historical and influential research dating back to early 1900's in the area of suppression, brings the reader up to date on current experiments that use a suppression task or aspects related to death, and a description of the conducted experiment, results, implications, future research, and conclusions.

Historical Suppression Research

Muller and Pilzecker (1900) reported the first empirical demonstration of forgetting due to interference, produced evidence of retroactive interference, and developed the Perseveration Consolidation Theory. The theory predicted that the process of storing new memories might disrupt the consolidation process that would ordinarily strengthen memories, therefore resulting in memory impairment. Muller and Pilzecker (1900) found that participants were less likely to recall a memory if the cue to retrieve that memory became associated with another memory. Therefore, "the memory impairment occurs when the storing of a new memory disrupts the consolidation process. That process should have strengthened the traces that subjects had acquired earlier" (Muller & Pilzecker, 1900, p. 415).

The work of Muller & Pilzecker (1900) began the classical interference era in memory research dating from 1900 to 1970 (Anderson, 2003). Many researchers attempted to discover what was involved in interference because it addressed the fundamental problem of forgetting. Muller and Pilzecker (1900) suggested that when a person forgets, it was because the person was affected by the ever-changing structure of our memory and the basic limitations in our ability to differentiate similar traces. Muller and Pilzecker's (1900) Perseveration Consolidation Theory dealt with retroactive interference. It stood the test of time with researchers trying to disprove it, but with little success. With more than 100 years of research and thousands of research papers on the topic of forgetting, there should be little doubt that interference is a powerful cause of forgetting.

A question from Muller and Pilzecker's (1900) work was how interference caused forgetting. Classical theories such as Response Competition Theory attributed interference effects to heightened competition arising from the association of additional memory traces to a retrieval cue or to strengthening of an existing competitor (McGeoch, 1942). Thus, the thought that memory was fundamentally associative, and that cues guide retrieval, determined which items in memory were associated (Bjork, et al., 1998). That is, having more than one response attached to a retrieval cue led those responses to compete with one another when later presented with the cue. Thus, the more intense or vivid a competing response became the more difficult it became to recall a given item or memory. The overall concept of McGeoch's (1942) Response Competition Theory was that adding a new structure into memory led to the occlusion, or blocking, of a target event. With this implication, the theory stimulated a great deal of empirical research over the several decades that follow.

Melton and Irwin (1940) proposed one of the most widely known examples of an associative decrement mechanism, unlearning. After testing Muller and Pilzecker's (1900)

theory, Melton and Irwin (1940) concluded that the factor of unlearning and goal-directed forgetting played a role in forgetting. Further, the researchers' deduced that unlearning to be extinction of conditioned responses (Melton & Irwin, 1940). Of theoretical importance in studies of retroactive interference was the analysis of evidence of active competition between the original and interpolated response systems during the learning of the interpolated material and, particularly, during the recall and relearning of the original material (Melton & Irwin, 1940). This study revealed a relationship between the amount of loss in retention and the degree of interpolated learning. It was probably a function of the definition of "degree of learning," and definitely a function of the degree of learning of the original list before the interpolation of the second list (Wood, 2005).

Postman, Stark, and Fraser (1968) proposed the response-set suppression hypothesis that explicated retroactive interference effects and the conditions under which items suffering retroactive interference exhibited spontaneous recovery. Melton and Irwin (1940) proposed a clear contradiction of unlearning, stating that response-set suppression was clearly a goal-directed inhibitory mechanism. The response-set suppression was an example of retrieval inhibition because the participant lost retrieval to one set of responses. Findings by Postman et al. (1968) supported the idea that representations continued to exist in memory as demonstrated by the spontaneous recovery under certain conditions. A condition possible for spontaneous recovery was the virtual disappearance of retroactive interference effects if used a multiple-choice recognition test rather than a recall test.

Bjork (1970) proposed item-by-item cuing, which attributed directed-forgetting to the participants segregating or differentiating in memory the items to remember from the items to forget. This theory explained directed-forgetting effects by focusing post cue rehearsal and other mnemonic activities on the to-be-remembered items. Next, the participant segregated in memory

the to-be-remembered items from the earlier to-be-forgotten items. Geiselman, Bjork, and Fishman (1983) proposed that differential grouping of the items was necessary to conduct selective rehearsal efficiently.

Although most instances of forgetting are unintentional or incidental, there are occasions when people try to forget, because the memory is unappealing, or because the memory constitutes a source of interference in conducting routine mental operations such as memory updating (Geiselman et al., 1983). Therefore, a cue to forget a word could cause a disruption in the retrieval process of the word later on. That is, disruption of retrieval of a word or event plays a significant role in intentional-forgetting experiments. Geiselman et al. (1983) proposed that intentional forgetting and posthypnotic amnesia had a strong parallel.

Wegner (1989) referred to unwanted thoughts as occurring at all points in the spectrum from normal to abnormal, spanning across different kinds of disorders rather than distinguishing one from another. It was necessary to understand because unwanted thoughts are a general symptom of mental distress, which occur in everyone, and causes anxiety and pain. Wegner (1989) proposed that people engage in a self-distracting strategy to circumvent unwanted thoughts, and that people literally think of distracters. There are two strategies for distracting: unfocused distraction strategy and focused distracter. The former consists of using many different distracters, causing a rebound of the suppressed thought, which defeats the purpose. The latter is more successful because “the rebound effect is attenuated creating an adaptive strategy for reducing distress associated with aversive thoughts” (Najmi, Wegner, & Nock, 2007, p. 1958).

Wegner and Zanakos' (1994) White Bear Suppression Inventory is a 15-item self-report measure of an individual's propensity to try to suppress unwanted thoughts. An example of using it in Wegner's experiments (1989, 2003) was to drop what the participant was doing and try to

not think about a white bear. It was usually impossible, it was just like when someone says, “I need to talk to you but not right now and do not worry about it,” which was virtually impossible. The rest of the day, participants’ minds were consumed with thoughts about the future conversation. In a typical experiment, Wegner (1989, 2003) instructed the participant to sit in a room and discuss whatever comes to mind. The researcher returned, “asking them to continue but this time not to think of a white bear. If the thought of a white bear came up anyway, the person is to ring the bell and go on” (Wegner, 1989, p. 2). In a five-minute period, participants rang the bell on average six times. Wegner (1989) suggested that attempting to suppress a thought made it more salient in the participants’ minds.

Wegner and his fellow researchers used the White Bear Suppression Inventory to examine different aspects of suppression. The most enduring contribution from Wegner’s (1994) research was the development of the Theory of Ironic Processes, which is currently the most complete account for suppression-related phenomena. Wenzlaff and Wegner (2000) wrote,

thought suppression involves two mechanisms: an intentional operating process that seeks thoughts that will promote the preferred state (i.e. anything other than the unwanted thought), and an ironic monitoring process that remains in the background of the consciousness and searches for mental contents that signal the failure to achieve the desired state (i.e., the unwanted thought) (p. 68).

The former is a conscious process that takes effort and the latter takes less mental effort and in most instances, is unconscious. The monitoring process was the ironic portion of the theory, which actively attuned to occurrences of the unwanted item. Despite its ironic nature, the vigilance was necessary for successful mental control because it alerted the operating process of the need to renew distraction when conscious awareness of the unwanted thought became imminent (Wenzlaff & Wegner, 2000).

Current Suppression Research

Anderson (2001, 2003, 2004) examined many of the main points from the above theories to develop a research paradigm to test suppression. Recent research with neurologically normal college students found suppression of unwanted memories; where as recall of suppressed items worsens with increased suppression trials (Anderson, 2001, 2003, 2004). This resulted in evidence for suppression when a participant encountered a cue to forget an unwanted memory and continually rejected that unwanted memory upon the cue. As the number of the rejection of the unwanted memory increased, the more difficult it became to later recall that unwanted memory.

More specifically, Anderson (2001, 2003, 2004) used a four phase (i.e., learn, recall, think-no-think, test) procedure to examine suppression. Learning the pairs consisted of viewing the two words simultaneously on the computer screen, each pair appeared alone in the center of the screen for a specific amount of time. The researchers used a recall task to test the participant's memory of the pairs; the participant had to recall at least 50 percent of the pairs. Next, was the think/no-think phase in which the researchers used color to cue participants to either suppress (i.e., red font) or recall (i.e., green font), and manipulated the number of repetitions each participant suppressed or recalled (Anderson, 2001, 2003, 2004). If the left-hand member word was in green, the participant was to recall and say the right-hand member word that goes with the pair. If the word was in red, the participant was to suppress and not say the matching word. At repetition levels, zero and one, researchers found no difference; however, at levels, one and eight, researchers found a statistically significant difference, and at levels eight and 16, researchers found no difference (Anderson & Green, 2001).

Anderson and Green's (2001) experiment utilized two different testing methods, same or independent probe, to determine if the participant actually suppressed or recalled. In the same

probe method, the participant saw all the left-hand member words individually and was to recall and say the correct right-hand member. With the independent probe method, participants saw a clue to the left-hand member, and the first letter of the right-hand member, and were to recall and say the correct right-hand member. The researchers deemed successful suppression if the participant could not recall one of the pairs that was a suppression pair. This was true for both testing methods. The authors equally supported both ways of testing, but did not suggest why use of both methods and did not make a distinction or preference for use of one method over the other.

Anderson and Green (2001) proposed that a deliberate effortful process plays a role in targeting recall of some memories, and forgetting of others. This suggested that when presentation of a stimulus triggered an unwanted memory in the victim, recruiting the process prevented awareness of the memory. Clinical studies of psychogenic amnesia suggested that the more encounters with stimuli that reminded one of an unwanted memory should make that memory less accessible (Wood, 2005). These findings supported Freud's suggestion of a suppression mechanism that forced unwanted memories out of awareness. Anderson and Green (2001) proposed evidence for a viable model for repression as well as the potential to move from an unintentional to an intentional process of forgetting.

Anderson et al. (2004) used functional magnetic resonance imaging (fMRI) to identify the neural systems involved in keeping unwanted memories out of consciousness. The experiment replicated the experiment by Anderson and Green (2001) published in *Nature* in that it used the same procedure and both methods (i.e., same and independent probe) for testing. The researchers scanned each participant with the fMRI when both suppressing and recalling the words. The participant knew to suppress or recall depending on the color of the word (i.e., green for recall or red for suppress). To identify the neural systems involved in suppression, the

researchers contrasted activation during suppression and recall trials. Researchers pinpointed the prefrontal cortical and right hippocampal activations as predictors for the extent of forgetting the unwanted memory (Anderson et al., 2004). These results confirmed the existence of an active forgetting process and established a neurobiological model for guiding inquiry into motivated forgetting (Anderson et al., 2004).

Currently, researchers incorporated autobiographical events into directed forgetting paradigms and got results that support the findings of Anderson (2001, 2003, 2004) as well as others who conducted suppression research. Joslyn and Oakes (2005) instructed participants to intentionally forget material previously written in a journal. The researchers suggested that participants had the ability to suppress memories of autobiographical events similarly to the way participants forget words on a memory list. These findings were true regardless of whether the events were positive or negative in mood and emotional intensity did not matter (Joslyn & Oakes, 2005). The effect was seen even after a full week after issuing the forget cue. With these findings in place, there was little doubt of the possibility that intentional forgetting of autobiographical events occurs. Joslyn and Oakes (2005) contended this allows a therapist to instruct patients to keep a journal of events or to write down if possible the traumatic event that is causing so much pain. The psychologist can implement this coping mechanism by giving the client a cue to forget and instructing the patient to forget the unwanted memory.

Now having established a general understanding of suppression and the empirical research that helps formulate the rationale for the current research, this paper can focus on the path to the current study. The current researcher previously worked with Anderson's (2001, 2003, 2004) think/no-think paradigm, specifically the same probe method, used neutral words (e.g., neutral, open, similar) as the left-hand members and death-related words (e.g., death, blood, coffin) as the right-hand members. The hypothesis was that when comparing data of

neutral-related pairs to the death-related pairs, participants in the death-related group would statistically suppress more pairs. The reasoning was that “conscious death-related thoughts lead to suppression of further death-related thoughts” (Arndt et al., 1997, p. 17). Therefore, when a participant encountered death-related pairs it was more likely that suppression would occur versus neutral pairs. Surprisingly, in previous pilot studies by the current research the participants did not recall at least 50 percent of the death-related pairs, and therefore, the participant’s were not able to complete the experiment (i.e., the think/no-think and the suppression test).

Death-Related Research

Previous research utilizing different mood states reported asymmetries between different moods and different participant populations. Power, Dalgleish, Claudio, Tata, & Kentish (2000) used a directed forgetting task modeled after Bjork’s (1970) task to investigate emotionally valent material and different mood states: “The depressed subjects demonstrated significantly higher levels of recall for negative material under ‘forget’ instructions than when under ‘remember’ instructions” (p. 154). A problem during the experiment by Power et al. (2000) parallels the current researcher’s pilot study in that the participants had the same difficulty remembering the negative material. After careful analysis, Powers et al. (2000) concluded this was due to a facilitation effect because there were more items that are negative in the first list half compared to the second list half. This was not occurring during the current researcher’s pilot studies because each pair had a death-related right-hand member. In addition, participants received two chances to recall the pairs, and in each trial, random presentation of the left-hand member occurs.

Power et al.’s (2000) research provided possible explanations for the difficulty of recalling death-related prime-target pairs by participants. For instance, the effects occurred at the

retrieval of the material, not the encoding. Participants in the pilot studies by the current researcher recalled many of the right-hand members, but did not successfully recall the pairs with the appropriate left-hand member. Essentially guessing occurred. Therefore, it seemed encoding happens, but was it a problem with the encoding or the retrieval causing the problem. It was significant that the preliminary evidence suggested that the directed forgetting effect was stronger for negative or threat-related material rather than positive material in normal individuals (Powers et al., 2000). Findings from Power et al.'s (2000) research suggested that if participants in the current research can recall the death-related pairs, and then complete the think/no-think task, the results would indicate successful suppression. In addition, when comparing the neutral pairs, the results should indicate better suppression for death-related pairs.

Wessel and Merkelbach (2006) examined previous results that people should have the ability to inhibit aversive material when wishing to do so, and emotion that had an arousal component exerts a memory enhancing effect. When participants had to learn the death-related prime-target pairs, stimulation should occur; therefore, the death-related prime-target pairs should be more difficult to forget. If this is the case, suppression using negative material should be more difficult than positive or neutral material. The results from Wessel and Merkelbach (2006) indicated that directed forgetting of negative and neutral words occurred to a similar extent. The most pertinent results for the purposes of the current study were that recall performance for negative emotional and neutral words was similar across the board. The stimuli of negative emotional words consisted of some death-related words (e.g., murder, grave, and corpse). Further analysis of successfully recalled words in the negative list would give a better understanding if researchers encountered the same problem as the current researcher did in pilot studies.

Arndt, Greenberg, Solomon, Pyzczynski, and Simon (1997) suggested that immediately following an explicit reminder of death, death-thought accessibility was low, however, when the mortality prime followed a delay, death-thought accessibility increased. As thoughts about death consumed participant's minds, for whatever reason, participants tended to think of death, and then consciously attempted to remove the death-related thoughts from focal attention. According to the researchers, "the awareness of our mortality, when juxtaposed with an instinct for self-preservation, creates in humans the potential for paralyzing terror" (Arndt et al., 1997, p. 6). This suggested that when the current researchers' pilot studies presented participants with the death-related pairs in the learning phase, participants began thinking of death and then focused on not thinking about the death-related pair. Therefore, it was possible participants were distracted with death thoughts which hindered proper encoding of the pairs, creating difficulty in the recall phase.

The results of Arndt et al. (1997) provided strong support to the hypothesized role of an active suppression process in the delayed increase in death thought accessibility after mortality salience. Our culture avoids the topic of death usually at all costs, even when there is a death close to the family, people find distractions to keep from thinking about it. This suggested that people were not consciously controlling thoughts about death because of ongoing terror management. The researchers concluded, "people are not well practiced at suppressing such thoughts once they have in fact entered consciousness" (Arndt et al., 1997, p. 9). Unfortunately, cognitive load affected the ability, therefore, interfering with suppression of death-related thoughts. One would predict that when participants trials increased, so would successful encode, retrieval, recall, and suppression of death-related prime-target pairs.

Greenberg, Arndt, Schimel, Pyszczynski, and Solomon (2001) focused on whether post defense reduction in accessibility was a consequence of a renewed effortful suppression of death-

related thoughts or an actual dissipation of such thoughts. After a high cognitive load delay, a participant accessed death-related thoughts better than with no delay. Were participants actually suppressing or was it just the salience of death that had dissolved? Greenberg et al. (2001) reported support of an actual dissipation of death-related thoughts because high cognitive load did not disrupt suppression, and did not increase accessibility.

Arndt, Cook, Goldenberg, and Cox, (2007) explored patterns of death-thought accessibility when concerned about cancer rendered salient or otherwise active. This study worked off the basis of Terror Management Theory developed by Greenberg, Solomon, and Pyszczynski (1997), which hypothesized that humans are in a precarious position due to the conflict between biological motives to survive and the cognitive capacity to realize life will ultimately end (as cited in Arndt et al., 2007). While humans know that death is an inevitable end, most try not to think about it. However, things in our lives, like death-related words, bring it to the mind's forefront. Arndt et al. (2007) presented participants with two letter matrices, which served as a distraction task between the salience induction and the accessibility measure. The researchers implemented this because of previous findings that showed having a delay after the mortality prime increased death-thought accessibility.

Research by Russac, Gatliff, Reece, and Spottswood (2007) suggested that young adults often reported higher levels of concern over mortality issues than older adults, with women typically reporting higher levels of death anxiety than men. The researchers used the Collett-Lester Fear of Death Scale-Revised to assess the participant's fear, which confirmed the reports of gender and age effects. Therefore, if participants are successful at recalling and able to complete the experiment, younger college students as well as women should have more anxiety than men and older participants.

This literature review presented a historical background into the research area of suppression as well as current research with methodology using death-related materials. The research discussed emotionally valent material and mortality salience gave suggestions of incorporation of procedures into the current research method. A lack of research exists for suppression and death-related prime-target pairs in the extensive review of the literature conducted by the current researcher. Most research included negative valence words, some pertaining to death, but that was the extent. In addition, many of the experiments used the method of having the participants learn the first half of a list, and then instruct participants to forget that section, and remember the second half of the list. In the current methodology, the prime-target pairs chosen as suppression words were at random for the six separate lists of suppression pairs; therefore, having half the participants suppress one portion of the list in each group, and the other suppressing the rest. Cues to suppress or recall occurred on an individual word basis, and then participants practiced recalling or suppressing four times. Because of the methodological differences, difficulty arises in analyzing the results to infer comparisons and conclusions.

The current study compared three types of prime-target pairs (i.e., nonword, neutral, and death-related). The intention of this experiment was to determine the generalizability of the ability to suppress unwanted death-related prime-target pair memories. After determining how to successfully suppress death-related thoughts, one result is the incorporation of the process into treatment plans as a coping mechanism for survivors of traumatic events; this could dramatically reduce the negative impact on their lives.

Current Study

The first hypothesis for the current study was participants will successfully suppress death-related prime-target pairs at a lesser rate than nonword and neutral prime-target pairs. The

second hypothesis was participants will successfully suppress death-related prime-targets at a lesser suppression confidence than neutral and nonword prime-target pairs. The first dependent variables were number of prime-target pairings recalled, and the number suppressed. This first dependent variable was then broken down into number of death-related, neutral, and nonword prime-target pairs suppressed. The second dependent variable was confidence of suppression (i.e., did not, maybe, probably, and definitely suppressed). The second dependent variable was broken down into mean confidence for the death-related, neutral, and nonword prime target pairs. The first independent variable was gender (i.e., male or female), which was quasi. The second independent variable was target type (i.e., death-related, neutral, nonword). The third independent variable was group (i.e., one, two, three, four, five, or six), resulting in 2x3x6 completely between participant's design. Portions of this methodology came from research by Anderson & Green's (2001, 2004) experiments; however, the current study did not use the independent probe test method and incorporated other modifications.

Method

Participants

Fifty-four students (17 males, 37 females), nine per group, from the University of Central Oklahoma general psychology pool participated in this experiment. The students used the internet to access Sona Systems, which is the experiment management system, to sign up for a desired time slot. Participants received one credit in their course for participation in this experiment. Participants received the credit if the students showed up for the appropriate time slot, and attempted to complete the experiment. The researcher posted the credit on Sona Systems, in which instructors of the general psychology courses at the University of Central Oklahoma access. The experiment required approximately 30 minutes from start to finish for each participant. Each participant signed a consent form (Appendix A) that acknowledges that

the participant understands he or she can stop the experiment at any time and receive full credit.

Treatment of all participants met the ethical guidelines of the American Psychological Association. Participants were debriefed, and thanked for their participation.

Exclusion of participants from the experiment occurred if the student had a history of Attention-deficit/hyperactivity disorder (ADHD). Addressing this happened at the time the participant signed up through Sona Systems, which stated under eligibility requirements “has never been or is not currently diagnosed with ADHD.” Characteristics of adults with this disorder include inattentiveness, impulsivity, unfocused and immature cognitive behavior patterns that impair functioning in multiple environments (Wadsworth & Harper, 2007). The year 2000 Diagnostic & Statistical Manual for Mental Disorders, (DSM-IV-TR) provides criteria for diagnosing ADHD. The manual states that a person who has six symptoms of inattentiveness or hyperactivity-impulsivity for a period of six months or longer meets the criteria for ADHD.

The experiment causes cognitive strain, has a long duration, and requires concentration to complete this experiment; participants diagnosed with Attention-deficit/hyperactivity disorder will have difficulty completing the experiment. Mattes (1980) reported a dysfunction in the prefrontal cortex as a neurobiological expression of the genetic disorder. Over the years, extensive documentation by researchers regarding abnormalities in the brain structure and function of adults with ADHD (Harvey, as cited in Wadsworth & Harper, 2007). By not excluding participants with these differences in the brain that is consistent with Attention-deficit/hyperactivity disorder from this experiment, the results would not generalize to the general population. Even taking this precaution, one problem still arises; ADHD more often than not goes undiagnosed and untreated. Therefore, many participants will not know if fulfill the requirements of the Diagnostic & Statistical Manual for Mental Disorders, (DSM-IV-TR).

In addition, exclusion of participants from the experiment occurred if the student had

red-green color blindness. Addressing this happened at the time in which the participant signed up through Sona Systems, which stated under eligibility requirements “does not have red/green color blindness.” People suffering from this have difficulty distinguishing red and green hues. This difficulty would cause problems during the experiment because of the use of red and green fonts to cue the participant to suppress or recall.

Materials

Presentation of the experiment, except for the manipulation check (i.e., questionnaire) is on a Hewlett-Packard (HP) laptop computer, the model is a Compaq nx6110, and the company resides in Palo Alto, C.A. The monitor screen display measures 15 inches. The program used to present the experiment is E-Prime version 1.1 developed by Psychology Software Tools, Inc. located in Pittsburgh, Pennsylvania, E-Prime. The researcher downloaded E-Prime on to the Hewlett-Packard laptop computer.

There are 22 prime-target pairs for each participant, four of which are for practice purposes only. However, groups one and two see the same stimuli pairs, the same goes for groups three and four, and groups five and six. The formation of the pairs occurred by combining a pronounceable nonword prime (i.e., left-hand member) with either itself (e.g., GEAD-GEAD), an orthographically and phonologically similar, same-length word that was death-related (e.g., GEAD-DEAD) or neutral (e.g., GEAD-READ), which served as the target (i.e., right-hand member). See (Appendix B) for stimulus set for participants by group.

The left-hand members (i.e., prime) consists of 22 nonword words, four of which are for practice purposes only. The formation of these occurred by taking a death-related word and changing one or two letters to form the nonword. The right-hand members (i.e., target) consist of 22 targets, four of which are for practice purposes only. These target stimuli were 18-yoked triplets of equal length (e.g., DEAD-READ-GEAD). The four practice pairs (Appendix C) have

the same characteristics as the other prime-target pairs, and each participant saw the same ones. Each triplet contained a death-related base word, a neutral word, and a pronounceable nonword. Preservation of the orthographic and phonological similarity of the three stimuli occurred by changing one letter of the base word to create the other two. For example, the base word DEAD yielded one real word (READ) and one nonword (GEAD). The base words were death-related words of length three, four, or five letters taken from Arndt et al. (1997), Arndt et al. (2007), and online thesauruses. Counterbalancing of the relationship of prime to target occurred between groups such that repetition of primes and targets occurred for groups one and two (Appendix D), three and four (Appendix E), and five and six (Appendix F). Therefore, only two of the groups saw the same prime-target pairs.

Code sheets developed by the current researcher using Microsoft Excel were used to record the responses of the participants. For groups one and two (Appendix G), for groups three and four (Appendix H) and for groups five and six (Appendix I). One modification for each code sheet for groups two, four, and six is that for the think-no-think, and suppression portion the words recall and suppress switch spots. The test-feedback phase code sheet had all 22 pairs listed in two different orders, each list is for one of the two trials the participant gets to recall the right-hand target stimulus when presented with the left-hand prime. There is a space to the right of each pair to mark if the participant successfully recalls the right-hand target stimulus. The practice think/no-think phase code sheet has four pairs for the participant to practice the suppression task. The think/no-think phase code sheet has the 18 pairs listed. To the right of the pairs are spaces to mark if the participant successfully recalls on a think word or to mark if a participant mistakenly recalls on a no-think word. The test-phase code sheet has the 18 pairs, and a space to the right to mark if the participant successfully recalls the right-hand target when presented with the left-hand prime. The recognition phase code sheet has 30 words listed, 18 are

the right-hand target the participant saw during the experiment, the remaining 12 are words that the participant did not see at any time during the experiment. There is a space to the right of each word to mark if the participant responded yes or no in response to the word. The questionnaire phase (Appendix J) uses a 5-point anchored scale for the participant to indicate responses to the six questions. The data was taken from the code sheets and put into SPSS for each participant.

Design

The design of the experiment is a completely between participant's $2 \times 3 \times 6$, gender (i.e., male, female) \times target type (i.e., death-related, neutral, nonword pairs) \times group (i.e., one through six). See (Appendix K) for the variable view of SPSS. The quasi independent variable is gender, and the manipulated independent variables are target type and group. The second independent variable (i.e., prime-target type) refers to if the right-hand target is death-related, neutral, or nonword pairs). Each participant saw six of each target type, with groups one and two saw the same pairs, groups three and four saw the same pairs, and groups five and six saw the same pairs. The third independent variable (i.e., group) refers to which group one, two, three, four, five, or six the participant was in. Groups one, three, and five recalled the first half of the list, and suppressed the second half of the list. Groups two, four, and six suppressed the first half of the list, and recalled the second half of the list.

The first dependent variable is confidence of suppression (i.e., not, maybe, probably, and definitely suppression), number of pairs recalled correctly on first trial of the feedback-phase, number of pairs recalled correctly on second trial of the feedback-phase, and number of right-hand targets recognized correctly. The researcher randomly assigned participants to groups based on the order of participation, which resulted in nine participants per group. Deciding the first dependent variable (i.e., suppression confidence) coding occurred by participant's responses on

the two recall trials, the suppression test, and recognition test. A coding of not suppression resulted from three different scenarios.

First, correctly recalling the right-hand target during the suppression test. Second, incorrectly recalling the right-hand target during the suppression test, not recalling right-hand target during either trial of the feedback phase, and not recognizing. Third, incorrectly recalling the right-hand target during the suppression test, not recalling right-hand target during either trial of the feedback phase, but recognizing. A coding of maybe suppression resulted from two scenarios. First, incorrectly recalling the right-hand target during the suppression test, recalling the right-hand target during one trial of the feedback-phase, and not recognizing. Second, incorrectly recalling the right-hand target during the suppression test, recalling the right-hand target during both trials of the feedback-phase, and not recognizing. A coding of probably suppression resulted from incorrectly recalling the right-hand target during the suppression test, recalling the right-hand target during one trial of the feedback-phase, and recognizing. A coding of definitely suppression resulted from incorrectly recalling the right-hand target during the suppression test, recalling the right-hand target during both trials of the feedback-phase, and recognizing.

The second dependent variable was death suppression confidence, which was out of the three death-related suppression prime-target pairs, the mean of the suppression confidence codings (i.e., not, maybe, probably, or definitely suppression) for the three death-related prime-target pairs. The third dependent variable was neutral suppression confidence, which was out of the three neutral prime-target pairs, the mean of the suppression confidence codings (i.e., not, maybe, probably, or definitely suppression) for the three neutral prime-target pairs. The fourth dependent variable was nonword suppression confidence, which was out of three nonword

suppression prime-target pairs, the mean of the suppression confidence codings (i.e., not, maybe, probably, or definitely suppression) for the three nonword prime-target pairs.

The fifth dependent variable was targets suppressed, which was out of the nine suppression prime-target pairs, how many total the participant suppressed. The prime-target pair was determined as suppressed if the participant's response met one of the situations for the coding of maybe, probably, or definitely suppression on the first dependent variable (i.e., suppression confidence). The sixth dependent variable was targets recalled, which is out of the nine recall prime-target pairs, how many total the participant recalled during the test phase. The seventh dependent variable was death targets suppressed, which was out of the three death-related suppression prime-target pairs, how many total the participant suppressed. The eighth dependent variable was neutral targets suppressed, which was out of three neutral prime-target pairs, how many total the participant suppressed. The ninth dependent variable was nonword targets suppressed, which was out of three nonword prime-target pairs, how many total the participant suppressed. For dependent variables seven, eight, and nine, the prime-target pair was determined as suppressed if the participant's response met one of the situations for the coding of maybe, probably, or definitely suppression on the first dependent variable (i.e., suppression confidence).

Procedure

Participation in the experiment occurred in one of the Psychology Department's rooms at the University of Central Oklahoma. Upon entering the room, the participant fills out the consent form. The researcher sits behind the participant to record responses (Appendix G) for groups one and two, (Appendix H) for groups three and four, and (Appendix I) for groups five and six, and reads aloud the instructions as the participant reads. Presentation of each phase occurs automatically and consecutively on a computer screen using the E-Prime program. The five-

phase computer-based procedure occurs in order of learn-recall-suppress-test-recognize.

Treatment consists of learning 22 unrelated prime-target pairings. Next, the participant is tested to see how many of the pairs can be recalled. Each trial will consist of presenting the left-hand prime from one pair on a computer screen, and recalling the right-hand target. As long as the participant gets at least 50 percent correct, the next phase begins. Then when presented with a left-hand prime that is in green font, the participant recalled and said the right-hand target of the pair. If the left-hand prime was in red font, the participant suppressed by not thinking and not saying the right-hand target of the pair. Next, is a suppression test to determine suppression of the unwanted memory prime-target pairs. Presentation of each left-hand prime is in black, and the participant is to recall the right-hand target. Then presentation of the 18 right-hand target members is in black, along with 12-filler words. The participant is to respond yes or no if the word was part of a pair during the experiment. Lastly, the participants filled out the questionnaire (i.e., the manipulation check) (Appendix J).

Study Phase

A screen appeared with instructions, which the research instructed the participant to read silently as the researcher read aloud.

Welcome to the Experiment!!! Press the Space Bar to Continue when reading any instructions!! In the first part of this task, you will be learning words paired together and then will be quizzed on them later. Please read aloud each pair of words as you study them. Your task will be to link the two words together in your mind, so that when you are given one word you will be able to remember the other word that was paired with it. It is important that you take the whole time to study the pair of words together because you will be quizzed on the pair right after the whole list has been shown to you. Do you have any questions?

This phase presented a prime-target pair that E-Prime randomly chooses appeared on the computer screen. The participant's goal in this phase is to learn the two words together as a pair. Each pair appeared on the screen for 1000 milliseconds. Then a blank screen appeared followed by another slide that has the next pair of words. This continued through all 18 prime-target pairs as well as four practice pairs. During this phase, the researcher did not have to record any responses.

Test-Feedback Phase

A screen appeared with instructions, which the research read aloud as the participant read silently.

Now that you have had time to review all of the pairs of words, we want you to see how well you can remember them before we go on to the next part of the task. In this part, we want you to test your ability to remember each pair of words. We will show one of the words of the pair each time. We will call this the "Hint" word. When you see this hint word, your job will be to remember the word that goes with it and say the word as fast as you can. The hint word will stay on the computer screen for a short period of time. After this short period of time, the correct answer will appear in blue. Take this chance to study the word again. Then we will go on to the next pair of words. Do you have any questions? Again, we will show you a hint word. Think of the word that goes with it and say it aloud as quickly as you can. The computer will then show the correct answer and you will have time to study the two words again. Do you have any questions?

This phase presented one of the left-hand prime for one of the pairs that E-Prime randomly chose. The participant's goal in this phase was to recall the right-hand target as quickly as possible. The correct answer is displayed on the next computer slide in blue font, regardless of the participant's response, giving the participant another opportunity to study the pair again. The

participant went through this for each word prime-target pair while the researcher recorded if the participant responded correctly. A screen appeared with instructions, which the researcher read aloud as the participant read silently, "Please continue saying the correct answer when you see a hint word."

After both trials, the researcher assessed the feedback to see if the participant successively recalled 50 percent or better. The four practice word prime-target pairs are not included in the percentage of correct word prime-target pairs recalled. If this is accomplished then the next phase began. If the participant did not recall 50 percent of the word prime-target pairs after two attempts, the researcher thanked the participant, and the researcher exclude that participants data from the experiment.

Practice Think/No Think Phase

A screen appeared with instructions, which the research read aloud as the participant read silently.

In this next part of the task, you will again see the hint words on the computer screen, but we will show them to you in a different way. This time some of the words will be in GREEN. For the GREEN words, it will be the same as we have practiced before. You will say the correct word as quickly as you can remember it. GREEN words mean, "go", and say the word as fast as you can. The computer screen will show you the right answer. We will go through these several times and your job is to get faster at giving the correct answer. In addition, some of the hint words will be shown in RED. For the RED words, your job will be to NOT say the word and NOT think about it. Think of RED words as "stop" words. Therefore, instead of trying to remember and say the word quickly, your job will be to NOT think of the word that goes with the RED word. This is very important, so I will explain exactly what to do for each of these hint words. When a RED

word appears on the screen, look at the word as you would any of the other words. Please pay full attention to the word and look straight at it for the full time that it appears on the screen. However, it is very important that you DO NOT think of the word that goes with it. DO NOT think of the word at all, not even for a second. The important thing is to learn to NOT think about the word that goes along with the RED word. Learning to NOT remember the RED word's pair may take a while, we might have to go over them several times. The important thing is to try as hard as you can and we will keep going until you CANNOT think of all of the words that are paired with the RED words. If you accidentally do remember and say the word that goes with the RED word, we will let you know when you hear this click. The click means that you have mistakenly responded when you were instructed not to. The RED word will stay on the screen for a short amount of time. Now we are going to practice so that you that you get used to this task. Remember, when a word appears in RED your job is to NOT think about the word that was paired with it. Please keep looking at the word on the screen but DO NOT let the word that was paired with it come to mind. Also, remember the words that are listed in GREEN, please continue as before and respond as quickly as possible to the GREEN words. Do you have any questions?

This phase presented the four practice prime-target pairs; each presented a left-hand prime in red or green font. The left-hand prime stayed on the screen for 5000 milliseconds no matter the font color. If in red font, the participant's goal was to not think or say the right-hand target. If in green font, the participant's goal was to think of and recall the right-hand target. When the left-hand prime was in green font, the correct right-hand target appeared on a new screen in blue font for 500 milliseconds. If a participant did not follow directions, and verbally responded to a prime that was in red font, the participant heard a loud error click. After this brief

practice session that uses the four practice prime-target pairs that the participants learned and recalled in the previous two phases, the actual think/no-think phase began. The researcher recorded by making a check mark if the participant got the green word correct.

Think/No-Think Phase

A screen appeared with instructions, which the research read aloud as the participant read silently.

Now that you have had time to practice, we will go on with the actual test. It will be exactly the same as we just practiced. For GREEN hint words, you are to say the correct response as quickly as possible. For the RED words, your job is to NOT think about the word that was paired with that word to start with. Just as before, if you respond to the RED word, you will hear a click. Please remember, it is not enough to just NOT say the response; we want you to NOT think of the response. NOT even a little, NOT for one second. We really need you to follow directions carefully, as well as you can. Do you have any questions?

This phase presented at random, a left-hand prime in red or green font, four times per left-hand prime. If the left-hand prime was in green font, it stayed in green font, if the left-hand prime was in red font it stayed in red font. If in red, the participant's goal was to not think or say the right-hand target. If in green font, the participant's goal was to think of and recall the right-hand target. If a participant failed to follow directions, and verbally responded to a stimulus that presented in red font, the participant heard a loud error click. The left-hand prime stayed on the screen for 5000 milliseconds no matter the font color. When the left-hand prime was in green font, the correct right-hand target appeared on a new screen in blue font for 500 milliseconds. The researcher recorded by making a check mark if the participant got the green word correct.

Test Phase

A screen appeared with instructions, which the research read aloud as the participant read silently.

In this part, you will again be remembering the response words that you learned earlier in the task and saying them aloud. All of the hint words will be in black and we would like for you to respond to all of the hint words, even if before the word was in red. Please try to respond as quickly and as accurately as possible. Do you have any questions?

This phase presented a left-hand prime for 3600 milliseconds in black at random. The participant's goal was to respond to each prime with its correct right-hand target.

Recognition Phase

A screen appeared with instructions, which the research read aloud as the participant read silently.

In this part, a word will appear on the screen. If it is a word from a pair seen at any time during this experiment please say "yes". If the word on the screen is not a word from a pair seen during this experiment please say "no". Do you have any questions?

This phase presented individually for 3600 milliseconds 18 right-hand target and 12-filler words in black at random. The participant's goal was to respond yes to right-hand target used in a pair during the experiment, or to respond no if the word was not used in a prime-target pair during the experiment. A screen appeared with instructions, which the researcher read aloud as the participant read silently, "Thank you for your participation in this experiment! Please complete the questionnaire."

Questionnaire Phase

The researcher handed the questionnaire (Appendix J), which served as a manipulation check, to the participant, along with an ink pen. Each participant answered three questions, which addressed if the participant had intentionally disregarded the instructions and allowed the

responses to the left-hand prime member stimulus in red font come to mind. The fourth question addressed how difficult the participant perceived the task of not allowing the right-hand target member stimulus of a suppression pair to come to mind. The fifth and sixth questions addressed if the participant knew someone who had died, how close that person was to the participant, and how long ago that event occurred.

Results

The participant sample (17 males, 37 females) was reduced to those who suppressed at least one prime-target pair, therefore, filtering out participants who did not successfully suppress any prime-target pairs. See (Appendix L) for data view in SPSS. All data analyses were conducted on the remaining participants (10 males, 29 females). A multivariate analysis of variance (MANOVA) was conducted on a portion this completely Between 2x3x6 (e.g., Gender: male/female; Target Type: death-related/neutral/nonword; Group: one/two/three/four/five/six) design. The participants' gender and group was included in the analysis. The results revealed no statistically significant *F* tests.

Three two-way contingency table analyses were conducted to evaluate the target type (i.e., death-related, neutral, nonword), specifically the number of prime-targets suppressed by participants for each of those target types. Death-related and nonword prime-targets suppressed were found to be significantly related, $\text{Pearson } X^2(9, N = 39) = 28.32, p = .001$. See Table 1 (Appendix M). Therefore, there is a significantly higher proportion of nonword prime-target pairs suppressed than death-related prime-target pairs. The other two contingency tables did not produce significant results. Out of 117 nonword prime-target pairs, participants successfully suppressed 36; out of 117 neutral prime-target pairs, participants successfully suppressed 28; and out of 117 death-related prime-target pairs, participants suppressed 24 prime-target pairs. See Figure 1 (Appendix N). This supports a portion of the first hypothesis, that participants did

significantly suppress death-related prime-target pairs at a lesser rate than nonword prime-target pairs. These results confirm a portion of the second hypothesis that death-related prime-targets are suppressed at a lesser rate than nonword prime-targets.

Three two-way contingency table analyses were conducted to evaluate the suppression confidence (i.e., not, maybe, probably, definitely suppression) for target type (i.e., death-related, neutral, nonword). Suppression confidence for death-related and nonword prime-target pairs were found to be significantly related, Pearson $X^2(36, N = 39) = 54.54, p = .02$. See Table 2 (Appendix M). Therefore, there is a significantly higher mean confidence of suppression for nonword prime-target pairs versus death-related prime-target pairs. The other two contingency tables did not have significant results. The mean suppression confidence for nonword prime-target pairs is 2.05, the mean suppression confidence for neutral prime-target pairs is 1.51, and the mean for death-related prime-target pairs is 1.18. See Figure 2 (Appendix O). These results confirm a portion of the third hypothesis that death-related prime-target pairs have a lesser suppression confidence than nonword prime-target pairs.

Discussion

Reducing participants who did not successfully suppress at least one prime-target pair occurred because if the participant was not suppressing, the researcher would not be analyzing suppression data. The multivariate analysis of variance resulted in no significant findings. Therefore, there is no significant difference between gender (i.e., male, female) or group (i.e., one, two, three, four, five, six). Therefore, it did not matter whether the participant was male or female, or out of the six groups, to which one the participant was assigned. In addition, because there is not a significant difference for group, the list of prime-target pairs each participant saw, and the prime-target pairs each participant suppressed did not make a difference.

The two way contingency for number of death-related by nonword prime-targets pairs supports a portion of the second hypothesis that death-related prime-target pairs are suppressed at a lesser rate than nonword prime-target pairs. The two way contingency for suppression confidence of death-related by nonword prime-targets pairs supports a portion of the third hypothesis that death-related prime-target pairs are suppressed at a lesser confidence than nonword prime-target pairs. The lack of statistical difference between neutral and death-related material parallels Wessel and Merkelbach (2006) results that indicate that directed forgetting of negative and neutral words occurs to a similar extent.

The results found no significant difference between the target type neutral and death-related prime-target types, and found better suppression of nonword prime-target pairs than death-related prime-target pairs. These findings contradict previous research using negative, neutral, or death materials, and terror management theory. According to Arndt et al. (1997) immediately following an explicit reminder of death, death-thought accessibility is low; however, when the mortality prime follows a delay, death-thought accessibility increases. It is possible that after each phase when the participants read the instructions as the researcher read the instructions aloud was a long enough delay to increase death-thought accessibility. Therefore, the salience of the death-related target-prime pairs could have influenced the lesser number of death-related word pairs being suppressed, and the less confidence in those death-related prime-target pairs suppressed. This saliency of death-related prime-targets is evolutionarily based. According to Arndt et al. (1997) when there is an awareness of a person's own mortality, keeping in mind human instincts for survival, there is potential for paralyzing terror. In addition, because people avoid this topic, humans are not prepared or well practiced at thought suppression for death-related materials (Arndt et al., 1997).

Limitations

A methodological limitation of the current research is the lack of participants, especially participants that successfully suppressed at least one prime-target pair, therefore resulting in analyses of the participant's data. Conducting a replication of this research with more participants will address this issue. If the same results produce, it will lend further support for the findings. However, if conflicting results produce, further replication studies will be necessary. In addition, by determining the least amount of participant's necessary to provide sufficient power will save the researcher from conducting numerous studies.

Another limitation is that the prime-target pairs for each group have little to no previous use in experiments, much less together or in a suppression task. The primes that are death-related have not all been used in research as death words. The right-hand primes taken from Arndt et al. (1997) and Arndt et al. (2007) were determined to be of negative valence. In addition, some of the death-related targets could refer to the act of killing or being killed (e.g., slay, slain, drown, choke, bomb), or pertain to words regarding after death (e.g., grave, mourn, tomb, skull, ghost). Further review of previous research regarding mortality salience or any relation to death could reveal words or word pairs that refer to death.

Future Research

One future research project could examine the affects of age on suppression of death-related, neutral, and nonword prime-target pairs. Research by Russac, et al. (2007) suggests that young adults often report higher levels of concern over mortality issues than older adults, with women typically reporting higher levels of death anxiety than men. According to Kastenbaum (2000), with age comes less anxiousness regarding a person's own mortality because (a) death does not threaten as many of our values, or (b) there is a continuous developmental process through which people 'come to terms' with dying. In addition, little suppression research with

older adults (i.e., 60 and above) exists. Therefore, this project could give insight into anxiety regarding death, and age differences when using a suppression task.

Conclusions

The current research revealed results that conflict with the suggestion by Bjork, et al. (1998), which proposes that mortality saliency produces better accessibility to death-related thoughts. Therefore, the current study aids further understanding of the use of different valence words in a suppression task. There is a lack of research using death-related and nonword pairs in suppression task. Therefore, the current study reveals a new area needing further investigation, as well as a conflict between previous research results. A practical implication that can be taken from this study is that therapists may have more difficulty teaching patients to suppress death-related undesirable thoughts. Unfortunately, patients are most likely seeking to suppress content that is either negative or death-related.

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Appendix A

UNIVERSITY OF CENTRAL OKLAHOMA INFORMED CONSENT FORM

Experimental Psychology Research Project Title: C & S III
 Researcher(s) and contact information: Kristin Woods (405) 615-7776, kwood7@uco.edu. You may also contact the Research Administrator at (405) 974-5707 or experimentrak@ucok.edu

A. Purpose of this research: Psychology majors are required to take a junior-level course, Experimental Psychology, where they perform their own research. In the course, they learn to test a hypothesis by manipulating an independent variable, controlling extraneous variables, and observing the results. This goal of this project, for example, is to investigate memory and cognition. Sometimes researchers will not be able to tell you the specific purposes or characteristics of their studies until all their data are collected. Rarely, you may receive false information— sometimes we will not be able to fully describe each event in the study or tell you about the things we need to measure or the observations we need to make. This prevents the results from being damaged by your knowledge; people sometimes unconsciously adjust their behavior according to their expectations.

B. Procedures/treatments involved: Participants will be asked to sit in at a computer and asked to follow the directions. This will include learning word pairs, recalling the word pairs and a short questionnaire.

C. Expected length of participation: No more than _____1___ hour(s).

D. Potential benefits: We happily share this learning experience with General Psychology students who may be contemplating psychology as a major course of study. Because some students may perceive psychology only as the practice of psychotherapy, potential majors need to know that other specialties exist and that some psychologists spend their days doing research. We submit that the best way to learn about something is from the inside. The benefits to both parties are significant: potential majors get to interact with more senior students in their field, all participants gain ownership of psychological research, and all participants get an active (therefore lasting) debriefing of popular myths about psychological research. Experimental psychology students get hands-on research experience that supports their intellectual goals, they get to be mentored one-on-one by more senior students and faculty, and they incur the practical benefit of an entry on their résumés. Participants get to add to our scientific knowledge about people.

E. Potential risks or discomforts: Unless explicitly stated otherwise in the specific study descriptions, your participation will not involve more than minimal risk to you. That means there will be no harm or discomfort anticipated in the research greater than what is ordinarily encountered in daily life or during routine physicals or psychological examinations or tests. Sometimes researchers will not be able to tell you everything about their studies until all their data are collected. This prevents the data from being damaged by participants' prior knowledge.

F. Medical/mental health contact information: If you would like to visit with someone regarding sensitive or special concerns about this project or other issues, please feel welcome to visit the UCO Student Counseling Center at (405) 974-2215 or http://www.ucok.edu/student_counseling (Bruce Lochner, Ph. D., Director).

G. Contact information for researchers appears above. You may also contact the Research Administrator at (405) 974-5707 or experimentrak@ucok.edu. Should you have any additional questions, please contact the Chair of the UCO Institutional Review Board at (405) 974-3341.

H. Explanation of confidentiality and privacy: Your name or identity will not be associated in any way with the research findings; information about you remains confidential and will not be kept after the semester ends. Your name or other uniquely identifying information will never be in any record that can be identified with you. We do not request student ID numbers either.

Results are reported only about groups of people or by a number that conceals your identity. All results are reported in summary form, except on occasion when an individual example may be given, at which time no name or other identifiable information will be given. Anonymous data are stored in electronic or hard copy form by individual researchers. Only the student researchers and their instructors have access to the data.

Most psychology journals expect that researchers retain data for five years following publication. Individual researchers destroy anonymous data after the standard retention period (see above) has passed. Records (separate from research data) regarding which students

completed their participation assignments are purged from electronic sources or shredded by individual instructors/researchers after final grades are recorded.

The fact that you did or did not participate in a specific experiment or study is part of a record available to your General Psychology instructor. General Psychology instructors have to know which studies you completed in order to know how much research participation credits each you earned (in order to determine whether that course requirement was satisfied). They do not need nor do they receive any other information.

I. Assurance of voluntary participation:

AFFIRMATION BY RESEARCH PARTICIPANT

I hereby voluntarily agree to participate in the above listed research project and further understand the above listed explanations and descriptions of the research project. I also understand that there is no penalty for refusal to participate, and that I am free to withdraw my consent and participation in this project at any time without penalty. I have read and fully understand this Informed Consent Form. I sign it freely and voluntarily. I acknowledge that a copy of this Informed Consent Form has been given to me to keep.

Participant's Printed Name: _____

Participant's Signature: _____

Date _____

J. For more information: If you would like more information about the results of this study, you can get the complete details after we have collected all our data. There are three ways to do this:

- 1) Ask your General Psychology instructor for access to this semester's study summaries.
- 2) Request that the researcher email/snail-mail you the study results.
- 3) Make an appointment for a telephone or in person visit with the researcher.

Appendix B

	p1				p2				p3			
	Left	Right	Right	Right	Left	Right	Right	Right	Left	Right	Right	Right
	Prime	Death	Word Ctl	Nword Ctl	Prime	Death	Word Ctl	Nword Ctl	Prime	Death	Word Ctl	Nword Ctl
1	BLAY	SLAY	CLAY	BLAY	BLAY	SLAY	CLAY	BLAY	BLAY	SLAY	CLAY	BLAY
2	BLIED	BLEED	BLEND	BLIED	BLIED	BLEED	BLEND	BLIED	BLIED	BLEED	BLEND	BLIED
3	DELTH	DEATH	DEPTH	DELTH	DELTH	DEATH	DEPTH	DELTH	DELTH	DEATH	DEPTH	DELTH
4	DOMB	TOMB	WOMB	DOMB	DOMB	TOMB	WOMB	DOMB	DOMB	TOMB	WOMB	DOMB
5	DRAVE	GRAVE	CRAVE	DRAVE	DRAVE	GRAVE	CRAVE	DRAVE	DRAVE	GRAVE	CRAVE	DRAVE
6	SKALL	SKULL	SKILL	SKALL	SKALL	SKULL	SKILL	SKALL	SKALL	SKULL	SKILL	SKALL
7	DROST	GHOST	FROST	DROST	DROST	GHOST	FROST	DROST	DROST	GHOST	FROST	DROST
8	FIED	DIED	LIED	FIED	FIED	DIED	LIED	FIED	FIED	DIED	LIED	FIED
9	FLAIN	SLAIN	DRAIN	FLAIN	FLAIN	SLAIN	DRAIN	FLAIN	FLAIN	SLAIN	DRAIN	FLAIN
10	GEAD	DEAD	READ	GEAD	GEAD	DEAD	READ	GEAD	GEAD	DEAD	READ	GEAD
11	JIE	DIE	LIE	JIE	JIE	DIE	LIE	JIE	JIE	DIE	LIE	JIE
12	TRIEF	GRIEF	BRIEF	TRIEF	TRIEF	GRIEF	BRIEF	TRIEF	TRIEF	GRIEF	BRIEF	TRIEF
13	PRAB	STAB	CRAB	PRAB	PRAB	STAB	CRAB	PRAB	PRAB	STAB	CRAB	PRAB
14	PROWN	DROWN	FROWN	PROWN	PROWN	DROWN	FROWN	PROWN	PROWN	DROWN	FROWN	PROWN
15	RILL	KILL	FILL	RILL	RILL	KILL	FILL	RILL	RILL	KILL	FILL	RILL
16	SHOKE	CHOKE	SPOKE	SHOKE	SHOKE	CHOKE	SPOKE	SHOKE	SHOKE	CHOKE	SPOKE	SHOKE
17	SOMB	BOMB	COOMB	SOMB	SOMB	BOMB	COOMB	SOMB	SOMB	BOMB	COOMB	SOMB
18	DOURN	MOURN	TOURN	DOURN	DOURN	MOURN	TOURN	DOURN	DOURN	MOURN	TOURN	DOURN

Appendix C

Prime-Target Practice Pairs for All Groups

Left-Hand Stimulus

TUCH
SKRAIN
HURP
BREAF

Right-Hand Stimulus

OUCH
SPRAIN
HURL
BREAD

Appendix D

Prime-Target Pairs for Groups One and Two

Left-Hand Stimulus

BLAY
BLIED
DELTH
DOMB
DRAVE
SKALL
DROST
FIED
FLAIN
GEAD
JIE
TRIEF
PRAB
PROWN

Right-Hand Stimulus

SLAY
BLEED
DEATH
TOMB
GRAVE
SKULL
FROST
LIED
DRAIN
READ
LIE
BRIEF
PRAB
PROWN

RILL
SHOKE
SOMB
DOURN

RILL
SHOKE
SOMB
DOURN

Appendix E

Prime-Target Pairs for Groups Three and Four

Left-Hand Stimulus

BLAY
BLIED
DELTH
DOMB
DRAVE
SKALL
DROST
FIED
FLAIN
GEAD
JIE
TRIEF
PRAB
PROWN

Right-Hand Stimulus

BLAY
BLIED
DELTH
DOMB
DRAVE
SKALL
GHOST
DIED
SLAIN
DEAD
DIE
GRIEF
CRAB
FROWN

RILL
SHOKE
SOMB
DOURN

FILL
SPOKE
COMB
TOURN

Appendix F

Prime-Target Pairs for Groups Five and Six

Left-Hand Stimulus

BLAY
BLIED
DELTH
DOMB
DRAVE
SKALL
DROST
FIED
FLAIN
GEAD
JIE
TRIEF
PRAB
PROWN

Right-Hand Stimulus

CLAY
BLEND
DEPTH
WOMB
CRAVE
SKILL
DROST
FIED
FLAIN
GEAD
JIE
TRIEF
STAB
DROWN

RILL
SHOKE
SOMB
DOURN

KILL
CHOKE
BOMB
MOURN

Appendix G

Code Sheets for Groups One and Two

TEST FEEDBACKS

PARTICIPANT # _____

GROUP # 1a

1

BLAY	SLAY	
BLIED	BLEED	
DELTH	DEATH	
DOMB	TOMB	
DRAVE	GRAVE	
SKALL	SKULL	
DROST	FROST	
FIED	LIED	
FLAIN	DRAIN	
GEAD	READ	
JIE	LIE	
TRIEF	BRIEF	
PRAB	PRAB	
PROWN	PROWN	
RILL	RILL	
SHOKE	SHOKE	
SOMB	SOMB	
DOURN	DOURN	
TUCH	OUCH	
SKRAIN	SPRAIN	
BREAF	BREAD	
HURP	HURL	
<i>Number of correct =</i>		
<i>At least 9 correct?</i>		

2

BLAY	SLAY	
BLIED	BLEED	
DELTH	DEATH	
DOMB	TOMB	
DRAVE	GRAVE	
SKALL	SKULL	
DROST	FROST	
FIED	LIED	
FLAIN	DRAIN	
GEAD	READ	
JIE	LIE	
TRIEF	BRIEF	
PRAB	PRAB	
PROWN	PROWN	
RILL	RILL	
SHOKE	SHOKE	
SOMB	SOMB	
DOURN	DOURN	
TUCH	OUCH	
SKRAIN	SPRAIN	
BREAF	BREAD	
HURP	HURL	
<i>Number of correct =</i>		
<i>At least 9 correct?</i>		

GREY ARE PRACTICE WORDS DON'T COUNT

Check if get it right

Leave blank if not right

If form of word write it

PRATICE TNT

PARTICIPANT # _____

TUCH	OUCH	
SKRAIN	SPRAIN	
BREAF	BREAD	
HURP	HURL	

GROUP # 1a

THINK-NO-THINK

Recall	BLAY	SLAY	
	BLIED	BLEED	
	DELTH	DEATH	
	DROST	FROST	
	FIED	LIED	
	FLAIN	DRAIN	
	PRAB	PRAB	
	PROWN	PROWN	
Suppress	RILL	RILL	
	DOMB	TOMB	
	DRAVE	GRAVE	
	SKALL	SKULL	
	GEAD	READ	
	JIE	LIE	
	TRIEF	BRIEF	
	SHOKE	SHOKE	
	SOMB	SOMB	
	DOURN	DOURN	

Check if recalled right-hand member correctly for recall word pairs.
 Make an x if recalled right-hand member for suppression word pairs.

Appendix H

Code Sheets for Groups Three and Four

TEST FEEDBACKS

PARTICIPANT # _____

GROUP # 2a

1

BLAY	BLAY	
BLIED	BLIED	
DELTH	DELTH	
DOMB	DOMB	
DRAVE	DRAVE	
SKALL	SKALL	
DROST	GHOST	
FIED	DIED	
FLAIN	SLAIN	
GEAD	DEAD	
JIE	DIE	
TRIEF	GRIEF	
PRAB	CRAB	
PROWN	FROWN	
RILL	FILL	
SHOKE	SPOKE	
SOMB	COMB	
DOURN	TOURN	
TUCH	OUCH	
SKRAIN	SPRAIN	
BREAF	BREAD	
HURP	HURL	
<i>Number of correct =</i>		
<i>At least 9 correct?</i>		

2

BLAY	BLAY	
BLIED	BLIED	
DELTH	DELTH	
DOMB	DOMB	
DRAVE	DRAVE	
SKALL	SKALL	
DROST	GHOST	
FIED	DIED	
FLAIN	SLAIN	
GEAD	DEAD	
JIE	DIE	
TRIEF	GRIEF	
PRAB	CRAB	
PROWN	FROWN	
RILL	FILL	
SHOKE	SPOKE	
SOMB	COMB	
DOURN	TOURN	
TUCH	OUCH	
SKRAIN	SPRAIN	
BREAF	BREAD	
HURP	HURL	
<i>Number of correct =</i>		
<i>At least 9 correct?</i>		

GREY ARE PRACTICE WORDS DON'T COUNT

Check if get it right

Leave blank if not right

If form of word write it

PRATICE TNT

PARTICIPANT # _____

TUCH	OUCH	
SKRAIN	SPRAIN	
BREAF	BREAD	
HURP	HURL	

GROUP # 2a

THINK-NO-THINK

Recall	BLAY	BLAY	
	BLIED	BLIED	
	DELTH	DELTH	
	DROST	GHOST	
	FIED	DIED	
	FLAIN	SLAIN	
	PRAB	CRAB	
	PROWN	FROWN	
Suppress	RILL	FILL	
	DOMB	DOMB	
	DRAVE	DRAVE	
	SKALL	SKALL	
	GEAD	DEAD	
	JIE	DIE	
	TRIEF	GRIEF	
	SHOKE	SPOKE	
SOMB	COMB		
DOURN	TOURN		

Check if recalled right-hand member correctly for recall word pairs.
 Make an x if recalled right-hand member for suppression word pairs.

PARTICIPANT # _____

GROUP # 2a _____

SUPPRESSION TEST

BLAY	BLAY	
BLIED	BLIED	
DELTH	DELTH	
DROST	GHOST	
FIED	DIED	
FLAIN	SLAIN	
PRAB	CRAB	
PROWN	FROWN	
RILL	FILL	
DOMB	DOMB	
DRAVE	DRAVE	
SKALL	SKALL	
GEAD	DEAD	
JIE	DIE	
TRIEF	GRIEF	
SHOKE	SPOKE	
SOMB	COMB	
DOURN	TOURN	

RECOGNITION TASK

DID SEE		DID NOT SEE	
GHOST		STAB	
DIED		DROWN	
SLAIN		KILL	
DEAD		CHOKE	
DIE		BOMB	
GRIEF		MOURN	
CRAB		CLAY	
FROWN		BLEND	
FILL		DEPTH	
SPOKE		WOMB	
COMB		CRAVE	
TOURN		SKILL	
BLAY			
BLIED			
DELTH			
DOMB			
DRAVE			
SKALL			

Check if participant said yes to seeing this word within the experiment

Appendix I

Code Sheets for Groups Five and Six

TEST FEEDBACKS

PARTICIPANT # _____

GROUP # 3a

1

BLAY	CLAY	
BLIED	BLEND	
DELTH	DEPTH	
DOMB	WOMB	
DRAVE	CRAVE	
SKALL	SKILL	
DROST	DROST	
FIED	FIED	
FLAIN	FLAIN	
GEAD	GEAD	
JIE	JIE	
TRIEF	TRIEF	
PRAB	STAB	
PROWN	DROWN	
RILL	KILL	
SHOKE	CHOKE	
SOMB	BOMB	
DOURN	MOURN	
TUCH	OUCH	
SKRAIN	SPRAIN	
BREAF	BREAD	
HURP	HURL	
<i>Number of correct =</i>		
<i>At least 9 correct?</i>		

2

BLAY	CLAY	
BLIED	BLEND	
DELTH	DEPTH	
DOMB	WOMB	
DRAVE	CRAVE	
SKALL	SKILL	
DROST	DROST	
FIED	FIED	
FLAIN	FLAIN	
GEAD	GEAD	
JIE	JIE	
TRIEF	TRIEF	
PRAB	STAB	
PROWN	DROWN	
RILL	KILL	
SHOKE	CHOKE	
SOMB	BOMB	
DOURN	MOURN	
TUCH	OUCH	
SKRAIN	SPRAIN	
BREAF	BREAD	
HURP	HURL	
<i>Number of correct =</i>		
<i>At least 9 correct?</i>		

GREY ARE PRACTICE WORDS DON'T COUNT

Check if get it right

Leave blank if not right

If form of word write it

PRATICE TNT

PARTICIPANT # _____

TUCH	OUCH	
SKRAIN	SPRAIN	
BREAF	BREAD	
HURP	HURL	

GROUP # 3a

THINK-NO-THINK

Recall	BLAY	CLAY	
	BLIED	BLEND	
	DELTH	DEPTH	
	DROST	DROST	
	FIED	FIED	
	FLAIN	FLAIN	
	PRAB	STAB	
	PROWN	DROWN	
	RILL	KILL	
	Suppress	DOMB	WOMB
DRAVE		CRAVE	
SKALL		SKILL	
GEAD		GEAD	
JIE		JIE	
TRIEF		TRIEF	
SHOKE		CHOKE	
SOMB		BOMB	
DOURN		MOURN	

Circle r for recall and s for suppression. This indicates if that half was recalled or suppressed.
 Check if recalled right-hand member correctly for recall word pairs.
 Make an x if recalled right-hand member for suppression word pairs.

PARTICIPANT # _____

GROUP # 3a

SUPPRESSION TEST

BLAY	CLAY	
BLIED	BLEND	
DELTH	DEPTH	
DROST	DROST	
FIED	FIED	
FLAIN	FLAIN	
PRAB	STAB	
PROWN	DROWN	
RILL	KILL	
DOMB	WOMB	
DRAVE	CRAVE	
SKALL	SKILL	
GEAD	GEAD	
JIE	JIE	
TRIEF	TRIEF	
SHOKE	CHOKE	
SOMB	BOMB	
DOURN	MOURN	

RECOGNITION TASK

DID SEE		DID NOT SEE	
STAB		SLAY	
DROWN		BLEED	
KILL		DEATH	
CHOKE		TOMB	
BOMB		GRAVE	
MOURN		SKULL	
CLAY		FROST	
BLEND		LIED	
DEPTH		DRAIN	
WOMB		READ	
CRAVE		LIE	
SKILL		BRIEF	
DROST			
FIED			
FLAIN			
GEAD			
JIE			
TRIEF			

Check if participant said yes to seeing this word within the experiment

Appendix J
Questionnaire

PARTICIPANT # _____

Please circle the number that corresponds with your answer to the statement or question.

When I saw the red Hint word, I quickly checked to see if I remembered the response word.

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

After a red Hint word went off the screen, I checked to see if I still remembered the response word.

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

When I saw a red Hint word, I thought about the response that went with it to improve my memory for that word pair.

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Very Frequently

How difficult was it for you to try to not think of the word that went with the “Red” hint word?

1	2	3	4	5
Not at all Difficult	Some What Difficult			Difficult

How recently have you experienced the death of someone you knew?

1	2	3	4	5
0-3 Months	4-6 Months	7-9 Months	10-12 Months	1 Year or More

Referring to the previous question, how close was the person to you.

1	2	3	4	5
Did Not Know	Acquaintance	Friend	Family Member	Loved One

Appendix K

Restructured suppressors only.sav [DataSet1] - SPSS Statistics Data Editor

	Name	Type	Width	Decimals	Label	Values	Missing	
1	PartNum	Numeric	10	0	The participants identification number.	None	None	6
2	Gender	Numeric	6	0	The gender of the participant.	{0, Male}...	None	5
3	Group	Numeric	8	2	group number	None	None	4
4	DeathSup0	Numeric	8	2	DeathNum Suppressed	None	None	7
5	NeutralSup1	Numeric	8	2	NeutralNum Suppressed	None	None	8
6	ControlSup2	Numeric	8	2	ControlNum Suppressed	None	None	8
7	DeathConf0	Numeric	8	2	DConfidence Sum	None	None	7
8	NtrlConf1	Numeric	8	2	NConfidence Sum	None	None	6
9	CtlCon2	Numeric	8	2	CConfidence Sum	None	None	5
10	Total_Supp	Numeric	8	2	Total number of word pairs out of nine suppressed	None	None	7
11	Total_Recal	Numeric	8	2	Total number of word pairs out of nine recalled	None	None	8
12	filter_\$	Numeric	1	0	Total_Supp > 0 (FILTER)	{0, Not Selected}...	None	10

Restructured suppressors only.sav [DataSet1] - SPSS Statistics Data Editor

	Decimals	Label	Values	Missing	Columns	Align	Measure
1	0	The participants identification number.	None	None	6	Right	Nom...
2	0	The gender of the participant.	{0, Male}...	None	5	Right	Nom...
3	2	group number	None	None	4	Right	Scale
4	2	DeathNum Suppressed	None	None	7	Right	Scale
5	2	NeutralNum Suppressed	None	None	8	Right	Scale
6	2	ControlNum Suppressed	None	None	8	Right	Scale
7	2	DConfidence Sum	None	None	7	Right	Scale
8	2	NConfidence Sum	None	None	6	Right	Scale
9	2	CConfidence Sum	None	None	5	Right	Scale
10	2	Total number of word pairs out of nine suppressed	None	None	7	Right	Scale
11	2	Total number of word pairs out of nine recalled	None	None	8	Right	Scale
12	0	Total_Supp > 0 (FILTER)	{0, Not Selected}...	None	10	...	Scale

Appendix L

Restructured suppressors only.sav [DataSet1] - SPSS Statistics Data Editor

File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help

Visible: 12 of 12 Variables

	PartNum	Gender	Group	DeathSup	NeutralSup	ControlSup	DeathConf	NtrlConf	CtlConf	TotalSupp	TotalRecall	filter_\$
1	1	1	1.00	0.00	0.00	1.00	0.00	0.00	3.00	1.00	9.00	1
2	2	0	2.00	0.00	0.00	2.00	0.00	0.00	4.00	2.00	9.00	1
3	10	1	4.00	0.00	1.00	2.00	0.00	3.00	5.00	3.00	9.00	1
4	11	1	5.00	0.00	2.00	1.00	0.00	2.00	3.00	3.00	9.00	1
5	13	1	1.00	1.00	1.00	1.00	1.00	2.00	2.00	3.00	8.00	1
6	15	0	2.00	0.00	0.00	1.00	0.00	0.00	3.00	1.00	9.00	1
7	16	1	4.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	8.00	1
8	17	1	5.00	1.00	1.00	0.00	3.00	1.00	0.00	2.00	9.00	1
9	18	1	6.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	9.00	1
10	20	0	2.00	2.00	1.00	0.00	2.00	3.00	0.00	3.00	8.00	1
11	21	0	3.00	2.00	0.00	1.00	4.00	0.00	3.00	3.00	9.00	1
12	22	1	4.00	1.00	0.00	2.00	1.00	0.00	4.00	3.00	9.00	1
13	24	1	6.00	1.00	0.00	0.00	2.00	0.00	0.00	1.00	9.00	1
14	25	1	1.00	0.00	1.00	1.00	0.00	1.00	3.00	2.00	9.00	1
15	26	0	2.00	0.00	0.00	1.00	0.00	0.00	2.00	1.00	9.00	1
16	27	1	3.00	0.00	1.00	1.00	0.00	1.00	2.00	2.00	9.00	1
17	29	1	5.00	1.00	0.00	0.00	3.00	0.00	0.00	1.00	9.00	1
18	30	0	6.00	1.00	1.00	1.00	2.00	2.00	2.00	3.00	8.00	1
19	31	1	1.00	0.00	2.00	0.00	0.00	5.00	0.00	2.00	9.00	1

Data View Variable View

SPSS Statistics Processor is ready

Restructured suppressors only.sav [DataSet1] - SPSS Statistics Data Editor

File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help

Visible: 12 of 12 Variables

	PartNum	Gender	Group	DeathSup	NeutralSup	ControlSup	DeathConf	NtrlConf	CtlConf	TotalSupp	TotalRecall	filter_\$
19	31	1	1.00	0.00	2.00	0.00	0.00	5.00	0.00	2.00	9.00	1
20	32	1	2.00	0.00	1.00	0.00	0.00	3.00	0.00	1.00	7.00	1
21	34	1	4.00	0.00	1.00	1.00	0.00	3.00	2.00	2.00	8.00	1
22	35	1	5.00	1.00	0.00	0.00	3.00	0.00	0.00	1.00	9.00	1
23	36	0	6.00	1.00	0.00	0.00	2.00	0.00	0.00	1.00	9.00	1
24	37	1	1.00	0.00	1.00	2.00	0.00	3.00	5.00	3.00	9.00	1
25	38	1	2.00	2.00	2.00	2.00	2.00	4.00	4.00	6.00	9.00	1
26	39	1	3.00	0.00	1.00	0.00	0.00	2.00	0.00	1.00	9.00	1
27	40	1	4.00	0.00	0.00	2.00	0.00	0.00	3.00	2.00	8.00	1
28	41	1	5.00	1.00	1.00	0.00	3.00	3.00	0.00	2.00	9.00	1
29	43	1	1.00	0.00	0.00	1.00	0.00	0.00	2.00	1.00	9.00	1
30	45	0	3.00	0.00	0.00	1.00	0.00	0.00	2.00	1.00	9.00	1
31	46	1	4.00	0.00	1.00	0.00	0.00	2.00	0.00	1.00	9.00	1
32	47	1	5.00	0.00	2.00	2.00	0.00	4.00	2.00	4.00	9.00	1
33	48	1	6.00	0.00	1.00	3.00	0.00	2.00	8.00	4.00	9.00	1
34	49	1	1.00	0.00	1.00	0.00	0.00	2.00	0.00	1.00	9.00	1
35	50	1	2.00	3.00	2.00	3.00	7.00	4.00	8.00	8.00	9.00	1
36	51	0	3.00	1.00	1.00	1.00	1.00	2.00	2.00	3.00	9.00	1
37	52	1	4.00	1.00	0.00	0.00	2.00	0.00	0.00	1.00	8.00	1

Data View Variable View

SPSS Statistics Processor is ready

Restructured suppressors only.sav [DataSet1] - SPSS Statistics Data Editor

File Edit View Data Transform Analyze Graphs Utilities Add-ons Window Help

41 : ControlSup Visible: 12 of 12 Variables

	PartNum	Gender	Group	DeathSup	NeutralSup	ControlSup	DeathConf	NtrlConf	CtlConf	TotalSupp	TotalRecall	filter_\$
37	52	1	4.00	1.00	0.00	0.00	2.00	0.00	0.00	1.00	8.00	1
38	53	0	5.00	1.00	1.00	0.00	2.00	3.00	0.00	2.00	9.00	1
39	54	1	6.00	2.00	1.00	2.00	5.00	2.00	5.00	5.00	9.00	1
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55

Data View Variable View

SPSS Statistics Processor is ready

Appendix M

Table M1

Suppression Targets

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	28.318 ^a	9	.001
Likelihood Ratio	16.085	9	.065
Linear-by-Linear Association	.181	1	.670
N of Valid Cases	39		

a. 13 cells (81.3%) have expected count less than 5. The minimum expected count is .05.

Table M2

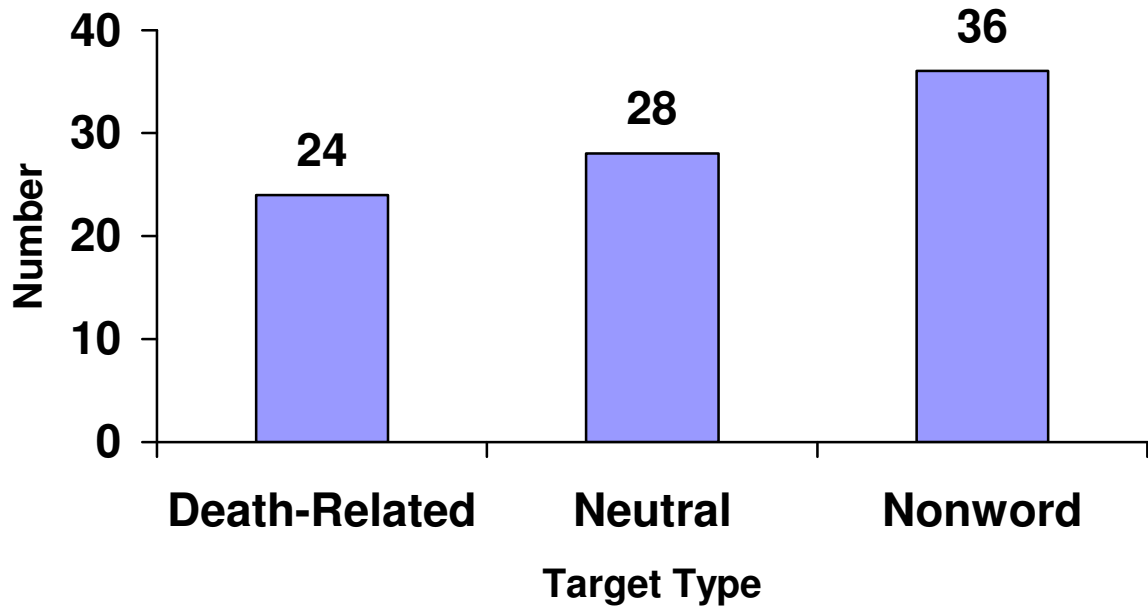
Suppression Confidence

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	54.538 ^a	36	.024
Likelihood Ratio	36.636	36	.439
Linear-by-Linear Association	.715	1	.398
N of Valid Cases	39		

a. 48 cells (98.0%) have expected count less than 5. The minimum expected count is .03.

Appendix N

Suppressed Targets



Appendix O

Suppression Confidence

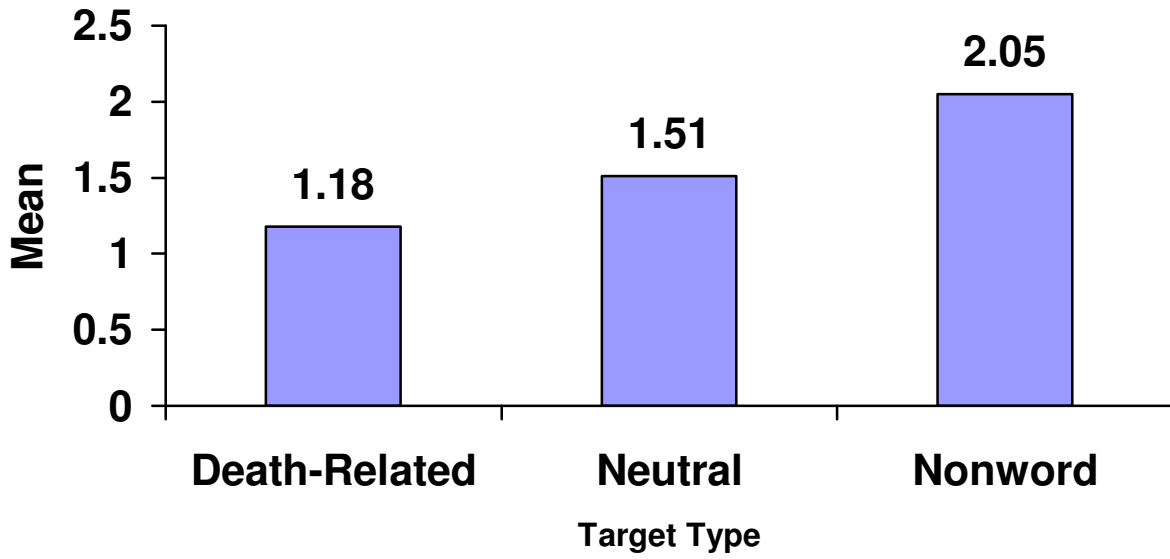


Figure Caption

Figure 1. Bar graph of number of prime-target pairs successfully suppressed for each target type (e.g., death-related, neutral, nonword).

Figure 2. Bar graph of mean suppression confidence for prime-target pairs for each target type (e.g., death-related, neutral, nonword).