

1 Running Head: PHYSICAL ENCLOSURE AND PSYCHOLOGICAL CLOSURE

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8 Sealing the Emotions Genie: The Effects of Physical Enclosure on Psychological Closure

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1 Abstract

2 This research investigates whether the physical act of enclosing an emotionally laden stimulus
3 can help alleviate the associated negative emotions. Four experiments found support for this
4 claim. Using recalled negative experiences such as regretted past-decisions and unsatisfied
5 strong desires, we showed in Experiments 1A and 1B that emotional negativity was reduced for
6 participants who placed a written recollection of such experiences inside an envelope. However,
7 enclosing a stimulus unrelated to the emotional experience did not have the same effect
8 (Experiment 2). In Experiment 3, we showed that the effect were not driven by participants
9 simply doing something extra with the materials, and that the effect of physical enclosure was
10 mediated by the psychological closure that participants felt towards the event.
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1 Negative emotions are shapeless and difficult to control, and are regarded as adversaries to
2 the self. Despite our wish to feel happy and positive, negative emotions – triggered by the
3 memory of experiences – often come back to haunt us. Researchers have found a positive link
4 between the intensity of an emotional reaction and the accessible emotional details of the
5 experience (Beike, Adams, & Wirth-Beaumont, 2007; Beike & Wirth-Beaumont, 2005).
6 Psychological closure in relation to memory has been conceptually linked to a subjective state of
7 having less access to emotional details. The greater the closure that an individual achieves
8 psychologically, the less intensely the individual feels toward an event. Yet how can distractions
9 caused by intrusive memories of negative experiences be minimized?

10 Memory researchers investigating the concept of cognitive inhibition have found that an
11 explicit instruction to inhibit an unwanted thought may actually increase the accessibility (and
12 hence recall) of the concept (Wegner, Schneider, Carter III, & White, 1987). Similarly, the
13 literature on emotion regulation suggests that efforts to intentionally suppress negative emotional
14 reactions can backfire (Gross, 1998; Wegner, Erber, & Zanakos, 1993). However, instead of
15 deliberately trying to forget, people often seek remedy by physically locking things up. For
16 instance, a self-help website on how to deal with broken relationships advises readers to “put
17 everything that reminds you of your ex in a box and seal it...” (Pant, 2007). Do these behavioral
18 strategies to put physical enclosure on emotion-laden objects work? Or will they backfire, just as
19 when emotions are deliberately hidden or suppressed?

20 Our hypothesis, which stems from recent research on embodied cognition and metaphorical
21 thinking, is that the physical enclosure of emotionally laden items helps people attain
22 psychological closure over emotional experiences. There is growing evidence that physical
23 experience and cognitive processes overlap (Boroditsky & Ramscar, 2002; Wilson, 2002). On

1 the one hand, the mind employs abstract concepts to register the movements of the body. On the
2 other hand, because of their direct and concrete nature, bodily movements and the resulting
3 sensory-motor experiences are used by the human mind to understand abstract concepts
4 (Boroditsky & Ramscar, 2002; Lakoff & Johnson, 1980; Niedenthal, 2007; Niedenthal,
5 Winkielman, Mondillon, & Vermeulen, 2009; Zhong & Leonardelli, 2008; Zhong & Liljenquist,
6 2006).

7 More relevant to the current discussion is the overlap between psychological states and
8 physical experience found in metaphors used in everyday language about emotions (Johnson,
9 2007; Lakoff & Johnson, 1980). Emotional events are commonly described as concrete objects
10 that can be manipulated and the control or suppression of emotions often corresponds with a
11 process of physically containing an object. For instance, anger is bottled up, anxieties are kept
12 inside, and sorrows are buried. These metaphors suggest that referring to physical acts, such as
13 putting things in a container, may help people to understand abstract processes of emotion
14 regulation. Seeing emotion- laden items enveloped may provide psychological relief or a sense
15 of taking emotions under control. The perception of a physical enclosure over the emotional item
16 may help people attain a temporary psychological closure.

17 We therefore hypothesize that physically enclosing an object associated with a negative
18 emotion provides at least temporary psychological closure, which makes people feel less
19 negative. We report the results of four experiments which showed that the act of sealing an
20 emotionally laden object into an envelope could relieve the related negative emotions.

21 EXPERIMENT 1A

22 Experiment 1A was conducted in a laboratory setting. Eighty students (47 females, 22 in
23 control condition, typically aged between 18 and 24) recruited from the subject pool of a large

1 Asian university were assigned to one of two conditions. In both conditions, participants were
2 first asked to recall a recent decision that they regretted. In the “Envelope” condition ($N = 40$),
3 participants were instructed to place the written recollection of the event into an envelope before
4 handing it back to the experimenter. In the control condition ($N = 40$), participants were simply
5 asked to return the questionnaires. In both conditions, a second questionnaire was then handed
6 out in which participants were asked to indicate how they felt at that moment about the event
7 they recalled. Five discrete negative emotions were measured: regretful, guilty, sad, worried, and
8 ashamed; all were anchored by 1 = not at all and 5 = extremely.

9 Responses to the five emotions were averaged ($\alpha = .80$) to indicate how negatively
10 participants felt about the event at the moment that the measurement was taken. An ANOVA test
11 suggested that the treatment effect was not qualified by gender ($F(1, 76) = .019, p = .89$), so
12 gender was not included in further analysis. As we predicted, participants who sealed a
13 recollection in the envelope felt less negative ($M = 1.94, SD = .81$) about the event than those
14 who just handed back the questionnaires ($M = 2.40, SD = 1.00, t(1, 78) = 2.24, p < .05, \eta^2 = .06$).
15 Thus, participants who enclosed their written recollection got their negative emotional state
16 alleviated.

17 EXPERIMENT 1B

18 Experiment 1B aimed to replicate the findings of Experiment 1A using a different kind of
19 emotional experience. Forty female college students were recruited in their own dormitories,
20 where they completed the study. In the first survey all participants were given 10 minutes to
21 write about a strong personal desire that had not been satisfied. Next, half of them were given an
22 envelope to put the completed task into before they handed it in, and the other half simply
23 handed back the survey to the experimenter. Finally, all participants were given the second

1 survey where they indicated how the recalled event made them feel. In addition to the four
 2 emotions pretested to be affected by the recall (i.e., anxious, disappointed, sad, and unsatisfied,
 3 anchored by 1 = not at all to 5 = extremely, $\alpha = .88$), we included two items that have been
 4 shown to be associated with the psychological state of “not gaining closure”, disruptive and
 5 unsettling (Beike & Wirth-Beaumont, 2005). Participants who enclosed their questionnaires in
 6 envelopes felt much less negative on the average scores of the four emotions ($M = 2.25$, $SD =$
 7 $.91$) than the control group ($M = 3.38$, $SD = 1.16$; $t(38) = 3.40$, $p < .01$, $\eta^2 = .23$). In addition, in
 8 terms of mental disturbance caused by not achieving psychological closure, participants who
 9 enclosed the recollection also felt less disruptive and unsettling (on average $M = 1.90$, $SD = .79$)
 10 than their counterpart ($M = 2.65$, $SD = .95$, $t(38) = 2.72$, $p = .01$, $\eta^2 = .16$). Moreover, the effect of
 11 physical enclosure on the emotions was mediated by mental disturbance, measured as the
 12 average of disruptive and unsettling (Sobel Test = 2.75, $p < .01$). This suggested that physical
 13 enclosure soothed the participants’ emotions by helping them attain psychological closure.

14 EXPERIMENT 2

15 The first set of two experiments demonstrated that the act of placing the emotionally laden
 16 material into the envelope helped relieve negative emotions. However, it remained unclear
 17 whether this was due to the act of enclosing in general (regardless of what was enclosed) or the
 18 specific act of enclosing the stimulus associated with the negative emotion. We explored this
 19 issue in Experiment 2.

20 Eighty college students (55 females) from a large Asian university participated in this
 21 experiment. In all three conditions, participants completed three tasks in the same sequence. The
 22 first task was “news comprehension”, in which participants were asked to read a recent news
 23 story on a baby’s tragic death and then answer two questions that measured their focus when

1 they read the story. The second task included questions unrelated to the news story such as what
2 participants planned to do over the weekend. In the third task, participants were asked to report
3 how the story made them feel with respect to three discrete emotions (sad, shocked, and angry, α
4 = .90) on 9-point scales (1, not at all, to 9, extremely). They then completed a set of true-or-false
5 questions as a surprise test of their memory of the news.

6 In all conditions, after each task was done, the completed surveys would be collected from
7 participants' desk before the next survey was distributed. Participants in the "Enclosing Related"
8 condition were given an envelope after completing the first task and instructed to enclose the
9 news story in the envelope. In the "Enclosing Unrelated" condition, participants were also given
10 an envelope but only after they completed the second task. It was for them to enclose the second
11 questionnaire. For these participants, the material being enclosed was unrelated to the emotion
12 induced by the stimulus. In the control condition, no envelope was involved.

13 We measured both the emotional responses and the recall performance to test the effects of
14 physical enclosure. The three discrete and relevant emotional states (sad, shocked, and angry)
15 were averaged to indicate how negative the story made participants feel. The results from linear
16 contrasts (2, -1, -1) showed that after placing the emotionally laden materials in the envelope (N
17 = 27, $M = 2.90$, $SD = 1.86$), the participants felt significantly less negative than those in the other
18 two conditions ($F(1, 77) = 5.39$, $p < .05$, $\eta^2 = .07$). However, there was no reliable difference
19 between the reported emotional states of the control condition and the "Enclose Unrelated"
20 condition ($M_{\text{control}} = 4.28$, $SD = 2.36$, $N = 19$; $M_{\text{unrelated}} = 4.10$, $SD = 2.63$, $N = 34$; $F(1, 77) = .32$, p
21 $> .80$). Further comparisons showed that placing the emotionally laden materials in an envelope
22 led to a marginally significant reduction in negative emotions compared to both the control
23 condition ($F(1, 77) = 3.90$, $p = .052$, $\eta^2 = .05$) and the "Enclose Unrelated" condition ($F(1, 77) =$

1 4.01, $p < .05$, $\eta^2 = .05$).

2 Moreover, past research on psychological closure has shown that memories containing less
3 emotional detail suggest better closure over an event (Beike & Wirth-Beaumont, 2005). We
4 tested participants' memories of the emotional details of the news story in seven (4 true) true-or-
5 false questions all pertaining to the information that could elicit the measured emotions (e.g.,
6 Baby P received a fatal blow to his mouth, knocking two teeth out). Supporting our prediction,
7 the "Enclose Related" group (hit rate = .76, $SD = .22$) who physically sealed the story did much
8 worse than the other two groups (hit rates = .85, $SD = .14$ and .86 $SD = .15$ for the "Enclose
9 Unrelated" group and the control group respectively, both $F(1, 77)s > 4.40$, $ps < .05$, $\eta^2 > .05$).

10 EXPERIMENT 3

11 Experiment 3 was conducted to show that the earlier results were specifically due to
12 enclosing the unpleasant materials rather than simply doing anything extra to the materials (e.g.,
13 stapling or organizing the materials). In addition, we used the psychological closure scales to
14 directly test our proposition that physical enclosure brought mental closure.

15 Similar to Experiment 1A, Experiment 3 required participants (47 in total, 20 females) to
16 recall an event about which they felt regretful. After the recollection task, they reported how
17 clear and detailed their memory about the event was (anchored by 1 = not at all, and 7 =
18 extremely). In the enclosing condition, participants were asked to place the recollection task and
19 the survey on memory clarity in an envelope before returning them to the experimenter. In the
20 control condition, participants used paper clips to attach the two surveys together before the
21 experimenter collected them. In the third survey, participants then reported how they felt about
22 the event they just recalled. Following past literature on regretful events, the intensity of two
23 discrete emotions, namely, regretful and disappointed (Beike & Crone, 2008), were measured,

1 both anchored by 1, not at all, and 5, extremely. On the next page, we also measured the degree
2 of psychological closure participants felt towards the event on three items (e.g., “I have put the
3 event behind me completely”, $\alpha = .86$) adapted from Beike et al. (2007). The scales were
4 anchored at 1, strongly agree, and 7, strongly disagree.

5 Results revealed that before the manipulation, participants’ event memories did not differ in
6 terms of clarity and detail (on average, $M = 5.48$, $SD = .92$ vs. $M = 5.52$, $SD = 1.03$ for the paper
7 clip and the enclosing conditions respectively, $t(45) = .15$, $p > .88$). However, after the key
8 manipulation, the physical process of enclosing made people feel less negative on the two
9 discrete emotions (on average, $M = 2.90$, $N = 24$, $SD = 1.18$) than simply clipping the pages ($M =$
10 3.78 , $N = 23$, $SD = .95$, $t(45) = 2.83$, $p < .01$, $\eta^2 = .15$). Moreover, the enclosing group also
11 reported greater psychological closure over the event they recalled ($M = 4.22$, $SD = 1.50$) than
12 the paper clip group ($M = 3.16$, $SD = 1.47$, $t(45) = 2.45$, $p < .05$, $\eta^2 = .12$). Regression analyses
13 showed that felt closure over the recalled event was a predictor of emotional intensity ($t(45) =$
14 3.92 , $p < .01$), and the psychological closure mediated the effect physical enclosure had on the
15 intensity of the participants’ feelings (Sobel test = 1.95, $p = .05$).

16 GENERAL DISCUSSION

17 In four experiments, we showed that the simple act of enclosing related materials in an
18 envelope made participants feel less negative about emotional events (Experiments 1A and 1B).
19 Experiment 2 found that enclosing unrelated material did not have the same effect of soothing
20 negative emotions as enclosing emotion-laden material. In Experiment 3, we showed that simply
21 doing something extra could not explain the effect of physical closure on negative emotion, and
22 the effect of physical enclosure was mediated by the psychological closure that participants felt
23 towards the event. Although they were all negative, the stimuli used in each experiment invoked

1 different kinds of emotional response.

2 It is known that the body is closely tied to the processing of emotional information
3 (Niedenthal et al., 2009). Therefore, it is reasonable to expect that bodily experience may play a
4 pivotal role in soothing emotions. Our results show that the processes of alleviating negative
5 emotions can be facilitated by physically sealing emotionally laden materials. The experiments
6 demonstrate that abstract mental states such as psychological closure over an event appear to rely
7 on the sensory-motor experiences brought about by the simple act of enclosing. Moreover, we
8 show that the metaphorical act of enclosing and sealing influences the memory, in the sense that
9 the recollection of the emotional details of an event becomes weaker. This seems to suggest that
10 physical experiences interfere with cognitive entities such as memory and retrieval. Finally, the
11 experiments provide scientific evidence of the effectiveness of metaphor therapy for emotional
12 healing (Hypknowsis.com). A recommendable way to relieve distress maybe for the distressed
13 person to seal an object related to their emotions in a package.

14 However, many questions remain to be answered by future research. For instance, it is not
15 clear whether people need to actually go through the process of “physical enclosure” to attain the
16 effect of psychological closure. It is also likely that merely observing others doing the enclosing
17 for them is sufficient to sooth their emotions. Future study is required to determine whether the
18 activity itself or its consequence (i.e., the emotionally laden item being sealed up) is essential for
19 mitigation of negative emotions. In addition, we did not explicitly instruct participants in this
20 study to try to gain closure over the negative events. In theory or in self-help practice, people
21 may do so consciously. Once the enclosing becomes a conscious effort, it may become less
22 effective in creating closure due to the ironic consequence of cognitive suppression (Wegner et
23 al., 1987). However, the placebo effect could lead to a more robust result. Which of the two

- 1 effects will dominate in the physical enclosure process with the conscious intention to forget
- 2 merits further investigation.
- 3

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