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Benefits of Emotional Integration and Costs of Emotional Distancing

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MindWare and Noldus technologies.

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Accepted Article

Abstract

Objectives: Three studies explored the consequences of the self-determination theory (SDT) conception of *integrative emotion regulation* (IER; Ryan & Deci, 2017), which involves an interested stance toward emotions. Emotional, physiological, and cognitive consequences of IER were compared to the consequences of *emotional distancing* (ED), in relation to a fear-eliciting film.

Method: In Study 1, we manipulated emotion regulation by prompting students' ($n = 90$) IER, ED, and a control group. Then we tested groups' defensive versus non-defensive emotional processing, coded from post-film written texts. Study 2 ($n = 90$) and Study 3 ($n = 135$) used the same emotion-regulation manipulations but exposed participants to the fear-eliciting film twice, 72-hours apart, to examine each style's protection from adverse emotional, physiological, and cognitive costs at second exposure.

Results: Participants who had been prompted to practice IER were expected to benefit more than participants in the ED and control groups at second exposure, as manifested in lower arousal and better cognitive capacity. Overall, results supported our hypotheses.

Conclusions: The current studies provide some support for the assumption that in comparison to ED, taking interest in and accepting one's negative emotions are linked with less defensive processing of negative experiences and with better functioning.

Benefits of Emotional Integration and Costs of Emotional Distancing

Health practitioners, theorists, and researchers have long grappled with the challenge of how individuals can successfully regulate negative emotions such as fear, anxiety, and anger (e.g., Gross, 2013; Saarni, Campos, Camras, & Witherington, 2006; Thompson & Meyer, 2007). Recent research has explored the self-determination theory (SDT) conception for the adaptive regulation of emotion, defined as *integrative emotion regulation* (IER: Roth & Assor, 2012; Roth, Assor, Niemiec, Ryan, & Deci, 2009; Roth et al., 2014). IER involves taking interest in one's own negative emotions, tolerating and accepting them, and integrating them with other aspects of the self (Ryan, Deci, Grolnick, & La Guardia, 2006). In the current research, we compared the consequences of IER with the consequences of *emotional distancing* (ED), which in contrast to IER involves an attempt to minimize, avoid, or change one's negative emotional experience (Gross & Levenson, 1997).

ED is one (but not the only) operationalization of the well-established concept of reappraisal, which is an antecedent-focused strategy anchored in the process model of emotion regulation (Gross & John, 2003; John & Gross, 2007; Webb, Miles, & Sheeran, 2012). The well-accepted process model for regulation of emotions developed by Gross and his colleagues (Gross, 2013; Gross & John, 2003) outlined specific regulatory strategies that unfold during an emotional response. An emotion begins when the person attends to and evaluates emotional cues, which then trigger a coordinated set of response tendencies, which next may be modulated. According to this model, strategies for regulating the emotion can occur at different times during the emotional response, and their primary impact on the emotion-generative process can be pinpointed as either antecedent-focused or response-focused (Gross, 2002). *Antecedent-focused strategies* occur prior to full activation of emotional response tendencies. *Response-focused*

strategies occur after an emotion is already in progress.

Research exploring regulatory strategies that attempt to reduce adverse emotional responding has extensively demonstrated the different consequences of two specific strategies: reappraisal, a cognitively oriented antecedent-focused strategy, as opposed to expressive suppression, a behaviorally oriented response-focused strategy (Gross, 2015). In suppression, the emotionally aroused person attempts to decrease emotionally expressive behavior that is already in progress, whereas in reappraisal one attempts to think about the situation differently to change one's emotional response. A large body of research revealed that reappraisal is more adaptive than suppression in relation to various affective, cognitive, social, and physiological outcomes (Gross, 2013). The advantage of reappraisal has been attributed to its antecedent-focused timing on the timeline of the unfolding emotional response. Antecedent-focused emotion-regulation strategies come early on this timeline, prior to full activation of response tendencies, and therefore appear to offer benefits over expressive suppression on various outcomes (for a review, see Gross, 2013).

Prior research on the IER style – the regulatory strategy corresponding with the SDT's definition of adaptive emotion regulation – highlighted its benefits over expressive suppression, a response-focused style (Roth & Assor, 2012; Roth, et al, 2014). However, the IER style has not yet been investigated in comparison to antecedent-focused emotion regulation strategies. To further elucidate outcomes of the SDT-conceived adaptive IER style in comparison to strategy applied early in the unfolding timeline of emotional response, we compared, in the present study, IER versus ED (Gross & Levenson, 1997; Richards & Gross, 2000). We specifically selected ED for comparison because this operationalization of reappraisal (based on past research, Gross, 2015; Webb et al., 2012), defined as attempting to minimize or even avoid (distance oneself

from) one's emotional experience, contradicts the SDT's definition of IER in many ways.

SDT-Based Conceptualization of Adaptive Emotion Regulation

The self-determination perspective considers the extent to which specific responses to emotional cues – such as accepting, distancing, suppressing expression, or reappraising situations – are accompanied by a sense of volition and choice (Deci & Ryan, 2008; Ryan et al., 2006). Thus, avoidance of negative emotions (i.e., distancing) may be adaptive in specific circumstances. For example, during an emergency, parents may choose to try to avoid their terror to help their children stay calm. However, afterwards parents may choose to express the traumatic experience and reflect on it with a spouse, friend, or therapist. This flexibility in responding to the same emotional stimulus in different situations is hypothesized as deriving from the ability to experience negative emotions and take interest in them. Thus, a tolerant, accepting, and interested stance toward emotions is a basic tenet in the SDT's definition of adaptive emotion regulation (Roth et al., 2014; Roth, Shane, & Kanat-Maymon, in press; Ryan et al., 2006).

The SDT perspective of healthy emotion regulation espouses a eudemonic view of wellness (Ryan & Deci, 2001) where emotions are neither good nor bad (Deci & Ryan, 2000) but rather comprise informational inputs that guide action and growth (Ryan et al., 2006; Vansteenkiste, Niemiec, & Soenens, 2010). Emotions are seen as a built-in feedback system providing physiological, cognitive, and motivational signals that inform behaviors and goals to satisfy basic psychological needs (Ryan et al., 2006). Healthy regulation of emotions implies ample access to both positive and negative feelings, and an ability to express them, which in turn fosters self-acceptance, personal growth, and the capacity for interpersonal intimacy. Within the SDT perspective, such eudemonically oriented regulation of affect is labeled "emotional integration"

(Ryan et al., 2006, 2009). Such an integrative regulatory style toward negative emotions (IER) is posited as enabling fairly effective functioning in many domains, for instance, in close relationships, where intense negative feelings might be activated often (Roth & Assor, 2012). Specifically, IER may be assumed to allow people to disclose personal difficulties, ask for help, listen empathically when others disclose negative emotions, and negotiate interpersonal conflicts in an open yet non-aggressive way (Roth & Assor, 2010, 2012).

Other constructs that are strongly linked with the concept of IER are mindfulness (Brown & Ryan, 2003; Chambers et al., 2009) and acceptance (Hayes, Strosahl, & Wilson, 1999), which are defined as non-judgmental awareness about the present moment's experience. IER shares an important aspect of mindfulness and acceptance – receptive awareness of the emotional experience (Deci, Ryan, Schultz, & Niemiec, 2014). However, IER also involves an additional aspect – incorporation of the emotional experience with other aspects of the self (i.e., needs, values, aspirations) while considering the situational circumstances (Ryan et al., 2006). Thus, the first aspect of IER, which corresponds with mindfulness (i.e., nonjudgmental receptive awareness of experience), may facilitate the second aspect of self-integration (i.e., integrating the emotional experience with other aspects of the self) by minimizing defensive, automatic, and impulsive reactions. This may allow volitional actions "that are informed by abiding needs, values, and feelings and their fit with situational options and demands" (Brown, Ryan, & Creswell, 2007, p. 223). The present research is anchored in several recent correlational and experimental studies that explored socializing antecedents and consequences of IER (Roth & Assor, 2010, 2012; Roth et al., 2009, 2014).

Correlates and Outcomes of IER

Inasmuch as the consequences of IER have not yet been compared to the consequences of

antecedent-focused emotion regulation strategies, the present research is the first to systematically test the relative influence of IER versus ED on relevant emotional and behavioral outcomes.

Recent research did suggest that the SDT-conceived adaptive IER style offers some advantages over the response-focused emotional suppression style in terms of better intimacy capacity, well-being, emotional and behavioral functioning, and non-defensive emotional processing (Roth & Assor, 2012; Roth et al., 2014). Specifically, in line with the view that IER is particularly adaptive in the area of close relationships, Roth and Assor's (2012) correlational study found that, unlike suppression, IER was positively associated with appropriate disclosure of personal difficulties, empathic listening, and support of one's intimate partner.

In an earlier study conducted by most of the current authors (Roth et al., 2014), we moved beyond (2014) interpersonal intimacy correlates of regulatory styles to directly compare IER and expressive suppression (Gross, 2013) for their emotional, behavioral, physiological, and cognitive outcomes. The first stage of Roth et al.'s (2014) research tested the unique effects of each regulatory style (IER and expressive suppression) on defensive/non-defensive written expression (Pennebaker, 2004). Initially, participants were asked to watch a short film clip from *The Silence of the Lambs* (Utt, Saxon, Bozman, & Demme, 1991) that had been validated as eliciting fear (Rottenberg, Ray, & Gross, 2007). Then, Pennebaker's (2004; Tausczik & Pennebaker, 2010) word-category approach was implemented to assess the quality of participants' emotional processing, as evidenced in their defensive and non-defensive written expression about the fear-eliciting film clip. For example, self-referencing indicates non-defensive processing because the writer reveals a sense of ownership or engagement in the threatening experience (Newman, Pennebaker, Berry, & Richards, 2003). Results revealed that participants' usage of word categories reflecting non-defensive emotional processing was positively correlated with their self-reported

IER (using Roth et al.'s 2009 IER scale) but was negatively correlated with their self-reported expressive suppression (using Gross & John's 2003 Emotion Regulation Questionnaire). This finding coincides with past research outcomes on associations between receptive attention to one's experiences and lower ego-defensive responsivity under threat (Brown, Ryan, Creswell, & Niemiec, 2008).

The second stage of our earlier research (Roth et al.'s, 2014) comprised a first attempt to manipulate IER in an experimental setting instead of examining individual differences. We investigated the emotional, physiological, behavioral, and cognitive consequences of a manipulated IER condition versus a manipulated expressive suppression condition. In that 2014 research, we hypothesized that asking participants to take interest in their emotions and explore them during a fear-eliciting event (i.e., prompting participants' IER while watching *The Silence of the Lambs* film clip) would protect participants from adverse emotional, physiological, and cognitive costs at second exposure to the same stimulus, 72 hours later. We did not predict an advantage for the IER style in the first session itself because IER in the short term may be emotionally demanding and may involve attentional and processing resources that are physiologically and cognitively taxing, and its benefits may not be immediately apparent (Mendolia & Kleck, 1993; Weinstein & Hodgins, 2009). However, the experience of IER at first exposure was expected to "immunize" participants from adverse effects of fear at the second exposure. For the suppressive condition, it was hypothesized that suppression of observable physically expressive behavior may shift attention toward the demanding task of hiding one's emotional experience, which may distract from fully processing the stimulus and, in turn, impair the capacity to recall specific details related to the stimulus. Past research (e.g., Gross, 1998) found that despite the lower levels of behavioral (facial) expression characterizing participants in a

suppression condition, these participants did show higher levels of emotional arousal and lower levels of cognitive functioning in comparison to a control (no-regulation) group.

Findings of the Roth et al. (2014) experiment supported the “immunization” hypothesis. Participants in all three conditions (IER, expressive suppression, and control) reported lower emotional arousal (measured by skin conductance, facial expression/body movements, and self-reports) when exposed a second time to the fear-eliciting film, but this reduction in the emotional arousal was significantly larger for the participants in the IER condition. Moreover, participants in the IER condition also scored significantly higher on a cognitive recall test than participants in the suppression condition.

Thus, recent studies suggested that IER may offer some advantages over expressive suppression in relation to various outcomes. As mentioned earlier, the disadvantage of suppression was documented in a large body of research anchored in the process model of emotion regulation (Gross, 2013; 2015). According to the process model, the disadvantage of suppressing emotional expression has been attributed to its later timing along the unfolding emotional response (Gross, 2015). Therefore, it would be of interest to test the consequences of IER in comparison to the consequences of antecedent-focused emotion regulation strategy like ED.

The Present Research

We conducted three studies to expand on prior research by exploring experimental outcomes of ED and IER. In Study 1, we examined these two regulatory styles' effects on defensiveness of emotional expression following a fear-eliciting event (*The Silence of the Lambs*), using an experimental rather than correlational design. Thus, in Roth et al. (2014) we used a correlational design to compare how the IER style versus the response-focused suppression style of regulation would associate with participants' emotional defensiveness,

whereas in the current research we compared the effects of two manipulated conditions on defensiveness of emotional processing: instructions prompting IER versus instructions prompting the antecedent-focused ED style of regulation. Like in Roth et al. (2014), in the current study we measured defensiveness via word categories (Pennebaker, 2004) assessed from participants' written expression subsequent to the fear-eliciting film clip.

In Studies 2 and 3, we utilized an experimental design to test the consequences of these two regulatory styles on emotional, physiological, and cognitive outcomes. For both these studies, similar to Roth et al.'s (2014) double-exposure experimental design comparing IER versus suppression regulatory styles, we compared IER versus ED styles. Like in Roth et al., we hypothesized that an attempt to take interest in and to explore one's emotional experience (i.e., IER), at first exposure to the fear-eliciting film, would result in a reduction in emotional arousal and better functioning ("immunization") at second exposure 72 hours later. As previously found for suppression, we predicted that such immunizing benefits would not be evident in the group given ED instructions for the first exposure. Study 2 tested the self-reported reduction of emotional arousal from the first exposure to the second exposure, and Study 3 replicated the same experimental design while also testing whether self-reported arousal reduction would be accompanied by lower physiological arousal and better cognitive functioning. All three studies were approved by the ethical review board at Ben-Gurion University of the Negev, and in all studies participants signed a consent form, were assured of confidentiality, and were told that they could stop the procedure at any time.

STUDY 1

Significant regulatory capacities like IER and ED should be evident in human behavior following an emotion-eliciting event. Thus, in Study 1 we examined participants' ability to

process negative emotions non-defensively subsequent to viewing the fear-eliciting short film clip, while manipulating the emotion regulation styles. We followed Roth et al. (2014) to manipulate IER and Gross's (1998) approach to prompt ED; we compared both of these conditions with a neutral control group in terms of self-reported emotional experience as well as quality of written expression concerning the emotion-eliciting film.

To code defensive versus non-defensive regulation (Weinstein & Hodgins, 2009) from open-ended written expressive texts, we focused on four linguistic categories deriving from Pennebaker and his colleagues' research (e.g., Pennebaker, 2004; Tausczik & Pennebaker, 2010) concerning linguistic representations of underlying mental states and processes. These four written manifestations of non-defensive emotional processing comprised: *self-referencing* terms, *cognitive processing* words, *negative-emotion* terms, and the usage of *past tense*.

Newman et al.'s (2003) research showed that *self-referencing* in written expression – me, my, I, mine – reflects a sense of ownership or engagement in the threatening experience, thereby indicating the writer's non-defensive response. On the other hand, written materials that lack self-referencing reveal the writer's defense against or dissociation from the text. Non-defensive *cognitive processing* mechanisms include causal words (e.g., "effect," "because," "therefore") and insight words (e.g., "know," "wonder," "think"), reflecting more complicated language and processing of the emotional experience (Pennebaker, Mayne, & Francis, 1997; Tausczik & Pennebaker, 2010). In addition, causal words used after traumatic events may create causal explanations that help participants to organize their thoughts (Boals & Klein, 2005). Pennebaker et al. (1997) reported that greater usage of these complex cognitive processing categories may lead to improved health. With regard to *negative-emotion* terms, non-defensive processing indicates accurate use of positive-emotion words in relation to positively experienced events and

accurate use of negative-emotion words in relation to negatively experienced events (Kahn, Tobin, Massey, & Anderson, 2007). Holmes et al. (2007) asserted that use of negative-emotion words reveals stronger immersion in a traumatic event. Finally, the *past tense* is likely to appear in written expression when an event has already been processed or worked through (Pasupathi, 2007).

Roth et al. (2014) we explored defensive and non-defensive written expression in relation to self-reported IER and expressive suppression. In that earlier study we hypothesized that a self-reported IER style – a tendency to take interest in one's emotions and to understand what one is feeling and why – would correlate more strongly with non-defensive written expression than would a suppressive regulation style. Using multiple regression analyses, the 2014 results revealed unique positive effects of self-reported IER on the frequency of first-person singular written text as well as on complex cognitive mechanisms and past tense, whereas self-reported suppressive regulation showed unique negative effects on first-person singular, cognitive mechanisms, past tense, and negative-emotion words.

In the present study, using experimental instructions instead of self-reports and focusing on ED instead of suppression as the regulatory style for comparison, we hypothesized that the IER style's effects on greater emotional non-defensiveness would be replicated. Specifically, we hypothesized that the manipulation instruction prompting ED would promote participants' written expression of fewer negative-emotion words, self-referencing terms, past tense, and words that reflect an attempt to understand the fear-eliciting event (cognitive mechanisms), compared to the other two conditions: IER and a control group.

Method

Participants

Participants were 90 undergraduate students recruited at Ben-Gurion University in Israel (mean age: 23.16 years, $SD = 1.86$; 61% female), who were paid \$10 each. Seven participants were removed from analyses because their written texts were illegible, leaving 83. Participants were randomly assigned to one of the three conditions: IER ($n = 28$), ED ($n = 28$), or control ($n = 27$). No significant differences emerged among the three groups on age or sex using chi-square tests. Twelve participants (13.3%) reported that they had seen the film in the past.

Experimental Procedure

Each participant was seated in a comfortable chair in a 6mX6m room that contained a window of darkened glass (which connected to an adjoining observation room). After the demographic questionnaire was completed, the experimenter (of the same sex as the participant) informed the participant "We are interested in learning more on emotions" and that the experiment will be videotaped. Then, preceding the film, each participant received one of three sets of instructions, as determined by his/her random assignment to one of the three conditions: IER, ED, or control, as follows.

Participants in the IER group received the following instructions per Roth et al. (2014): *"We will now be showing you a short film clip. Please watch the film clip carefully, but if you find the film too distressing, just say 'stop.' While you watch the movie try to take interest in your emotions; thus, while watching try to understand what you are really feeling and why. Please watch the video very carefully and try to be attentive to your emotions."*

Participants in the ED group received the following instructions per Gross (1998): *"We will now be showing you a short film clip. Please watch the film clip carefully, but if you find the film too distressing, just say 'stop.' If you have any feelings as you watch the film clip, try to adopt a detached and unemotional attitude. In other words, as you watch the film clip, try to think about*

what you are seeing objectively, in terms of the technical aspects of the events you observe.

Watch the film clip carefully, but please, try to think about what you are seeing in such a way that you don't feel anything at all."

Finally, participants in the control (neutral) group received the following instructions: *"We will now be showing you a short film clip. It is important to us that you watch the film carefully, but if you find the film too distressing just say 'stop.'"*

After the instructions, the experimenter left the room. Then, following Rottenberg et al. (2007), participants viewed the short film clip taken from *The Silence of the Lambs* that had been previously validated as eliciting fear (Rottenberg et al., 2007). The clip was shown on a 23-inch screen at a distance of 1.5m. A post-film self-report on emotional experience was administered to verify that fear was elicited, and then the participant was asked to describe in writing, for 7 minutes, his/her experience while viewing the film as follows:

For the next 7 minutes, you are being asked to write the very deepest thoughts and feelings you had while watching the film. In your writing we would like you to really let go and explore your deepest emotions and thoughts. All of your writing will be completely confidential.

Measures

Demographic questionnaire. Participants provided information on age, sex, major of study, and year of study.

Defensive and non-defensive written expression. The texts written in Hebrew underwent back-and-forth translation to English. The English translation was analyzed by the Linguistic Inquiry and Word Count (LIWC; Pennebaker, Booth, & Francis, 2007; Tausczik & Pennebaker, 2010), which is a text-analytic software that counts specific words or specific categories of

words in text (Pennebaker, 2004). The LIWC was used to count the frequency of self-referencing terms, past tense, complex cognitive mechanisms (causal and insight words) and appearance of negative-emotion words.

Self-reported emotional experience. To validate that Rottenberg et al.'s (2007) short film clip (3.29 min in length) from *The Silence of the Lambs* indeed elicited fear in the current sample, after watching the film participants completed a 14-item questionnaire (Gross & Levenson, 1993, 1997) on their emotional experience while viewing the film. One item assessing fear level was embedded into a 14-item questionnaire with 13 distractors (amusement, anger, confusion, contempt, disgust, embarrassment, fear, guilt, happiness, interest, joy, pride, sadness, and shame). Participants rated the greatest extent to which they had experienced each emotion while viewing the film, on Rottenberg et al.'s 9-point Likert scale ranging from *Not at all* (0) to *Extremely* (8). The film clip was found to activate fear in the current sample ($M = 3.82$, $SD = 1.26$), as shown by Gross and Levenson (1995) and Philippot (1993). The clip also activated a high level of interest ($M = 4.29$, $SD = 1.80$) but no other specific emotions. Means for the 14 emotions demonstrated that the fear and interest scores differed significantly from the other 12 emotions.

Results and Brief Discussion

To compare the frequencies of different word categories' usage among groups, we conducted analysis of variance (ANOVA) in relation to each category, as seen in Table 1. With regard to self-referencing terms, the differences between the groups were in line with predictions, although the differences were not significant. In relation to the frequency of causal and insight words, the higher frequency for the IER condition was in line with the hypothesis, but the difference between the IER and ED conditions was not significant, $t(80) = .44$, $p = .66$,

Cohen's $d = .09$. Each experimental group significantly differed from the control group regarding these cognitive mechanisms, with $t(80) = 2.81, p = .00$, Cohen's $d = .63$ for IER versus controls and $t(80) = 2.39, p = .02$, Cohen's $d = .53$ for ED versus controls. A similar pattern of results emerged for past tense, showing higher usage of past tense in the written expression of IER participants versus the ED group, but this difference was non-significant, $t(80) = 1.46, p = .14$, Cohen's $d = .32$. Nonetheless, regarding usage of past tense, both experimental groups differed significantly from the control group: $t(80) = 3.92, p = .00$, Cohen's $d = .88$ for IER versus controls; $t(80) = 2.49, p = .02$, Cohen's $d = .55$ for ED versus controls.

Group differences in the usage of negative-emotion terms provided stronger support for our hypothesis. As described earlier, the use of emotion words indicates greater involvement and attention to the emotional experience (Holmes et al., 2007). Thus, the results revealed that usage of negative-emotion words by participants in the IER condition was significantly higher in comparison to the ED group, $t(80) = 2.50, p = .01$, Cohen's $d = .56$ and the control group, $t(80) = 3.27, p = .00$, Cohen's $d = .73$. Importantly, the difference between the ED and control groups was not significant, $t(80) = .78, p = .44$, Cohen's $d = .17$.

Thus, Study 1 provided only partial support for our hypothesis. Although the participants in the IER condition used more word categories reflecting non-defensive processing of their film-watching experience, only the frequency of negative-emotion words was significantly higher among those who had been prompted to use IER in comparison to those who had been prompted to use ED when viewing the film.

Study 1 focused on the quality of written expression as an outcome of ED and IER. The next two studies focused on the emotional, physiological, and cognitive functioning that may result from different regulation instructions for watching films that elicit negative emotions.

STUDIES 2 AND 3

Studies 2 and 3 followed Roth et al. (2014) by exploring the emotional, physiological, and cognitive consequences of emotion regulation styles that were manipulated through differing instructions to two experimental groups and one control group while viewing the same fear-eliciting film twice, 72 hours apart. At first exposure, the participants were instructed to regulate their emotions in accordance with their experimental condition. At second exposure, participants received no instructions other than to watch the film. Substituting the ED condition in the current research for the expressive suppression condition in the Roth et al. (2014) study, we hypothesized that asking participants to take interest in their emotions and explore them at first exposure to the film (i.e., IER) would result in lower arousal to the same stimulus at second exposure in comparison to participants in the ED and control conditions. Thus, we expected that the IER prompt at first exposure would protect that group from adverse emotional, behavioral, and cognitive reactions at second exposure, as found in Roth et al. (2014). Study 2 focused on self-reported emotional arousal, and Study 3 added a behavioral measure of physiological arousal and a recall test that reflected cognitive capacity, hypothesizing that lower arousal would also involve fuller processing of the stimulus and therefore better recall of details from the film.

We did not predict the same advantage for ED as we did for the IER condition, although we did hypothesize a reduction in emotional arousal from the first exposure to the second in all three conditions due to habituation. Still, we hypothesized that this reduction would be smaller for the participants in the ED condition. Given the ED group's attempt to distance themselves from their emotional experience during the first exposure, we expected them to allow themselves to engage emotionally in the film only at second exposure, when prompted to watch as they typically would. Hence, in comparison to the other two conditions, we predicted higher

emotional arousal at second exposure for the ED participants (reflected in their self-reports in Studies 2 and 3 and in their skin conductance in Study 3), which may interfere with their ability to process the stimulus and recall specific details related to it.

Both Studies' Experimental Procedure

The procedures for Studies 2 and 3 were identical, except for the addition of the skin conductance level (SCL) and recall test in Study 3. To generate a consistent experimental script for these two studies, we utilized E-Prime programming software (Schneider, Eschman, & Zuccolotto, 2002). As in Study 1, each participant was seated comfortably in a 6mX6m room with a one-way window enabling observation from the adjoining room. The experimenter (same sex as participant) informed the participant that the experiment dealt with emotion and would be videotaped. All questionnaires, instructions, and films were presented on a 23-in screen above a computer keyboard placed at a 1.5m distance from the participant.

After completing a computerized demographic questionnaire, a white screen was shown for 2 minutes to assist the participant to "clear your mind from all thoughts, feelings, and memories" and thus adjust to the experimental setting. In the experiment, participants viewed two different films (one neutral and one fear-eliciting) preceded by instructions. They also completed self-reports of emotional experience three times – once at baseline and once after each film (Gross & Levenson, 1993, 1997). Then, the participant viewed a 3-min neutral nature film, preceded by the following onscreen instructions: "*We will now be showing you a short film clip. It is important to us that you watch the film carefully, but if you find the film too distressing just say 'stop'.*" (Gross & Levenson, 1997). After watching *Alaska's Wild Denali* (Rottenberg et al., 2007), participants completed the Gross and Levenson (1993, 1997) measure again, to assess self-reported emotional experiences while watching the neutral film. Next, the fear-eliciting *The*

Silence of the Lambs film clip was presented (Rottenberg et al., 2007) after its pre-film instructions. Each participant received one of three sets of onscreen instructions, as determined by his/her random assignment to one of the three conditions: ED, IER, or control. For participants in the ED and IER groups, instructions were identical to those used in Study 1. For the control group, the instructions that preceded viewing of *Alaska's Wild Denali* were repeated. After the film clip, participants completed the Gross and Levenson (1993, 1997) measure a third time to assess self-reported emotional experiences while watching the fear-eliciting film.

All participants returned to the lab 72 hours later and underwent the same procedure. Each session lasted for about 20 minutes.

STUDY 2

Participants

Participants in Study 2 were 90 undergraduate students from Ben-Gurion University in Israel. Power analysis revealed that significant effects, assuming a medium effect size ($\eta^2 \geq .06$) and power of .80, required a sample size of 90 (Cohen et al., 2003). Students visited the lab for two individual sessions held 72 hours apart and were paid \$15. Mean age was 24.19 years ($SD = 1.83$), and 68% were female. Participants were assigned randomly to one of the three conditions ($n = 30$ each): ED regulation, IER, or control. No significant differences emerged among the three groups on age or sex using chi-square tests. Eleven participants (12%) reported that they had seen the film in the past.

Measures

Demographic questionnaire. Participants provided information on age, sex, major of study, and year of study.

Self-reported emotional experience. At the beginning of each session and after viewing

each film, participants received the same 14-item set utilized in Study 1 (Gross & Levenson, 1993, 1997). Participants rated the greatest amount of each emotion they had felt while viewing each of the two films, on a 9-point Likert scale ranging from *Not at all* (0) to *Extremely* (8) taken from Rottenberg et al. (2007).

Conditions' manipulation check. To verify that participants adhered to the differing instructions in the three groups, at the end of the first session participants completed two items. On a 9-point Likert scale ranging from *Very often* (8) to *Never* (0), participants in all three groups rated: (a) the extent to which they tried to explore and understand what they felt during *The Silence of the Lambs* film; and (b) the extent to which they tried to distance themselves from their emotional experience during *The Silence of the Lambs* film.

Results and Brief Discussion

Manipulation Checks

Efficacy of stimulus films. We examined the efficacy of *The Silence of the Lambs* film in eliciting fear compared to the neutral film, based on self-report. Participants' self-reported fear levels, as rated on the post-film self-reported "fear" item embedded in distractor items, were significantly higher during the fear-eliciting *The Silence of the Lambs* than during the neutral *Alaska's Wild Denali* in both Session 1, *Lambs*: $M = 3.69$, $SD = 2.25$; *Alaska*: $M = .33$, $SD = .96$; $t(89) = 13.41$, $p = .00$, Cohen's $d = 2.84$, and Session 2, *Lambs*: $M = 1.73$, $SD = 1.54$; *Alaska*: $M = .08$, $SD = .35$; $t(89) = 10.19$, $p = .00$, Cohen's $d = 2.16$. In addition, as in Study 1, the short film clip from *The Silence of the Lambs* also activated interest ($M = 4.23$, $SD = 2.03$) in Session 1. No other specific emotions were elicited to the same extent as these two experiences.

Efficacy of the three conditions' instructions. The conditions' manipulation check item asked participants to rate the extent to which they tried to understand what they really felt while

watching *The Silence of the Lambs* film. Results verified that participants in the IER condition adhered to instructions. They reported the highest attempt to explore their emotional experience ($M = 6.11$, $SD = 1.45$) in comparison to the ED ($M = 2.41$, $SD = 1.93$) and the control ($M = 3.86$, $SD = 2.08$) groups. The differences were significant, $F(2, 87) = 27.85$, $p = .00$, $\eta^2 = .41$.

Planned contrasts revealed significant differences between the IER condition and the other two conditions: for the comparison with the control group, $t(87) = 4.57$, $p = .00$, Cohen's $d = .98$, and for the comparison with the ED group, $t(87) = 7.40$, $p = .00$, Cohen's $d = 1.59$.

Data from the conditions' manipulation check item that asked participants at the end of Session 1 to rate the extent to which they tried to "be detached from my emotions and not feel a thing" while watching *The Silence of the Lambs* film verified that the participants in the ED condition also adhered to their instructions. They reported higher attempts to distance themselves from their emotions ($M = 5.59$, $SD = 1.69$) in comparison to the control ($M = 2.14$, $SD = 2.18$) and the IER ($M = 1.00$, $SD = 1.23$) groups. The differences were significant, $F(2, 87) = 51.22$, $p = .00$, $\eta^2 = .56$. Significant differences emerged between the ED condition and the other two conditions: $t(87) = 9.73$, $p = .00$, Cohen's $d = 2.08$ for the comparison with the IER group, and $t(87) = 2.45$, $p < .00$, Cohen's $d = 0.52$ for the comparison with the control group.

Main Analyses

We hypothesized that the intensity of the fear experience would be lower at second exposure to the fear-eliciting film for all three conditions, but that this reduction would be larger for the IER group, presumably because of better regulatory efforts at first exposure to the same stimulus. Thus, we conducted a two-way ANOVA with condition as the between-subjects factor and time as the within-subjects factor. In this study, fear intensity was measured by post-film self-reports in each session. It is important to note that the following results did not change when

we controlled for prior viewing of the fear-evoking film (reported by 12% of participants).

Regarding self-reported experiences of fear during *The Silence of the Lambs* film, the main effect for condition (IER/ED/control) was not significant, $F(2, 86) = .68$, ns , but, as expected, we found a reduction in participants' experience of fear between the two sessions, $F(1,86) = 66.17$, $p = .00$, $\eta^2 = .45$. Thus, regardless of the condition to which participants were assigned, they reported higher fear in the first session ($M = 3.38$, $SD = 2.26$) in comparison to the second session ($M = 1.64$, $SD = 1.45$). Further, in line with this study's main hypothesis, the interaction between condition and time (Session1/Session2) was marginally significant with a moderate effect size, $F(2, 86) = 2.74$, $p = 0.06$, $\eta^2 = .06$. As seen in Figure 1, the reduction in fear experience was stronger for the IER condition (Session 1: $M = 3.54$, $SD = 2.20$; Session 2: $M = 1.12$, $SD = 1.17$) in comparison to the ED group (Session 1: $M = 3.04$, $SD = 2.39$; Session 2: $M = 1.78$, $SD = 1.53$) and in comparison to the control group (Session 1: $M = 3.55$, $SD = 2.23$; Session 2: $M = 2.03$, $SD = 1.59$). Analysis of simple interactions revealed that the difference in the magnitude of fear reduction over time between the IER condition and the control group was marginally significant, $F(1,58) = 3.22$, $p = .078$, $\eta^2 = .06$, and the difference between the IER and ED conditions was significant, $F(1,58) = 4.26$, $p = .04$, $\eta^2 = .07$.

Thus, like Roth et al. (2014), a stronger reduction in fear intensity was found for the IER condition, but unlike Roth et al. (2014) the present comparison referred to the antecedent-focused regulation style of ED instead of the response-focused expressive suppression style. Hence, the present study provided additional support for the "immunization" hypothesis but, unlike Roth et al. (2014), the present outcome measure was limited to self-reported level of arousal. Therefore, we undertook an additional study that, beyond replicating Study 2, involved a physiological measurement of arousal, as well as a recall test to provide indication of the quality

of cognitive functioning resulting from the different regulation styles.

STUDY 3

As described earlier, we hypothesized a reduction in the intensity of fear (indicated by self-report and SCL) for all conditions due to habituation, but we hypothesized the strongest reduction in the IER condition. Fear response is characterized by sympathetic activation, which among other physiological responses involves an increase in SCL (Kreibig, Wilhelm, Roth, & Gross, 2007). Moreover, we hypothesized that the lower fear activation in the IER condition may involve superior cognitive functioning manifested as better recall of specific details from the fear-eliciting film. Richards and Gross (2000) found that in comparison to a control group, only expressive suppression but not ED led to poorer memory, whereas the difference between ED and expressive suppression was not significant. Roth et al. (2014) demonstrated a significant advantage in recall for IER over expressive suppression. These findings call for further exploration of cognitive ability as an outcome of IER and ED styles.

Method

Participants

Participants were 135 undergraduate students recruited at Ben-Gurion University (7 were excluded because of incomplete self-report data). Students visited the lab for two individual sessions held 72 hours apart and were paid \$15. Mean age was 24.19 years ($SD = 1.87$), and 61% were female. Participants were randomly assigned to one of the three conditions: ED regulation ($n = 41$), IER ($n = 45$), or control ($n = 41$). No significant differences emerged among the three groups on age or sex using chi-square tests. We excluded 35 participants from the SCL analyses because of technical problems in the data acquisition box, leaving 100 participants for these analyses ($n = 34$ for ED, 34 for IER, and 32 for control conditions).

Experimental Procedure

The procedure was identical to Study 2 except for the addition of the SCL measure and recall test. The physiological sensors measuring SCL were attached to the participants' non-dominant hand before the experimenter left the room.

Measures

As in Study 2, we initially administered a demographic questionnaire, a self-report of emotional experience, and a conditions' manipulation check. Two additional measures were as follows:

Physiological arousal. Continuous recording of participants' SCL was measured by Mindware Technologies' (Gahanna, OH) BioLab acquisition software and hardware, in accordance with Society for Psychophysiological Research Guidelines (Boucsein et al., 2012), with two Ag/AgCl electrodes placed on the palmar surface of the middle phalanx of the first and third fingers of the non-dominant hand. The second-by-second SCL values were averaged for the two epochs of the baseline and the fear-eliciting film in each session. A difference score was calculated by subtracting the baseline mean SCL from the value obtained during the fear-eliciting film.

Cognitive recall. At the end of the second session, participants completed an 11-item multiple-choice test developed for the purpose of this study. Items required recall of specific details from *The Silence of the Lambs* film clip (e.g., "What was the name of the male character?;" "What was the color of the detective's jacket?"). Hence, scores ranged from 0 to 11, with higher scores indicating better recall.

Results and Brief Discussion

Efficacy of stimulus films. We examined the efficacy of *The Silence of the Lambs* film in

eliciting fear compared to the neutral film, based on self-report and physiological activation.

Self-report. Participants' self-reported fear levels, as rated on the post-film "fear" item embedded in distractor items, were significantly higher during the fear-eliciting *The Silence of the Lambs* than during the neutral *Alaska's Wild Denali* both in Session 1, *Lambs*: $M = 3.15$, $SD = 2.08$; *Alaska*: $M = .17$, $SD = .44$; $t(126) = 16.01$, $p = .00$, Cohen's $d = 2.85$, and in Session 2, *Lambs*: $M = 1.99$, $SD = 1.78$; *Alaska*: $M = .35$, $SD = .74$; $t(126) = 11.05$, $p = .00$, Cohen's $d = 1.97$. In addition, and as found by others (Roth et al., 2014; Rottenberg et al., 2007), the short film clip from *The Silence of the Lambs* also activated interest ($M = 5.10$, $SD = 2.03$) and surprise ($M = 3.17$, $SD = 2.03$) in Session 1. No other specific emotions were elicited to the same extent as these three experiences.

Skin conductance. To avert an instruction effect for the two films, we tested whether SCL increased from the baseline to the fear-eliciting film stimulus among participants in the control group. As expected, the control participants showed significantly higher SCL during the fear-eliciting *The Silence of the Lambs* than during the baseline in Session 1: *Lambs*: $M = 7.63$ μ siemens, $SD = 6.02$; *baseline*: $M = 6.28$ μ siemens, $SD = 5.72$; $t(31) = 4.16$, $p = .00$, Cohen's $d = 1.49$.

Efficacy of the three conditions' instructions. Similar to Study 2, the conditions' manipulation check item asked participants at the end of Session 1 to rate the extent to which they tried to understand what they really felt while watching *The Silence of the Lambs* film. Replies verified that participants in the IER condition adhered to their instructions, as they reported the highest attempt to explore their emotional experience ($M = 6.11$, $SD = 1.66$) compared to the ED group ($M = 3.51$, $SD = 2.59$) and the control group ($M = 3.95$, $SD = 2.42$). The differences were significant, $F(2, 124) = 17.21$, $p = .00$, $\eta^2 = 2.12$. Planned contrasts

revealed significant differences between the IER condition and the other two conditions: $t(124) = 4.46, p = .00$, Cohen's $d = 0.80$, for the comparison with the control group and $t(124) = 5.45, p = .00$, Cohen's $d = .98$, for the comparison with the ED group.

Data from the conditions' manipulation check item asking participants at the end of Session 1 to rate the extent to which they tried to "be detached from my emotions and not feel a thing" while watching *The Silence of the Lambs* film verified that the participants in the ED condition also adhered to their condition's instructions. Those in the ED condition reported the highest attempts to hide their emotions ($M = 5.90, SD = 1.81$) compared to the control group ($M = 1.54, SD = 1.60$) and the IER group ($M = 1.38, SD = 2.02$). The differences were significant, $F(2, 124) = 81.90, p = .00, \eta^2 = .57$. Significant differences also emerged between the ED condition and the other two conditions: $t(124) = 11.54, p = .00$, Cohen's $d = 2.07$ for the comparison with the IER group, and $t(124) = 10.65, p = .00$, Cohen's $d = 1.91$ for the comparison with the control group.

Main Analyses

As in Study 2, we hypothesized that the intensity of the fear experience would be lower at second exposure to the fear-eliciting film for all three conditions due to habituation, but that this reduction would be larger for the IER group. Thus, we conducted two-way ANOVAs, with condition (IER/ED/control) as the between-subjects factor and with time (Session1/Session2) as the within-subjects factor. Fear intensity was measured by self-report and physiology; therefore, we conducted analysis for each measure separately. It is important to note that the following results did not change when we controlled for prior viewing of the fear-evoking film (reported by 12% of participants).

Self-report. Regarding self-reported experiences of fear during *The Silence of the Lambs*

film, the main effect for condition was not significant but, as expected, we found a reduction in participants' experience of fear between the two sessions, $F(1,124) = 46.50, p = .00, \eta^2 = .27$.

Table 2 presents descriptive statistics. Regardless of the condition to which participants were assigned, they reported higher fear in the first session ($M = 3.15, SD = 2.08$) in comparison to the second session ($M = 1.99, SD = 1.78$). Further, in line with this study's main hypothesis, the interaction between condition and time was significant, with a moderate effect size, $F(2,124) = 8.66, p = .01, \eta^2 = .08$. As seen in Figure 2, the reduction in self-reported fear experience was stronger for the IER condition (Session 1: $M = 3.32, SD = 2.04$; Session 2: $M = 1.45, SD = 1.67$) compared to the ED condition (Session 1: $M = 2.85, SD = 2.14$; Session 2: $M = 2.20, SD = 1.63$) and the control group (Session 1: $M = 3.26, SD = 2.09$; Session 2: $M = 2.38, SD = 1.99$).

Analysis of simple interactions revealed a significant difference in the magnitude of fear reduction over time between the IER and control groups, $F(1,84) = 6.55, p = .01, \eta^2 = .072$, as well as between the IER and ED groups, $F(1,86) = 8.73, p = .00, \eta^2 = .09$.

Physiology (SCL). First, we computed a change score for each session by deducting the SCL score at baseline from the SCL score during the fear-eliciting film. We hypothesized that the results of the SCL would replicate the self-report data found for fear, showing a stronger SCL reduction from Session 1 to Session 2 for the IER condition. Thus, we conducted a two-way ANOVA for mean SCL change scores, with condition as the between-subjects factor and time as the within-subjects factor. We found a significant time effect (Session 1: $M = 1.02, SD = 1.78$; Session 2: $M = .33, SD = 1.30$), $F(1,97) = 8.06, p < .01, \eta^2 = .09$, and a non-significant condition effect, $F(2, 97) = 1.16, p = .32, \eta^2 = .03$ (see descriptive statistics on Table 2).

Contrary to our hypothesis, the interaction between condition and time was not significant, $F(2, 97) = 1.05, p = .36, \eta^2 = .03$, suggesting that SCL was lower in the second session than the first

for all three conditions. This finding may be attributed to the low SCL score obtained for IER in the first session, which did not allow for a large reduction in Session 2. Past research found that ED resulted in lower sympathetic activation in comparison to expressive suppression, but not in comparison to a control group (Gross, 1998). Given that exploration of a negative emotional experience (IER) may be quite demanding in the short term, it may be speculated that in the first session those participants prompted to perform IER may reveal higher sympathetic activation than the other two groups. Contrary to this expectation, in Roth et al. (2014) we found a lower sympathetic activation of the IER condition at first exposure in comparison to the expressive suppression and control groups. Likewise, in the present study the lowest sympathetic activation in Session 1 was found for the IER group (see Table 2), although, unlike in Roth et al. (2014), the differences among the groups in the present sample were not significant. Interestingly, the differences among groups in Session 2 were significant, $F(2, 97) = 3.30, p = .04, \eta^2 = .07$. Contrast analyses yielded one significant comparison: between the IER condition and ED groups, $t(97) = 2.56, p < .05$, Cohen's $d = 0.52$. Thus, participants in the IER condition had a significantly lower SCL than the ED condition at second exposure to the fear-eliciting film.

Recall test. We hypothesized that the best recall (at the end of the second session) would be shown by the participants in the IER condition because they were expected to be more relaxed and free to process the content of the film stimulus due to better regulatory efforts made in the first session. Mean correct response scores on the multiple-choice recall test were 6.76 ($SD = 1.23$) for the IER condition, 5.93 ($SD = 1.37$) for the ED condition, and 6.08 ($SD = 1.26$) for the control condition. Whereas the comparison among groups was only marginally significant, $F(2, 124) = 2.72, p = .08, \eta^2 = .04$, the specific comparison between the IER and ED conditions was significant, $t(124) = 2.1, p = .04$, Cohen's $d = 0.38$. Hence, as expected, asking participants to

take interest in their emotions in the first session resulted in better cognitive recall than asking participants to avoid the expression of their emotions.

GENERAL DISCUSSION

In the present paper, three studies explored various outcomes of ED and IER, as emotion regulation styles applied during exposure to the same fear-evoking stimulus. All three studies manipulated participants' regulatory style using experimental prompts. Study 1 tested emotional defensiveness in the prompted IER, ED, and neutral groups' written expressions. The results suggested that when prompted to perform IER, participants tended to use more negative-emotion words to describe their experience during the fear-eliciting film, thereby reflecting less defensiveness in comparison to the other conditions. These experimental results upheld Roth et al.'s (2014) correlational findings between self-reported IER and non-defensive written expression. These findings also coincide with past research outcomes on the associations between receptive attention to one's experiences and less ego-defensive responsivity under threat (Brown et al., 2008).

The next two studies explored the affective, physiological, and cognitive consequences of the IER versus ED regulatory styles. The results of Studies 2 and 3 provide support for the "immunization" hypothesis; thus, as expected, all participants reported lower emotional arousal when exposed a second time to the fear-eliciting film, but this reduction was significantly larger for the participants in the IER condition. Hence, in comparison to the ED condition, IER participants' integrative processing of the emotional experience at first exposure was indeed found to result in lower arousal and better cognitive functioning later, at second exposure. Importantly, all participants were instructed to regulate their emotions according to the assigned condition only at first exposure, but at second exposure they were free to process the experience

naturally. Thus, in comparison to the IER group, the ED group revealed higher arousal and poorer memory at second exposure when viewing the film naturally for the first time.

Richards and Gross (2000) explored the effects of expressive suppression and ED on memory. They found that in comparison to a control group, only expressive suppression, but not ED, led to poorer memory. Thus, ED did not improve memory in comparison to a control group but did not deteriorate it either. In line with these findings, the present research did not find differences in cognitive recall between the ED and the neutral conditions. However, participants in the ED condition did show inferior cognitive functioning in comparison to the IER group.

The findings regarding SCL reveal that at second exposure, the IER instructions resulted in lower sympathetic arousal in comparison to the ED instructions, thereby supporting the "immunization" hypothesis. However, the hypothesized interaction between group and time of exposure was not significant, maybe due to the low SCL level among IER participants at first exposure to the fear-eliciting film, which may have prevented meaningful reduction in the second session. This result corroborates our earlier finding (Roth et al., 2014) of significantly lower SCL for integrative regulation than for expressive suppression at first exposure.

Interestingly, in the present research as well as in Roth et al. (2014), self-reports about arousal revealed the opposite trend to actual SCL at first exposure: Thus, in Session 1, IER participants reported higher levels of fear in comparison to the other two conditions (although differences were not significant). These opposing trends for the self-reported and physiological data, if validated by future research, may possibly be attributed to the IER condition's instructions: On the one hand, the prompt to take interest in and be attentive to emotional experiences may have been perceived by IER participants as demanding energy investment and emotionality, leading to self-reports of high arousal. On the other hand, the explicit instructions

to take active interest in exploring feelings may have legitimized these participants' reactions to the experience of negative emotions and may have lessened their socially normative distress about outwardly disclosing their film-evoked fear in public (to unfamiliar research assistants in an unfamiliar setting), thereby perhaps resulting in lower actual physiological arousal. Indeed, previous studies showed increases in electrodermal responses corresponding with defensive or appetitive activations, where the largest responses accompanied the most arousing pleasant and unpleasant contents (Bradley, Codispoti, Cuthbert, & Lang, 2001; Bradley & Lang, 2007).

Hence, in the present research, although the unpleasant fear-evoking stimulus was equivalent across conditions, the level of defensive activation may have been smaller in the IER condition. Of course, this speculation should be explored in future research and on a larger scale.

These findings are in line with the SDT definition of adaptive regulation. From the SDT viewpoint, regulatory styles such as expressive suppression and ED may each be adaptive at times, but only to the extent that they are enacted volitionally based on the individual's ability to take interest in the emotional experience and integrate it with important aspects of self, such as needs, values, and goals. For example, a person aware of workplace norms and underlying goals for job promotion might smile and breathe deeply to avoid or hide anger toward the boss, thereby choosing to avert the personal costs attributed to the expression of an emotion that is perceived as counterproductive in the specific circumstances (e.g., see Shultz et al., in press). However, expression of anger could be productive in other circumstances. Thus, the ability to choose to flexibly express, suppress or avoid the emotional experience depends on the ability to take interest in and explore one's emotions without the defensiveness that would distort one's experience. When attempts to suppress or avoid the emotional stimulus are enacted consistently as a defense mechanism (e.g., in some cultures where expression of anger is considered

unacceptable or improper), they may result in consistent avoidance of emotional experience. Such avoidance has been linked with adverse psychological and behavioral costs for well-being (Gámez et al., 2014; Hayes, 2003; Kelly & Forsyth, 2009), capacity for intimacy (Roth & Assor, 2012), empathy, and prosocial behavior (Benita, Levkovitz, & Roth, in press; Roth et al., in press).

While attempts to distance oneself from the emotional experience or to suppress the behavioral expression of that emotional experience can be seen as two ways to cope with illegitimate or threatening emotions, one may view emotional acceptance, mindful attention, and IER as more adaptive coping styles (Hayes, 2003; Ryan et al., 2006). However, in the latter emotion regulation styles, the attention focused on negative emotions may potentially result in an overwhelming experience of flooding or paralysis, which characterize dysregulation. Yet, recent research provided support for a clear distinction between dysregulation and IER. Thus, in Roth et al. (2014) we simultaneously regressed Pennebaker's defensive and non-defensive word categories on IER, suppression, and dysregulation, and associations between IER and non-defensive written expression continued to emerge even while controlling for dysregulation. Furthermore, Roth and Assor (2012) examined IER and dysregulation as related to the capacity for intimacy. While controlling one for the other, IER was positively related to intimacy capacity, whereas the reverse was true for dysregulation.

These recent studies suggest that taking active interest in one's emotions does not necessarily involve dysregulation. Therefore, in terms of adaptive functioning, emotion regulation should not be simplified dichotomously, as two poles characterized by down-regulation of emotion (e.g., ED) or of its expressive behaviors (suppression) on the one hand, versus up-regulation (flooding and paralysis) on the other hand. IER reflects a distinctive

emotional capacity in which the tolerant, accepting, and interested stance toward negative emotions does not impair adaptive functioning due to flooding, but on the contrary, predicts non-defensive emotional processing (Roth et al., 2014), better intimacy capacity (Roth & Assor, 2012), and social relations (Benita et al., in press; Roth et al., in press). Future research should provide more support for these distinctions.

Several implications emerge from the current outcomes that highlight the advantages of integratively regulating emotional experiences for increasing non-defensive emotional processing, lowering arousal levels, and enhancing cognitive functioning. First, inasmuch as countless internal and external stimuli may evoke negative feelings, deliberate attempts to process such emotion-eliciting situations in correspondence with major aspects of the self may help to ameliorate the affective reactions and functional costs of repeated exposure to these everyday stimuli. In addition, treatment methods may be adopted that align with these findings, including those that derive from theoretical considerations other than SDT. For example, prolonged exposure therapy (Foa, 2006) for individuals with posttraumatic stress disorder utilizes imaginary exposure to and emotional engagement with memories of the traumatic event (Jaycox, Foa, & Morral, 1998). Clinical studies underscored the effectiveness of the emotional engagement component in such treatment (Foa, Hembree, & Rothbaum, 2007; Jaycox et al., 1998). In line with this approach, acceptance and commitment therapy (ACT; Hayes, 2003) teaches clients to actively be aware of their experiences without distortion, as an alternative to experiential avoidance (Hayes, Luoma, Bond, Masuda, & Lillis, 2006).

Despite the current experimental approach's advantage for extending past research on styles of emotion regulation, our research had several limitations. First, we explored the novel IER regulation style on a small scale, calling for more research to replicate and expand the

present findings. Especially important is future examination of various other emotional, cognitive, and behavioral outcomes. Second, our findings unfortunately do not yet furnish a clear explanation for the processes that underlie successful attentiveness to emotional experiences; nor is sufficient empirical evidence available in the literature on such processes (Brown et al., 2007; Roth et al., 2014). Considering that our present and earlier work (Roth et al., 2014) provided some indication that IER was linked with less defensive processing of fear, we propose that defensive/non-defensive processing should be examined as a variable that may mediate the relations between emotion regulation styles and their outcomes.

In sum, the present studies seemed to pinpoint the advantage of emotional integration in relation to fear experiences. People who practiced higher IER were somewhat less defensive in writing retrospectively about the frightening event, and when exposed a second time to the same event they were less emotionally stimulated and recalled the event's details better. We do not claim that avoidance or ED is necessarily problematic because its use is context-related, but we do claim that individuals' ability to volitionally choose how to process emotion may predict adaptive functioning. Future research should provide further support for this claim.

Declaration of Conflicting Interests

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Table 1

Study 2: Means, Standard Deviations, and F Values for Pennebaker's Word Categories as a Function of Emotion Regulation Condition

Word categories	Experimental condition						<i>F</i>	<i>pη²</i>
indicating non-defensive emotion processing	Integrative emotional regulation		Emotional distancing regulation		Neutral			
	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)		
Self-referencing terms	6.56	(3.26)	6.04	(3.08)	5.66	(2.66)	.62	.02
Causal & insight words	21.47	(4.10)	20.90	(4.21)	17.82	(5.91)	4.62*	.10
Past tense words	8.23	(2.23)	7.18	(2.72)	5.34	(3.26)	7.88**	.17
Negative-emotion words	6.48	(3.93)	4.29	(2.82)	3.62	(2.86)	5.83**	.13

* $p < .05$. ** $p < .01$.

Table 2

Study 3: Means (and Standard Deviations) of Self-Reported Fear and Skin Conductance

Level by Condition and Time

Time	Self-reported fear			Skin conductance level		
	Integrative	Emotional	Neutral	Integrative	Emotional	Neutral
	emotional	distancing		emotional	distancing	
	regulation	regulation		regulation	regulation	
<i>Session 1</i>	3.32 (2.04)	2.85 (2.14)	3.26 (2.09)	.87 (2.16)	.94 (2.00)	1.23 (1.67)
<i>Session 2</i>	1.45 (1.67)	2.20 (1.63)	2.38 (1.99)	-.09 (1.05)	.74 (1.39)	.34 (1.36)

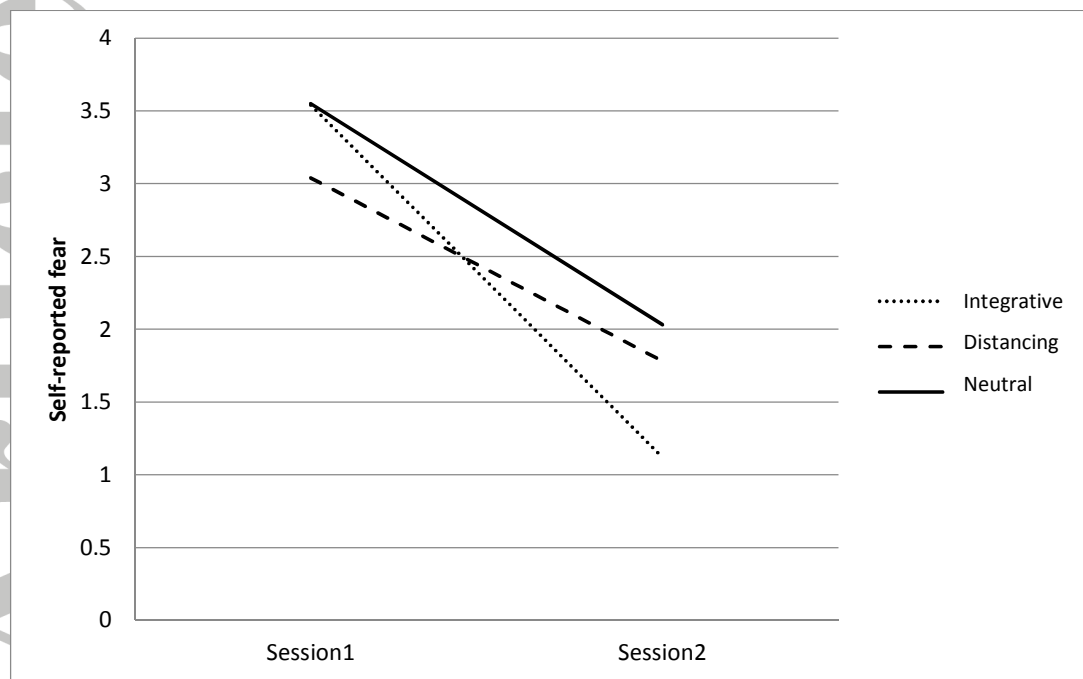


Figure 1. Study 2 – Change in self-reported level of fear arousal in three emotion-regulation prompted groups.

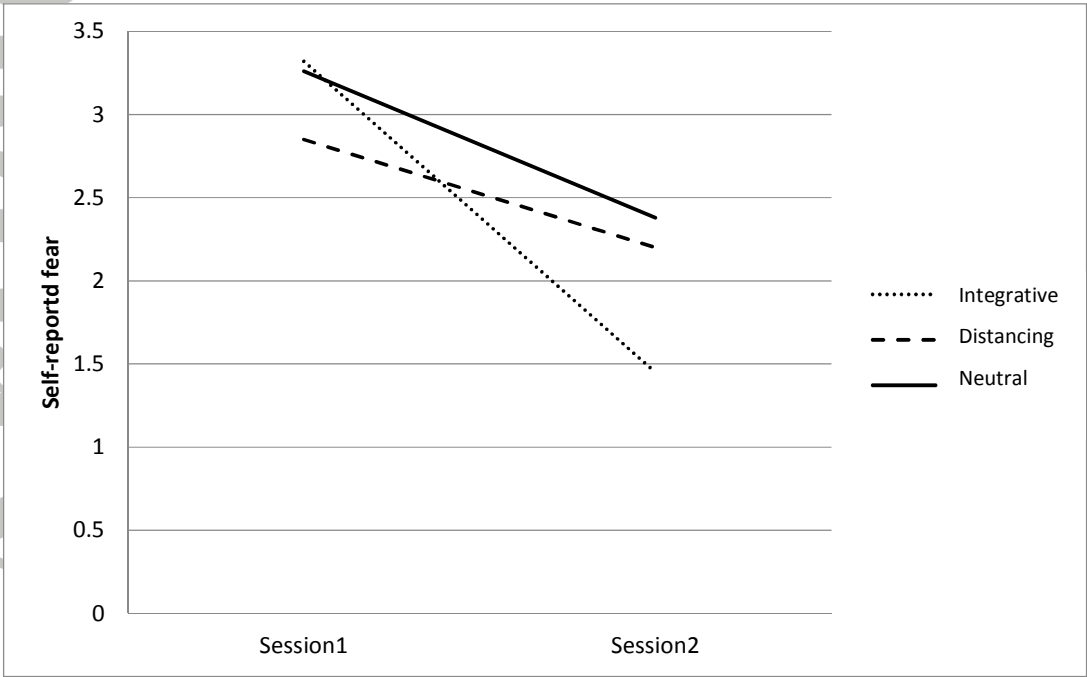


Figure 2. Study 3 – Change in self-reported level of fear arousal in three emotion-regulation prompted groups.