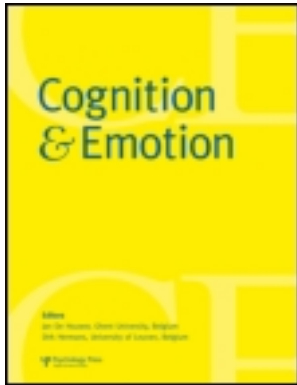


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### Level of processing modulates benefits of writing about stressful events: Comparing generic and specific recall

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# Level of processing modulates benefits of writing about stressful events: Comparing generic and specific recall

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Writing about emotional experiences has been shown to improve physical and psychological health (Frattaroli, 2006). The current study aimed to assess whether manipulating the level of information processing during disclosure impacted on psychological variables in individuals with high posttraumatic stress. Fifty-four participants were assigned to one of three conditions: (1) writing about the specific details of a stressful experience; (2) writing about generic information associated with a stressful event such as intrusive thoughts; or (3) writing about a neutral topic. They wrote on the given topic for three consecutive days for 20 minutes each day. Results showed that specifying a stressful event resulted in less distress during subsequent writing sessions, aided participants in making sense of the event, and helped them to feel less anger when thinking about the event.

*Keywords:* Written disclosure; Emotion regulation; Specificity; Stressful event; Level of processing.

Since the mid 1980s, a wealth of studies has examined the effects of written emotional disclosure on psychological and physical health (Frattaroli, 2006). Most researchers use the paradigm designed by Pennebaker and Beall (1986), which invites participants to write either emotionally about an upsetting topic or unemotionally about a neutral topic for at least three sessions of 15–20 minutes each. A meta-analysis that included 146 relevant studies (Frattaroli, 2006) demonstrated this procedure to have an overall beneficial effect on physical and mental health.

However, Frattaroli (2006) qualified her conclusions by adding that disclosure is not beneficial for all people in all situations, but is particularly helpful in the following conditions: (a) for

participants with health problems or with a history of trauma or severe stressors; (b) for participants who disclose at home in a private setting; (c) when participants write about recent events; (d) when they choose personal events that have been previously undisclosed; (e) when there are at least three sessions of minimum 15 minutes each; and (f) when the questions used to guide the writing are specific and directed. Additionally, disclosure has not been found to positively impact on all measures of psychological health (Frattaroli, 2006). Compared to participants who wrote about neutral topics, those who disclosed about traumatic or stressful experiences felt less depression, anxiety, and anger, and showed a more positive overall functioning when the follow-up was less

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than one month after the task. In contrast, experimental disclosure did not affect measures related to grief, stress, coping strategies, cognitive schemas, eating-disorder-related problems, or dissociative experiences.

Several theories have been proposed regarding the mechanisms underlying the benefits of written emotional disclosure. The following four non-mutually-exclusive theories will be discussed in this paper: the disinhibition theory, the cognitive-processing theory, the self-efficacy theory, and the exposure theory.

A popular explanation of the beneficial impact of disclosure lies in the idea that emotional inhibition leads to psychological distress and physical problems (e.g., Lepore & Smyth, 2002; Pennebaker, 1989). According to Pennebaker (1989), disclosing feelings that were previously inhibited reduces stress, which results in better immune functioning, and consequently improves physical health. However, this theory has received little support. The meta-analysis of Frattaroli (2006) indicated that measures of stress did not significantly improve after experimental disclosure and that individuals with emotionally inhibited personality (e.g., alexithymia) did not benefit more from disclosure than other individuals who usually express their emotions.

A second explanation of the positive impact of written disclosure relates to the cognitive changes provided by the task. According to cognitive theories, writing about traumatic or stressful experiences and associated feelings helps to make sense of the event, to organise and to integrate it into self and world schemata, which in turn facilitates the cognitive assimilation of the event (e.g., Horowitz, 1986; Pennebaker, 1993; Smyth, True, & Souto, 2001). Pennebaker (1993) observed a positive correlation between the number of causation words (e.g., because, effect, etc.) or insight words (e.g., know, consider, etc.) during writing sessions and the beneficial outcome of disclosure. However, other studies failed to replicate this result (e.g., Batten, Follette, Rasmussen, & Palm, 2002; Walker, Nail, & Croyle, 1999). Several studies experimentally examined the direct impact of different types of cognitive-processing

instructions on health. Thus, Smyth and colleagues (2001) compared three procedures of disclosure: writing about a traumatic event in a narrative way, writing about such an event in a fragmented way, or writing about a trivial topic. Results showed that writing about a trauma in a narrative fashion resulted in less illness-related restriction of activity at follow-up compared to the two other conditions. More recently, Sloan and colleagues (Sloan, Marx, Epstein, & Lexington, 2007) indicated that encouraging emotional expression during disclosure led to better outcome than emphasising insight and cognitive assimilation. In sum, studies that examined predictions of cognitive theory showed mixed results, partly due to differences in the manipulation of cognitive processes.

Third, it has been hypothesised that disclosure helps individuals to develop or improve their sense of self-efficacy to regulate their emotions, allowing them to perform a mastery experience (e.g., King, 2002; Lepore, Greenberg, Bruno, & Smyth, 2002). No studies directly assessed the impact of disclosure on self-efficacy measures. However, according to Frattaroli (2006), the hypothesis finds some support in results demonstrating that disclosing about positive events or about benefits of traumatic events had a similar positive impact as disclosing about negative aspects associated with an emotional event.

A final hypothesis considers that written emotional disclosure is a form of emotional exposure. According to the emotional processing theory (Foa & Kozak, 1986), an individual who experiences a trauma or a stressful event creates a "fear structure" that includes erroneous information about stimuli, responses, and meanings associated with the event. This theory indicates that the activation of the pathological fear structure is necessary for beneficial emotional processing to occur. Two factors may help emotional processing. First, facilitating the construction of a coherent narrative of the trauma during exposure by helping individuals to remember more details would favour a more complete activation of the fear structure (Foa, Huppert, & Cahill, 2006). Second, the repetitive confrontation in imaginal exposure to the memory

of the traumatic event would lead to habituation, which in turn would modify the pathological fear structure. This last argument is sustained by a meta-analytic finding demonstrating that disclosure procedures with at least three sessions, each lasting for a minimum of 15 minutes, are more effective than procedures with less exposure (Frattaroli, 2006). In addition, Sloan and colleagues (Sloan, Marx, & Epstein, 2005; Sloan et al., 2007) showed that participants who wrote about the same traumatic event during each of the three sessions manifested an initial intense reactivity followed by habituation, and that this pattern of responding was associated with health benefits.

Overall, three hypotheses about the beneficial impact of disclosure have received empirical support: the cognitive-processing theory, the self-efficacy theory, and the exposure theory. However, these hypotheses might be integrated rather than viewed as in competition. They all point to a mode of writing that promotes cognitive changes, increases self-efficacy beliefs, and facilitates emotional processing. In this perspective, a recent distinction in psychopathology research might provide an interesting theoretical framework: Two construal-levels of processing information have been contrasted in the literature: *higher* construals versus *lower* construals (e.g., Freitas, Gollwitzer, & Trope, 2004; Markman & McMullen, 2003; Trope & Liberman, 2003; Watkins, 2008). High-level construals are abstract, general, and decontextualised mental representations that are relatively invariant across different situations, while low-level construals are more concrete, specific, and contain contextualised details of specific events or situations. Researchers have proposed that higher construals are adaptive for unproblematic, familiar, or positive situations, whereas lower construals are more constructive for difficult or novel situations (Watkins, 2008). Consequently, facilitating a low level of processing emotional information in individuals with a history of trauma or stressful events should be therapeutically useful. After describing the experimental studies that evaluate the impact of two similar facets of the construal level of processing (concrete vs. abstract, and specific vs. general/generic), we will explain how this perspective can integrate the

three theories accounting for the beneficial impact of disclosure.

Researchers who experimentally manipulated the construal level of thinking in people with emotional disorders have specifically focused on the *concrete* (i.e., low construal) vs. *abstract* (i.e., high construal) level of thinking. Several authors (e.g., Watkins, 2004; Watkins, Moulds, & Moberly, 2008) have demonstrated that an abstract and analytical self-focus, which consists in thinking about the causes, meanings, and consequences of an emotional situation (i.e., the “why rumination”), is maladaptive and impairs social problem solving (e.g., Watkins & Moulds, 2005). In contrast, a concrete and experiential self-focus (i.e., the “how rumination”), which consists of focusing on one’s experience, has been found to reduce negative global self-judgements (Rimes & Watkins, 2005), improve social problem solving (Watkins & Moulds, 2005), and reduce emotional vulnerability to subsequent failure (Moberly & Watkins, 2006).

Recently, another similar aspect of the construal level of processing emotional information has been considered in the literature, which is the focus of the present study: the *specificity* vs. *generality* mode of processing emotional information (see Philippot, Neumann, & Vrielynck, 2007, for a review). A specific mode of processing information consists of describing the unique aspects of a particular situation with as much specific detail as possible, and thus corresponds to the definition of a low-construal level of thinking. In contrast, generic information refers to features that tend to be repeatedly experienced during a given emotion, that is, information abstracted from repeated similar experiences (i.e., prototypic emotional information; e.g., the type of thoughts I have each time I get upset); it thus corresponds to a high-construal level of thinking. Research has documented that elaborating specific and detailed aspects of episodic emotional information paradoxically reduces distress (e.g., Neumann & Philippot, 2007; Philippot, Baeyens, & Douilliez, 2006; Philippot, Schaefer, & Herbette, 2003; Raes, Hermans, Williams, & Eelen, 2006). More specifically, a recent study (Vrielynck & Philippot,

2009) found that socially anxious participants who re-evoked specific and unique elements of an upsetting social event during imaginal exposure reported less distress than those who recalled typical features of their social fears (e.g., the type of emotion they usually feel when they experience such a stressful situation). In that study, two sessions of imaginal exposure were necessary to observe a significant difference in distress level between conditions. In addition, the recall of specific emotional information further resulted in a decrease in the need to search for meaning about the upsetting event. Furthermore, other studies indicate that recalling a past personal failure with specific details improves the sense of self-efficacy to handle future failures (Van Lede, Galand, Bourgeois, & Philippot, 2009).

In sum, a lower level of processing has been shown to reduce global self-judgements and maladaptive rumination (i.e., the need to search for meaning about an event), which corresponds to important cognitive changes. Second, low construal level has been demonstrated to increase interpersonal problem solving and enhance emotion regulation competence, which should result in heightened self-efficacy. Third, a low level of processing has been shown to activate more coherent and detailed information about one specific event. This type of activation is advocated by proponents of exposure theory as a necessary condition to lead more rapidly to recovery from PTSD, via a more complete emotional processing. Thus, low construal processing (concrete and specific) may constitute a common underlying factor, which facilitates cognitive changes (as suggested by cognitive theories), emotion regulation competence (as considered by self-efficacy theories), and emotional processing (as proposed by exposure theories).

The main objective of the present study was to assess whether manipulating the construal level of processing emotional information during disclosure (unique and episodic vs. generic) impacted on psychological variables in individuals with a high level of traumatic stress. Three procedures of written disclosure were compared: (1) writing about a stressful event detailing its specificity

and episodic features (i.e., the unique episodic procedure; a low-construal-level manipulation); (2) writing about the features (e.g., affects, sensations, thoughts) associated with the stressful event(s) that repeatedly intrude in the victim's life (i.e., the generic procedure; a high-construal-level manipulation); and (3) writing about a trivial non-emotional topic (i.e., the control condition). Following the recommendations of Frattaroli (2006), participants were instructed to choose recent stressful experiences, previously undisclosed (at least partly), and to write at home in a calm room for three 20-minute sessions.

First, we predicted that the unique episodic procedure would elicit less distress than the generic procedure during disclosure at the second and third writing sessions. As observed in Vrielynck and Philippot (2009), the difference in distress level might not appear at the first writing session. Indeed, learning an emotion regulation strategy might not result immediately in performance changes, but only at a follow-up period (Craske et al., 2008). The control procedure should not induce distress, given that participants in this condition write about neutral and non-personal topics. No changes were thus expected in this condition.

Second, we postulated that the unique episodic procedure would reduce the need to search for meaning about the event. The generic procedure might increase the need to search for meaning, as the abstract and general way of processing information prompted in this condition should facilitate an analytical mode of thinking (e.g., Watkins & Moulds, 2005), which corresponds to the tendency to search for meaning about a situation. No changes were thus expected in the control condition.

Third, we predicted that the unique episodic procedure would generate the largest psychological benefits. Results from the meta-analysis of Frattaroli (2006) demonstrated a positive impact of disclosure on anger, depression, and anxiety. These measures are consequently administered before the experiment and at one-week follow-up. It was expected that the control and generic condition would not lead to beneficial psychological benefits.

## METHOD

### Participants and design

All aspects of the procedure complied with American Psychological Association (2005) ethical principles regarding research with human participants. Participants were informed of the objectives and procedure of the study before starting the experiment.

Participants were recruited through advertisements posted on internet discussion forums (about mental health, anxiety, and distressing life events), asking for volunteers for an internet study on writing and well-being. The announcement explicitly targeted individuals who had recently experienced one or several upsetting life events corresponding to several criteria: (a) the life event was experienced in the last five years; (b) the individual does not feel to have recovered from the event; and (c) the life event or some of its features has not been disclosed previously.

One hundred seventy-nine volunteers filled in the Impact of Event Scale (IES; Horowitz, Wilner, & Alvarez, 1979). Individuals with a score above 26 on the IES were invited to participate in the study. Twenty-five participants had a score below 26 and were consequently excluded. Of the 154 individuals contacted, 45 refused to take part in the study and one had to be discarded because of insufficient writing capacity. The remaining 108 participants were randomly assigned to one of three experimental conditions (unique/episodic processing, generic processing, and control). Forty-nine participants dropped out between the completion of pre-test questionnaires and the second writing session (15 in the unique/episodic condition, 16 in the generic one, and 18 in the control group). Reasons for drop-out were: (a) technical problems of the server or the participant's computer or internet connection ( $n = 18$ ); (b) the length of the study ( $n = 8$ ); and emotional distress or frustration with the procedure ( $n = 4$ ). No reasons were given by the remaining 19 participants who dropped out. There was no effect of condition on the number of drop-out,  $\chi^2(2) = 1.10$ , *ns*. In addition, the number of participants who dropped out did not differ from

the number of participants who completed the psychological measures. Four participants were excluded from the statistical analyses (2 in the unique/episodic condition and 2 in the control one); one participant did not follow the writing instructions correctly (probably due to a problem of misunderstanding) and the other three provided inconsistent responses to baseline questionnaires (i.e., they always pressed the same side of the scales).

The final sample consisted of 54 participants (46 women and 8 men), aged between 18 to 63 years ( $M = 34.27$ ,  $SD = 11.21$ ), including 9 students, 29 employed, and 16 non-employed individuals. Nineteen participants were in the unique episodic condition, 20 in the generic condition, and 15 in the control one. The descriptive statistics of participants as a function of condition are reported in Table 1. There were no significant differences among conditions for gender,  $\chi^2(2) = 3.04$ , *ns*, age,  $F(2, 51) = 1.17$ , *ns*, current activity,  $\chi^2(10) = 8.34$ , *ns*, and educational level,  $\chi^2(8) = 9.18$ , *ns*. However, there was a difference among conditions for level of posttraumatic stress (assessed by the IES),  $F(2, 51) = 3.52$ ,  $p < .05$ , with participants of the generic condition reporting more intense posttraumatic stress than controls.

### Self-reported measures

*The Impact of Event Scale (IES; Horowitz et al., 1979)*. This consists of 15 items assessing post-traumatic stress through the frequency of intrusions and avoidance associated with a traumatic or stressful event. Both the intrusion and avoidance IES subscales are reliable (alphas of .79 and .82, respectively), and the total scale evidenced a split-half reliability of .86 (Horowitz et al., 1979). It has been suggested that the cut-off point above which a moderate or severe level of distress following a traumatic/stressful event is 26 (Horowitz et al., 1979). Consequently, we selected only participants with a score of 26 or above on the IES to participate in the study.

*The Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1998)*. This was used to assess the level of depressive symptoms. The BDI-II is a

Table 1. Descriptive statistics as a function of condition

	Unique/episodic <sup>a</sup>		Generic <sup>b</sup>		Neutral <sup>c</sup>	
	<i>n</i>	<i>M (SD)</i>	<i>n</i>	<i>M (SD)</i>	<i>n</i>	<i>M (SD)</i>
Male	1		3		4	
Female	18		17		11	
Students	4		3		2	
Non-employed	6		8		2	
Self-employed	1		3		3	
Managers	4		1		2	
Employed	4		5		6	
Age		33.42 (11.73)		37.15 (12.47)		31.53 (8.19)
Educational level <sup>d</sup>		3.89 (1.24)		3.95 (1.15)		3.67 (1.34)
IES		46.05 (15.95)		51.25 (15.36)		38.13 (10.79)

Notes: <sup>a</sup>*n* = 19; <sup>b</sup>*n* = 20; <sup>c</sup>*n* = 15. <sup>d</sup>The educational level consists of the highest qualification obtained, ranging from 1 (primary school) to 5 (university).

21-item questionnaire with good psychometric properties (Beck et al., 1998). The French version was established by *les Éditions du Centre de Psychologie Appliquée* (1998) and has shown strong reliability and validity properties.

*The General Health Questionnaire (GHQ; Goldberg, 1978; translation into French by Pariente, Challita, Merbah, & Guelfi, 1992).* This is a self-report instrument including four subscales that measure somatic symptoms, anxiety and insomnia, social dysfunction, and severe depression. In this study, the seven items of the 4-point Likert subscale “anxiety and insomnia”, rated from 0 (“less than usual”) to 3 (“much more than usual”), were used to assess psychological distress. The GHQ has shown good psychometric properties (Goldberg & Williams, 1988).

*Search for meaning.* Four items, rated in term of intensity on a 7-point scale anchored from 0 (“not at all”) to 6 (“completely”) addressed the extent to which participants searched for meaning about the stressful event (“to understand why and how”, “to clarify what happened”, “to find words to express”, and “to find the meaning of the event”; Finkenaue & Rimé, 1998). The internal consistency of this scale in this study was acceptable (Cronbach’s  $\alpha$  was .73 at baseline and .70 at one-week post-test).

*The Spielberger Anger Expression Scales (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983; translated into French by Philippot, 1999).* These were used to measure levels of outwardly expressing anger (“anger-out”) and inwardly containing anger (“anger-in”). Reported alpha coefficients for the Anger-In and Anger-Out subscales are .73 and .75, respectively (Spielberger et al., 1985). Each scale consists of 10 statements, such as “I keep my control” or “I express my anger”. In this study, we selected four items for each scale to contain the total number of items within reasonable limits. Participants were instructed to indicate on a scale anchored from 1 (“hardly ever”) to 4 (“almost always”) the extent to which each statement described their general feelings or action when they were thinking about the upsetting event(s) experienced.

*The Subjective Units of Distress Scale (SUDS).* This was used to assess the intensity of distress during writing, on a single 0–100 scale, 0 indicating calm and free from distress and 100 indicating the strongest distress participants recall ever having experienced.

## Procedure

The entire experiment was conducted online through an internet server used to create and complete questionnaires. At each step of the study, internet

links were e-mailed to the participants, inviting them to follow the corresponding instructions.

Before the beginning of the experiment, participants were told that the study was investigating the impact of writing on psychological well-being and that it might increase their knowledge about themselves and their emotions. It was also explained that participation involved typing online at home, 20 minutes a day on three consecutive days, and completing questionnaires the day before the first writing session, and again one week after the last writing session. Immediately afterwards, the volunteers were instructed to fill in the IES and socio-demographic data.

The day before the first writing session, participants were asked to choose upsetting life event(s) corresponding to the inclusion criteria (see participants section), and to complete a packet of questionnaires including the BDI, the scale "Distress" of the GHQ, the Spielberger Anger Expression Scales, and the Search for Meaning scale. Participants were told that they would have to write either about the distressing life event they chose, or about non-personal topics. They were advised to write at home, and to choose moments in the day during which they would not be disturbed. They were then randomly assigned to one of the three conditions. Writing duration was automatically controlled by the server software.

For the unique/episodic condition, participants were instructed to describe as specifically as possible the elements that were particular to the stressful event chosen, i.e., the elements that defined its uniqueness. In other words, participants were instructed to re-evoked with precise details the emotional and factual features of the event as they specifically experienced them during the event. Ten questions guided them to write the narrative of their upsetting event with as many specific details as possible:

1. What emotions did you specifically feel during this event?
2. Could you describe chronologically the different steps of the event?
3. When precisely did the event take place?

4. Could you describe precisely how was the weather outside during the event?
5. Where precisely did the event take place and what was your position in this place?
6. How were objects exactly arranged around you in this place?
7. Who was present during the event? Could you describe their clothes, attitudes, etc.?
8. What did you specifically think in that situation?
9. What bodily sensations did you feel during this event, that confer to that situation its specificity?
10. What reactions, behaviours, etc., did you specifically have during this event?

For the generic condition, participants were instructed to evoke emotional elements associated with their stressful event that they repetitively experience, that is, the prototypical elements of the emotions they feel related to the event(s). They were also guided by ten questions:

1. What emotions do you repetitively feel each time you think about this stressful event?
2. What type of weather is associated with these emotions and elicit thoughts related to the event?
3. What place typically evokes that type of emotion associated with the upsetting event?
4. What type of objects evoke these emotions and thoughts?
5. What characteristics in the landscape elicit that type of emotion?
6. What type of individuals are associated with those emotions?
7. What characteristics in people remind you of the event?
8. What thoughts do you repetitively have in mind related to the upsetting event?
9. What bodily sensations do you experience when you feel that type of emotion associated with the event?
10. What reactions, attitudes, and behaviours do you have when you think of the event?



The guiding questions included in both experimental conditions were effectively used in studies about the emotional impact of the specificity of information processing, described in the introduction (Neumann & Philippot, 2007; Philippot et al., 2006; Vrielynck & Philippot, 2009). Questions were adapted to the context of a highly stressful event.

Finally, control participants were instructed to write about one of five proposed topics linked to current events that were not associated with their personal life. They did not expect any particular benefit from this assignment but were told that they could write about the distressing life event(s) they experienced after the end of the experiment, if they wished. The topics were: (a) benefits of school exchanges; (b) social diversity in school; (c) religious markers in school; (d) strategies to change our habits in order to save energy; (e) impact of the cellular phone “instant messages” on spelling; and (e) impact of the media on children and adolescents. No questions guided their writings.

Just before each writing session, participants were told that their writing was confidential, that they could stop the experiment at any time, and that they would have to write continuously without regard to spelling, grammar, or sentence structure. Additionally, it was explained to participants in the experimental conditions that they should try to imagine the upsetting event or several associated aspects as vividly as possible, and that they could choose to write about the same or a different upsetting event each day (provided that the events were selected before).

In each writing session, participants in the generic and the unique episodic conditions were asked to report their level of distress (SUDS) four times at regular intervals during writing. Participants in the control condition were not asked for their level of distress during writing, given that their assigned task was not emotional. Once all participants completed the writing sessions, they were asked to complete a short questionnaire rating the extent to which the events they had written about were emotional, and if the event had been disclosed previously. After one week,

participants were asked to respond again to the same questionnaires that they completed at baseline. They were then fully debriefed and thanked for their participation.

## RESULTS

### Manipulation check

*Level of specificity.* To assess the validity of the manipulation, all responses to questions asked during the writing sessions in the two experimental conditions were read by two independent judges, one of whom was blind to the hypotheses of the study. They rated the extent to which each participant’s response was unique/specific (that is, contextualised to the specific target event and detailed) or generic (that is, non-contextualised to the moment of the target event but abstracted from repeated moments), on a scale anchored from  $-3$  (“*very generic*”) to  $+3$  (“*very unique/specific*”). Correlations between the two judges’ ratings were acceptable for each question ( $r$  between .64 and .97, mean  $r = .85$ ). A mean specificity score was computed for each participant on the basis of both judges’ ratings. An analysis of variance (ANOVA) with Condition as a between-subjects factor was performed on the level of specificity, and showed a significant main effect of Condition,  $F(1, 37) = 896$ ,  $p < .001$ ,  $\eta^2 = .96$ . Participants’ responses were on average very unique/specific ( $M = 1.90$ ,  $SD = 0.48$ ) in the unique/episodic condition, and very generic in the generic condition ( $M = -1.70$ ,  $SD = 0.24$ ).

*Level of emotionality.* To assess whether there were differences in the emotionality of writing between the experimental and control conditions, we had participants report their level of emotionality after each writing session on a scale anchored from 0 (“*not at all*”) to 6 (“*very much*”). An ANOVA with Condition (unique/episodic, generic, and neutral) as a between-subjects factor and Time (first, second, and third writing session) as a within-subject factor was performed on this level of emotionality. This analysis revealed a main

effect of Condition,  $F(2, 50) = 11.84$ ,  $p < .001$ ,  $\eta^2 = .32$ . Post hoc tests (using the Bonferroni procedure) showed that controls rated their writing content as less emotional than participants in the experimental conditions.

*Writing duration.* As described in the procedure, writing duration was measured by the internet server at each session. A mean writing duration was computed for each participant. Descriptive statistics show that, on average, participants wrote for 18.41 min ( $SD = 3.97$ ) in the unique episodic condition, 19.24 ( $SD = 4.8$ ) in the generic condition, and 18.44 ( $SD = 5.0$ ) in the control condition. An ANOVA with Condition (unique/episodic, generic, and neutral) as a between-subjects factor was performed on this mean writing duration, and revealed no significant effect of condition,  $F(2, 51) = 0.17$ , *ns*.

### Events description

The events chosen by the participants fell into a variety of categories: 20 events involved the death or suicide of a relative, 8 related to romantic relationship break-ups, 3 related to illness of a relative, 4 involved academic or professional difficulties, 3 related to sexual abuse, 6 to physical abuse, 3 to moral abuse, 2 related to abortion, 2 to vehicle accidents, and 6 related to other stressful life events. Numbers of events as a function of category and condition are reported in Table 2.

### Baselines

A multivariate analysis of variance (MANOVA) with Condition as a between-subjects factor was performed on the baseline psychological measures, and revealed no effect of condition for "search for meaning" about the upsetting event,  $F(2, 51) = 0.39$ , *ns*, anger-in,  $F(2, 51) = 2.17$ , *ns*, anger-out,  $F(2, 51) = 0.76$ , and anxiety,  $F(2, 51) = 2.50$ , *ns*. In contrast, there was a marginal effect of Condition on Depressive Level,  $F(2, 51) = 2.89$ ,  $p = .06$ . Post hoc comparison tests (using the Bonferroni procedure) showed that the generic

**Table 2.** Number of participants by category of life event experienced as a function of condition

	Unique/episodic	Generic	Control
Death of a relative	7	8	5
Relationship break-up	3	3	2
Professional difficulties	1	2	0
Sexual abuse	2	0	1
Physical abuse	4	1	1
Moral abuse	1	1	1
Abortion	0	2	0
Vehicle accidents	0	0	2
Illness of a relative	1	1	1
Others	2	3	1

group reported a slightly higher depressive level than the control group at baseline.

*Anticipatory distress.* Participants in both experimental groups reported their level of distress (SUDS) just before writing each day. A  $2 \times 3$  ANOVA with Condition (unique/episodic vs. generic) as a between-subjects factor, and Time (at first, second, and third writing session) as a within-subject factor was performed on this anticipatory level of distress. This analysis revealed main effects of Time,  $F(2, 74) = 10.46$ ,  $p < .001$ ,  $\eta^2 = .22$ , and of Condition,  $F(2, 74) = 6.09$ ,  $p < .05$ ,  $\eta^2 = .14$ , qualified by an interaction between Time and Condition,  $F(2, 74) = 6.54$ ,  $p < .005$ ,  $\eta^2 = .15$ . Post hoc tests (using the Bonferroni procedure) demonstrated that participants of both conditions reported similar levels of anticipatory distress at the first day of writing. In contrast, the unique/episodic group reported less anticipatory distress than the generic one at the second and third days of writing (see Figure 1). Given that baseline levels of posttraumatic stress and depression were different from the control condition to the generic condition, the same analysis was performed with the level of posttraumatic stress and depression as covariates, separately (ANCOVAs). However, this did not change the pattern of results.

*Mean distress.* Participants in both experimental conditions reported their level of distress (SUDS) four times during writing each day. A mean level

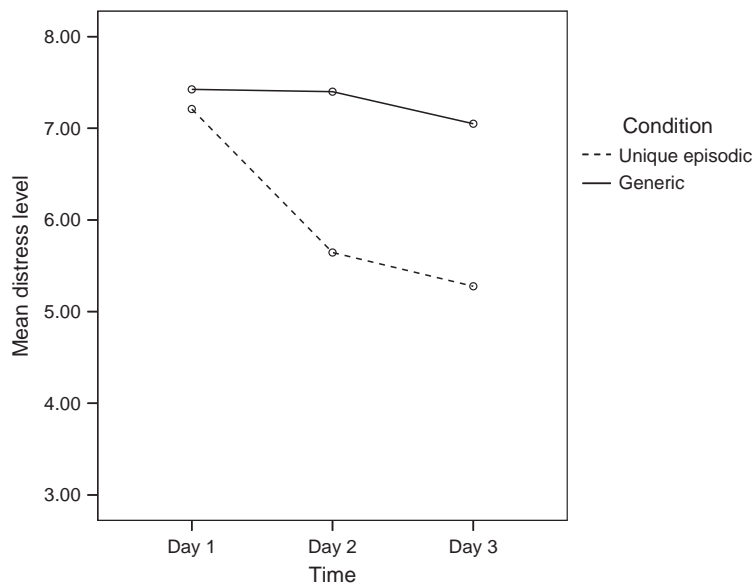


Figure 1. Mean distress level as a function of time and condition.

of distress during writing was computed for the three sessions separately and computed for each participant. The same ANOVA as described above was performed on this distress level, and revealed a main effect of Time,  $F(2, 74) = 6.36, p < .005, \eta^2 = .15$ , qualified by an interaction between Time and Condition,  $F(2, 74) = 3.64, p < .05, \eta^2 = .09$ . As illustrated in Figure 2, participants in both experimental conditions reported similar levels of distress during their first writing session. In contrast, participants in the unique/episodic condition reported less intense distress than those in the generic condition during the second and third writing sessions. The same analyses with the level of posttraumatic stress and depression as separate covariates were performed but these analyses did not change the pattern of results.

### Impact of condition on outcome measures<sup>1</sup>

We expected the unique/episodic group to demonstrate the most favourable outcomes on

measures of psychological health one week after the experiment when compared to the generic and control groups. A series of ANOVAs with Condition (unique/episodic, generic, and control condition) as a between-subjects factor and Time (at pre- and post-experiment) as a within-subject factor were performed on the different outcome measures separately. Significant differences as a function of Condition and Time (according to Bonferroni post-tests) are reported in Table 3. In addition, the same analyses were performed with the level of posttraumatic stress and depression as separate covariates. However, these analyses did not change the pattern of results for each variable.

*Search for meaning.* Results showed an interaction between Time and Condition,  $F(2, 51) = 3.51, p < .05, \eta^2 = .12$ . Post hoc tests (using Bonferroni) showed that while participants reported a comparable need to search for meaning about the target event(s) before the experiment, those in the

<sup>1</sup> Given that participants could write about the same event each day or could change the event they wrote about, the number of events disclosed (between 1 and 3) was introduced as a covariate in the analyses. Nevertheless, this did not change the results presented in this section.

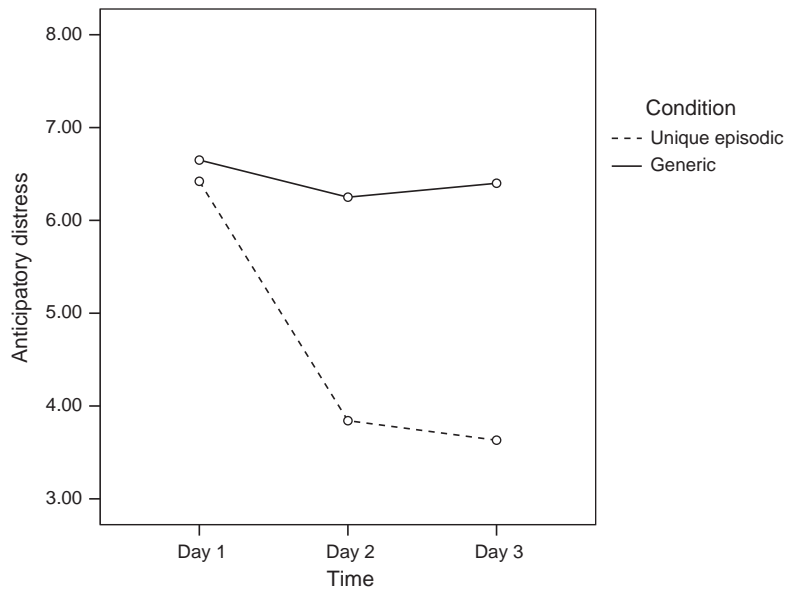


Figure 2. Mean anticipatory distress level as a function of time and condition.

unique/episodic condition reported less need to search for meaning than participants in the generic condition one week after the experiment ( $p < .05$ ). Participants in the control condition did not report any significant difference in the search for meaning in comparison with the two other conditions.

*Anger-in/anger-out.* Results revealed a significant interaction between Time and Condition for anger-out,  $F(2, 51) = 15.20$ ,  $p < .001$ ,  $\eta^2 = .37$ , whereas for anger-in, the interaction approached significance,  $F(2, 51) = 2.58$ ,  $p < .10$ ,  $\eta^2 = .09$ .

Participants in the three conditions reported similar levels of anger-out and anger-in before the experiment. According to Bonferroni post tests, control participants reported a higher level of anger-out one week after the experiment than participants of the two other conditions ( $p < .05$ ). In addition, participants of the generic group reported a higher level of anger-in in comparison to those of the two other conditions ( $p < .05$ ).

*Depression.* The ANOVA yielded main effects of Time,  $F(1, 51) = 15.26$ ,  $p < .001$ ,  $\eta^2 = .23$ , and

Table 3. Scores on outcome measures as a function of condition and time (at pre- and post-experiment)

Variables	Condition					
	Unique/episodic <sup>a</sup>		Generic <sup>b</sup>		Control <sup>c</sup>	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
Meaning search	21.63 <sup>b</sup> (5.76)	17.84 <sup>a</sup> (6.03)	21.15 <sup>b</sup> (6.19)	22.20 <sup>b</sup> (5.03)	20.93 <sup>b</sup> (6.31)	20.73 <sup>b</sup> (5.84)
Anger-out	8.10 <sup>b,c</sup> (2.70)	6.94 <sup>a</sup> (2.39)	7.55 <sup>a,b</sup> (2.35)	7.40 <sup>a</sup> (2.09)	7.06 <sup>a</sup> (2.22)	9.47 <sup>c</sup> (1.88)
Anger-in	11.16 <sup>b</sup> (2.29)	9.36 <sup>a</sup> (2.83)	12.00 <sup>b</sup> (2.77)	12.00 <sup>b</sup> (2.93)	10.33 <sup>a,b</sup> (1.72)	9.40 <sup>a</sup> (1.68)
Depressive level	24.21 <sup>b</sup> (12.58)	18.26 <sup>a</sup> (10.97)	30.30 <sup>c</sup> (10.58)	26.65 <sup>b</sup> (12.07)	21.33 <sup>a,b</sup> (10.85)	18.87 <sup>a</sup> (10.17)
Anxiety level	11.05 <sup>a,b</sup> (4.73)	8.89 <sup>a</sup> (4.81)	13.45 <sup>b</sup> (3.99)	13.10 <sup>b</sup> (5.08)	10.47 <sup>a</sup> (4.03)	9.60 <sup>a</sup> (4.89)

Note: Means differing significantly ( $p < .05$ ) from one another according to Bonferroni post tests are accompanied by different subscripts.

of Condition,  $F(2, 51) = 3.34, p < .05, \eta^2 = .12$ , but no significant interaction. There was a general decrease of depression across measurement, but no significant differences between conditions.

*Anxiety.* Results showed a main effect of Condition on the level of anxiety,  $F(2, 51) = 4.45, p < .05, \eta^2 = .15$ , and a marginal main effect of Time,  $F(1, 51) = 2.73, p = .10, \eta^2 = .05$ , but no significant interaction.

### Correlation between level of specificity and outcome variables

In order to check whether the level of specificity was associated with the outcome of the unique/episodic procedure, correlations between the level of specificity and the dependant variables were performed. Difference scores between measures at follow-up and measures at baseline were computed for levels of depression, anxiety, search for meaning, as well as internal and external anger. Results showed significant correlations between specificity and distress at the second ( $r = .37$ ) and third ( $r = .38$ ) writing sessions, at  $p < .05$ , and with anticipatory distress also at the second ( $r = .44$ ) and third ( $r = .51$ ) writing session, at  $p < .01$ . In addition, specificity was correlated with a reduction in search for meaning ( $r = .37$ ) and in internal anger ( $r = .33$ ) at  $p < .05$ . Consistent with results from ANOVAs, correlations between level of specificity and changes in depression, anxiety, and external anger were not significant.

## DISCUSSION

The purpose of the present study was to assess whether manipulating the construal level of processing emotional information during written disclosure impacts on psychological variables in individuals with a high level of posttraumatic stress. More precisely, two procedures of written disclosure were compared: the unique episodic procedure that encouraged participants to focus on specific details of the stressful event disclosed (i.e., a low construal level) and the generic procedure that

instructed participants to focus on features associated with the stressful event that tend to be repeatedly experienced, such as intrusive thoughts (i.e., a high construal level). A control procedure consisted of asking participants to write about a trivial non-emotional topic.

First, as hypothesised, participants of the unique episodic procedure reported less distress while writing than those in the generic procedure at the second and third sessions of disclosure. This result replicates previous findings that demonstrated a reduction of distress when recalling unique elements of emotional personal memories (Neumann & Philippot, 2007; Vrielynck & Philippot, 2009), and extends them to highly stressful memories. The non-significant difference in distress level at the first writing session is consistent with findings from Vrielynck and Philippot (2009) who observed a similar result in socially anxious participants. In addition, clinical studies assessing the impact of imaginal exposure in traumatised individuals (e.g., Ehlers, Hackmann, & Michael, 2004) demonstrated that emotional benefits occurred only after repeated sessions of exposure to traumatic memories. These results are consistent with the observation of Craske et al. (2008) that learning an emotion regulation strategy manifests in actual performance only during a subsequent session.

Second, the present results also support the hypothesis that the recall of specific emotional information during disclosure reduces the need to search for meaning about the stressful event, as compared to the recall of generic elements associated with the event. Several different perspectives on cognitive processes may explain the reasoning for these results. For instance, the unique episodic procedure possibly facilitated the organisation and integration of the stressful event in the autobiographical memory database, or in pre-existent cognitive schemas (e.g., Horowitz, 1986; Pennebaker, 1993; Smyth et al., 2001). This interpretation is congruent with the proposition of Pennebaker and Seagal (1999) that integrating thoughts and feelings into a coherent narrative of one's experience helps one to summarise, store, and forget it more efficiently. On the other hand,

it is plausible that the specification of the stressful event in details encouraged a more concrete processing of emotional information, which resulted in a decrease in maladaptive rumination. Indeed, the need to search for meaning assessed in this study corresponds to the concept of maladaptive rumination as considered by Watkins and colleagues (e.g., Watkins & Moulds, 2005). They define maladaptive rumination as a process whereby one focuses on the causes, meanings, and consequences of an emotional situation or mood. The results of the present study are thus consistent with recent studies demonstrating that a more concrete style of self-focus decreases maladaptive rumination (e.g., Moberly & Watkins, 2006; Watkins et al., 2008).

Third, the unique episodic procedure tended to reduce internally expressed anger. The significant correlation between the level of specificity of writings and the reduced level of anger-in is concordant with this tendency. In contrast, writing about generic elements had no significant effect on anger. Writing about a trivial topic even elicited a higher level of externally expressed anger. It is possible that control participants were disappointed by the fact that they could not express themselves about the stressful event they experienced.

Contrary to our hypotheses, the unique episodic procedure yielded no significant effect on depression and anxiety. However, it should be noted that the levels of depression and anxiety were general and not directly linked with the life events that participants wrote about. In contrast, we evaluated the level of anger *when thinking about the target event(s)*, the need to search for meaning *about the target event(s)*, and the level of distress during exposure to the events. In addition, the questionnaires used in this study (GHQ and BDI) focus on intense symptoms of anxiety (e.g., insomnia, panic reactions) and depression (e.g., loss of hope, difficulty in sleeping, thoughts of suicide). It is possible that these questionnaires were not sensitive enough to measure subtler changes in anxiety and depression. Furthermore, the high number of drop-outs observed in this study resulted in a small sample size, which

possibly did not allow the detection of significant group differences on these variables.

In sum, specifying the unique aspects of a stressful past event helped participants to feel less distress during re-confrontation with the event, to make sense of the event experienced, and to express less anger when thinking about the event. This pattern of results supports the proposal of Watkins (2008) that a low construal level of processing emotional information is adaptive for difficult situations. In addition, these findings provide further insight to clarify the mechanisms underlying outcome of written disclosure. It is possible that a deep cognitive processing of emotional information during disclosure is necessary for emotional processing to occur. Moreover, the beneficial effect of disclosing emotional information in a detailed and specific manner may explain why studies in which participants were guided by specific questions during disclosure produced better outcome (Frattaroli, 2006).

However, several limitations of the present study must be considered. First, as we discussed above, a number of participants dropped out in the course of the experiment, which may have resulted in insufficient power to detect a significant difference between groups. This attrition seems mostly due to technical problems (mainly with the participants' internet connection or computer) and to the length of the study, without direct contact with the experimenter or payment. However, it should be noted that post hoc analyses revealed no differences between participants who dropped out and those who completed the study. It is thus unlikely that the two types of participants differed in an important clinical dimension.

Second, even if the instructions specified the necessity to write in a calm place and to choose moments during which participants would not be disturbed, it was not possible to check whether these conditions were correctly followed. However, Frattaroli (2006) indicated that disclosing at home had larger psychological effects than writing in a controlled setting, which justifies the procedure used in the present study.

Third, while some participants disclosed about the same stressful event each day, others changed the event they wrote about at the second or third writing session. We allowed participants to disclose about one or several events during the experiment, following the recommendation of Pennebaker and Beall (1986). One could argue that participants decided to change an event in order to avoid distress felt during the previous written session. Emotional avoidance may consequently influence the beneficial outcome from the experiment. However, complementary analyses (see Footnote 1) showed that the number of events disclosed did not modulate the beneficial impact of the specification processing on emotional outcome.

Finally, there were significant differences regarding the level of posttraumatic stress and depression between the control and the generic condition. However, when these differences were controlled for in statistical analyses, the pattern of results did not change. Importantly, there was no baseline difference regarding the level of posttraumatic stress between both experimental conditions, and our main hypotheses concerned the differential impact of the unique episodic and the generic conditions on outcome.

In sum, this study is the first to precisely manipulate the construal level of processing emotional information during written disclosure and to show psychological benefits of a low level of processing, that is, the benefits of a focus on specific features of emotional information. The present data suggest interesting clinical implications with individuals who experience highly stressful events. Therapists should help clients to focus on specific and concrete details of their emotional experiences during exposure or writing in order to enhance emotion tolerability, which represents an important component of effective therapy (Craske et al., 2008). In addition, the difficulty in recalling specific events (known as overgeneral memory) is a characteristic of people with depression (see Van Vreeswijk & de Wilde, 2004, for a review) and/or a history of trauma accompanied by symptoms of posttraumatic stress (e.g., Dalgleish, Rolfe, Golden, Dunn, &

Barnard, 2008; Henderson, Hargreaves, Gregory, & Williams, 2002). This overgeneral bias has been shown to be associated with impaired problem solving and delayed recovery from episodes of affective disorders (see Williams et al., 2007, for a review). Consequently, it should be interesting to evaluate whether improving the specificity of stressful experiences decreases the overgeneral bias in individuals with a high level of posttraumatic stress. However, future studies should further analyse the processes underlying the impact of the specificity of information processing. Importantly, impact of this procedure at a longer follow-up than one week and with a larger sample should be evaluated in future research before attesting to its efficacy in clinical settings.

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## REFERENCES

- American Psychological Association. (2005). *Concise rules of APA style*. Washington, DC: American Psychological Association.
- Batten, S. V., Follette, V. M., Rasmussen, H., & Palm, K. M. (2002). Physical and psychological effects of written disclosure among sexual abuse survivors. *Behavior Therapy, 33*, 107–122.
- Beck, A. T., Steer, R. A., & Brown, G. K. (1998). *Inventaire de dépression de Beck—2eme édition (BDI-II)*. Paris: Editions du Centre de Psychologie Appliquée (ECPA).
- Craske, M. G., Kircanski, K., Zelikowsky, M., Mystkowski, J., Chowdhury, N., & Baker, A. (2008). Optimizing inhibitory learning during exposure therapy. *Behaviour Research and Therapy, 46*, 5–27.
- Dalgleish, T., Rolfe, J., Golden, A., Dunn, B. D., & Barnard, P. J. (2008). Reduced autobiographical memory specificity and posttraumatic stress: Exploring the contributions of impaired executive control and affect regulation. *Journal of Abnormal Psychology, 117*, 236–241.
- Ehlers, A., Hackmann, A., & Michael, T. (2004). Intrusive re-experiencing in post-traumatic stress

- disorder: Phenomenology, theory, and therapy. *Memory*, 12, 403–415.
- Finkenauer, C., & Rimé, B. (1998). Socially shared emotional experiences vs. emotional experiences kept secret: differential characteristics and consequences. *Journal of Social and Clinical Psychology*, 17, 295–312.
- Foa, E., Huppert, J., & Cahill, S. (2006). Emotional processing theory: An update. In B. Olasov (Ed.), *Pathological anxiety: Emotional processing in aetiology and treatment* (pp. 3–24). New York: Guilford Press.
- Foa, E. B., & Kozak, M. J. (1986). Emotional processing of fear. Exposure to corrective information. *Psychological Bulletin*, 99, 20–35.
- Fratraro, J. (2006). Experimental disclosure and its moderators: A meta-analysis. *Psychological Bulletin*, 132, 823–865.
- Freitas, A., Gollwitzer, P., & Trope, Y. (2004). The influence of abstract and concrete mindsets on anticipating and guiding others' self-regulatory efforts. *Journal of Experimental and Social Psychology*, 40, 739–752.
- Goldberg, D. (1978). *The General Health Questionnaire*. Windsor, UK: NFER.
- Goldberg, D., & Williams, P. (1988). *A user's guide to the General Health Questionnaire*. Windsor, UK: NFER-NELSON.
- Henderson, D., Hargreaves, I., Gregory, S., & Williams, J. M. G. (2002). Autobiographical memory and emotion in a non-clinical sample of women with and without a reported history of childhood sexual abuse. *British Journal of Clinical Psychology*, 41, 129–142.
- Horowitz, M. (1986). *Stress response syndromes* (2nd ed.). New York: Jason Aronson.
- Horowitz, M., Wilner, N., & Alvarez, W. (1979). Impact of Event Scale: A measure of subjective stress. *Psychosomatic Medicine*, 41, 209–218.
- King, L. A. (2002). Gain without pain? Expressive writing and self-regulation. In S. J. Lepore & J. M. Smyth (Eds.), *The writing cure: How expressive writing promotes health and emotional well-being* (pp. 119–134). Washington, DC: American Psychological Association.
- Lepore, S. J., Greenberg, M. A., Bruno, M., & Smyth, J. M. (2002). Expressive writing and health: Self-regulation of emotion-related experience, physiology, and behavior. In S. J. Lepore & J. M. Smyth (Eds.), *The writing cure: How expressive writing promotes health and emotional well-being* (pp. 99–134). Washington, DC: American Psychological Association.
- Lepore, S. J., & Smyth, J. M. (Eds.). (2002). *The writing cure: How expressive writing promotes health and emotional well-being*. Washington, DC: American Psychological Association.
- Markman, K. D., & McMullen, M. N. (2003). A reflection and evaluation model of comparative thinking. *Personality and Social Psychology Review*, 7, 244–267.
- Moberly, N. J., & Watkins, E. R. (2006). Processing mode influences the relationship between trait rumination and emotional vulnerability. *Behaviour Therapy*, 37, 281–291.
- Neumann, A., & Philippot, P. (2007). Emotional feeling intensity as a function of the type of information activated during the specification of an autobiographical memory. *Emotion*, 7, 566–578.
- Pariante, P., Challita, H., Mesbah, M., & Guelfi, J. D. (1992). The GHQ-28 questionnaire in French: A validation survey. *European Psychiatry*, 7, 15–20.
- Pennebaker, J. W. (1989). Confession, inhibition, and disease. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 22, pp. 211–244). San Diego, CA: Academic Press.
- Pennebaker, J. W. (1993). Putting stress into words: Health, linguistic & therapeutic implications. *Behaviour Research and Therapy*, 31, 539–548.
- Pennebaker, J. W., & Beall, S. K. (1986). Confronting a traumatic event: Toward an understanding of inhibition and disease. *Journal of Abnormal Psychology*, 95, 274–281.
- Pennebaker, J. W., & Seagal, J. D. (1999). Forming a story: The health benefits of narrative. *Journal of Consulting and Clinical Psychology*, 55, 1243–1254.
- Philippot, P. (1999). *Traduction et validation française du "Spielberger Anger Expression Scales"*. Unpublished data. ECSA, Louvain-la-Neuve, Belgium.
- Philippot, P., Baeyens, C., & Douilliez, C. (2006). Specifying emotional information: Modulation of emotional intensity via executive processes. *Emotion*, 6, 560–571.
- Philippot, P., Neumann, A., & Vrielynck, N. (2007). Emotion information processing and affect regulation: Specificity matters! In M. Vandekerckhove, et al. (Eds.), *Regulating emotions: Social necessity and biological inheritance*. New York: Blackwell.
- Philippot, P., Schaefer, A., & Herbertte, G. (2003). Consequences of specific processing of emotional information: Impact of general versus specific



- autobiographical memory priming on emotion elicitation. *Emotion*, 3, 270–283.
- Raes, F., Hermans, D., Williams, J. M. G., & Eelen, P. (2006). Reduced autobiographical memory specificity and affect regulation. *Cognition and Emotion*, 20, 402–429.
- Rimes, K. A., & Watkins, E. (2005). The effects of self-focused rumination on global negative self-judgements in depression. *Behaviour Research and Therapy*, 43, 1673–1681.
- Sloan, D. M., Marx, B. P., & Epstein, E. M. (2005). Further examination of the exposure model underlying the efficacy of written emotional disclosure. *Journal of Clinical and Consulting Psychology*, 73, 549–554.
- Sloan, D. M., Marx, B. P., Epstein, E. M., & Lexington, J. M. (2007). Does altering the writing instructions influence outcome associated with written disclosure? *Behavior Therapy*, 38, 155–168.
- Smyth, J. M., True, N., & Souto, J. (2001). Effects of writing about traumatic experiences: The necessity for narrative structuring. *Journal of Social and Clinical Psychology*, 20, 161–172.
- Spielberger, C. D., Gorsuch, R. L., Lushene, R., Vagg, P. R., & Jacobs, G. A. (1983). *Manual for the State-Trait Anxiety Inventory*. Palo Alto, CA: Consulting Psychologists Press.
- Spielberger, C. D., Johnson, E. H., Russell, S. F., Crane, R. J., Jacobs, G. A., & Worden, T. J. (1985). The experience and expression of anger: Construction and validation of an anger expression scale. In M. A. Chesney & R. H. Rosenman (Eds.), *Anger and hostility in cardiovascular and behavioral disorders* (pp. 5–30). Washington, DC: Hemisphere.
- Trope, Y., & Liberman, N. (2003). Temporal construal. *Psychological Review*, 110, 403–421.
- Van Lede, M., Galand, B., Bourgeois, E., & Philippot, P. (2009). *Autobiographical memory specificity: Impact of state and trait specificity on academic self-efficacy beliefs*. Manuscript in preparation.
- Van Vreeswijk, M. F., & de Wilde, E. J. (2004). Autobiographical memory specificity, psychopathology, depressed mood and the use of Autobiographical Memory Test: A meta-analysis. *Behaviour Research and Therapy*, 42, 731–743.
- Vrielynck, N., & Philippot, P. (2009). Regulating emotion during imaginal exposure to social anxiety: Impact of the specificity of information processing. *Journal of Behavior and Experimental Psychiatry*, 40, 274–282.
- Walker, B. L., Nail, L. M., & Croyle, R. T. (1999). Does emotional expression makes a difference in reactions to breast cancer? *Oncology Nursing Forum*, 26, 1025–1032.
- Watkins, E. R. (2004). Adaptive and maladaptive self-focus during emotional processing. *Behaviour Research and Therapy*, 42, 1037–1052.
- Watkins, E. R. (2008). Constructive and unconstructive repetitive thought. *Psychological Bulletin*, 134, 163–206.
- Watkins, E. R., & Moulds, M. (2005). Distinct modes of ruminative self-focus: Impact of abstract versus concrete rumination on problem solving in depression. *Emotion*, 5, 319–328.
- Watkins, E. R., Moulds, M. L., & Moberly, N. J. (2008). Processing mode causally influences emotional reactivity: Distinct effects of abstract versus concrete construal on emotional response. *Emotion*, 8, 364–678.
- Williams, J. M. G., Barnhofer, T., Crane, C., Hermans, D., Raes, F., Watkins, E., et al. (2007). Autobiographical memory specificity and emotional disorder. *Psychological Bulletin*, 133, 122–148.