Published in final edited form as:

Cogn Emot. 2014 June ; 28(4): 678–697. doi:10.1080/02699931.2013.853648.

Age differences in managing response to sadness elicitors using attentional deployment, positive reappraisal, and suppression

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Abstract

The current study investigated age differences in the use of attentional deployment, positive reappraisal, and suppression while regulating responses to sadness-eliciting content. We also tested to what extent these emotion regulation strategies were useful for each age group in managing response to age-relevant sad information. Forty-two young participants ($M_{age} = 18.5$, $SE = .15$) and 48 older participants ($M_{age} = 71.42$, $SE = 1.15$) watched four sadness-eliciting videos (about death/illness, 4–5 minutes long) under four conditions - *no-regulation* (no regulation instructions), *attentional deployment* (divert attention away), *positive reappraisal* (focus on positive outcomes), and *suppression* (conceal emotional expressions). We assessed negative emotional experience, expression, skin conductance level, and visual fixations while participants watched the emotional clips and followed the instructions for each condition. Results suggest that older adults were more successful than younger adults at implementing both attentional deployment and positive reappraisal. Ability to suppress emotions appears to remain stable with age. Within age-group comparisons suggested that for the older adults, positive reappraisal was a more useful emotion regulation strategy than the others, while the pattern among younger adults was less conclusive. Age-relevant differences in motivation and successful emotion regulatory efforts based on theoretical and empirical literatures are discussed.

Keywords

Aging; Sadness; Emotion regulation; Psychophysiology

Age differences in managing response to sadness elicitors using attentional deployment, positive reappraisal, and suppression Emotion regulation (attempts to modify subjective experiences and behavioral expressions associated with felt emotions; Gross, 1998a) is not a single process but rather a family of processes. Gross's process model of emotion regulation (1998a) distinguishes among regulation strategies based on their temporal occurrence in the emotion-generation process. In this paper, we focus on three emotion regulation strategies: The first two, *attentional deployment* (directing attention to aspects of emotional stimuli in order to influence the felt emotions) and *positive reappraisal* (focusing on recognizing the positive aspects and outcomes of the negative situation), are focused on manipulating the emotion-generation process. Conversely, *suppression* involves concealing an ongoing emotion-expressive behavior. In typical laboratory-based studies, participants are shown standardized emotional stimuli (videos or pictures) and are given specific instructions on how to modify their emotional response by using an emotion regulation strategy (e.g., Gross

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& Levenson, 1993; Kunzmann, Kupperbusch, & Levenson, 2005; Phillips, Henry, Hosie, & Milne, 2008; Urry, 2010).

In such studies, successful implementation of a strategy can be assessed by comparing participants' emotional response to standardized stimuli while using the strategy relative to the non-regulation condition, when no specific regulation instructions are provided (e.g., Kunzmann et al., 2005; Phillips et al., 2008). An emotional response can affect different systems including subjective experience, behavioral response, and physiological aspects (Lang, 1988; Mandler, 1975). A multi-methods measurement may benefit our understanding of emotions (Larsen & Prizmic-Larsen, 2006; Mauss & Robinson, 2009). Age may influence success at implementing different emotion regulation strategies that require different abilities and lead to different outcomes (Shiota & Levenson, 2009; Urry & Gross, 2010). Along these lines, a multi-method approach may help in a more thorough understanding of age-differences in the implementation of different emotion regulation strategies.

Age differences in use of emotion regulation strategies

Contrary to the negative stereotype of aging, theoretical and empirical literatures suggest that emotion regulation skills may be maintained or enhanced throughout adulthood. According to Socioemotional Selectivity Theory (SST; Carstensen, Isaacowitz, & Charles, 1999), as individuals get older they are motivated by a limited time perspective to pursue emotion regulatory goals, which is consistent with the idea of a general age-related improvement in emotion regulation. In line with theoretical formulations, compared to their younger counterparts, older adults report experiencing fewer negative and more positive emotions as suggested by cross-sectional (e.g., Gross et al., 1997; Mroczek & Kolarz, 1998) as well as longitudinal research (e.g., Carstensen, Pasupathi, Mayr, & Nesselroade, 2000; Carstensen et al., 2011; Charles, Reynolds, & Gatz, 2001). They also endorse statements that reflect high levels of emotion control, mood stability, and greater well-being (e.g., Carstensen et al., 2011; Lawton, Kleban, Rajagopal, & Dean, 1992; Orgeta, 2009) and consider themselves to employ effective regulatory strategies with which to control their emotional responses (e.g., Carstensen et al., 2000; Gross et al., 1997; Lawton et al., 1992). Older individuals might achieve these emotional goals by allocating social and cognitive resources towards emotion regulation; however, older adults are not predicted to show a uniform improvement in all forms of regulation strategies.

As posited by the Selection, Optimization, and Compensation with Emotion Regulation theory (SOC-ER), older adults select and optimize certain emotion regulation strategies to compensate for age-related changes in affective and cognitive functioning, which may lead older adults to use different emotion regulation strategies than younger adults (Urry & Gross, 2010). Past work has largely looked at age differences in using reappraisal and suppression strategy. For instance, questionnaire data suggest that older adults use reappraisal more than suppression (John & Gross, 2004).

In addition to age differences in the *use* of different emotion regulation strategies, there may also be age differences in the *success of implementing* different strategies. Different regulation strategies may be applied more successfully at different times of life (e.g., Opitz, Rauch, Terry, & Urry, 2012; see also Isaacowitz & Blanchard-Fields, 2012). One empirical study compared age differences in the abilities to use positive reappraisal and suppression while regulating disgust and sadness (Shiota & Levenson, 2009). Results (collapsed across both emotions) suggested that older adults were more successful than younger adults in using positive reappraisal (indicated by reduced negative experience and less physiological activity). This finding was in line with past research that older adults tend to allocate greater attention to positive facial expression and image stimuli (e.g., Charles & Carstensen, 2007),

and they are more successful in engaging with positive aspects of a negative situation. Moreover, no age differences were found in successfully implementing suppression (Shiota & Levenson, 2009). Other studies which have used film clips portraying injustice (Phillips et al., 2008) or disgust (Kunzmann et al., 2005) have also found that, when instructed to suppress emotions, both younger and older adults are able to reduce external displays of negative emotion. These laboratory studies imply that suppression ability remains stable throughout older adulthood.

However, previous work provides only limited and indirect evidence regarding age differences in implementing attentional deployment. A growing body of research suggests that positive attentional preferences are exhibited by older adults in order to promote, maintain, or enhance a positive emotional state (e.g., Carstensen, Mikels, & Mather, 2006; Isaacowitz, Wadlinger, Goren, & Wilson, 2006a, 2006b), which can be categorized as part of the regulatory strategy of attentional deployment. Positive gaze preferences may help older adults in alleviating negative mood in real time. Older adults in negative moods have shown positive gaze preferences to improve their mood implying that they use gaze not to reflect their mood but to regulate it (Isaacowitz, Toner, Goren, & Wilson, 2008). Nevertheless, no studies have investigated age differences in implementing *deliberate* attentional deployment. Furthermore, there is a lack of research comparing age differences in using attentional deployment to other emotion regulation strategies such as reappraisal and suppression. A comparison between attentional deployment and suppression is also interesting as the former involves avoidance approach while the latter involves inhibition of negative information. Past work has established the benefits of reappraisal over suppression (Gross, 1998b), however we do not know of any study that has compared deliberate attentional deployment with suppression (or positive reappraisal) and looked at underlying age differences. This was the inspiration for the first goal of the current study, where we have investigated age differences in implementing these three strategies in younger and older adults.

The specific comparison between attentional deployment and positive reappraisal is quite important, especially among older adults, as these strategies have different regulation foci and resource demands. In a negative situation, attentional deployment is focused on regulating one's attention toward neutral aspects of the situation; however, positive reappraisal involves focusing one's attention on positive aspects of the situation. It is possible that due to older adults' preference for positive information (Isaacowitz et al., 2006a, 2006b) they may be more successful at implementing positive reappraisal (Shiota & Levenson, 2009). However, positive reappraisal involves attending to and reinterpretation of emotional information in a positive light which requires semantic elaboration (e.g., Sheppes & Gross, in press) and is thought to be more resource demanding for older adults (Opitz et al., 2012). On the other hand, attentional deployment may require less effort compared to reappraisal as attention is focused away from emotional content and may minimize its emotional impact (Sheppes & Gross, in press; Sheppes & Meiran, 2007, 2008), which may make it older adults' preferred regulation strategy. Given the decline in cognitive resources and changes in motivations to maintain emotional wellbeing (Urry & Gross, 2010), it is unclear which of the two strategies may be more useful for older adults, in terms of success in implementing them and resource demands, to manage sadness-eliciting content. This was the reasoning behind the second goal of the current study.

Age differences in emotional response to sadness

Aging may relate to negative emotions in distinct ways. For example, later adulthood is accompanied with increased instances of loss in various domains such as physical or mental health and social or personal losses (Lindenberger & Baltes, 1997). It is possible that

sadness reactivity may increase with age because social and personal losses may be of greater significance in later adulthood (Kunzmann & Grühn, 2005) as suggested by lifespan development theories (e.g., Carstensen et al. 1999; Fung, Carstensen, & Lutz, 1999; Urry & Gross, 2010). Unlike some other negative emotions such as anger, sad situations (including personal, social, or health-related loss or feelings of loneliness) may affect older adults more than young. For instance, studies have found older adults *experience* greater levels of negative affect when shown films about loss (Kunzmann & Grühn, 2005; Seider, Shiota, Whalen, & Levenson, 2011), suffering (Kliegel, Jäger, & Phillips, 2007), injustice (Charles, 2005; Phillips et al., 2008), or when exposed to offensive remarks about them (Charles & Carstensen, 2008).

Although self-report findings in general suggest that sadness reactivity is maintained in older adults, the pattern of findings in expression and physiological response systems is mixed. For instance, some past work has reported no age effects (Seider et al., 2011; Tsai, Levenson, & Carstensen, 2000) while others report age-related increases in *expressed* negative affect while participants relived emotional experiences (Malatesta-Magai, Jonas, Shepard, & Culver, 1992) or watched emotional film clips (Phillips et al., 2008). One possibility is that older adults may become more (or less) adept at regulating their expression of emotions. On the other hand, interpreting age differences in facial expressions may be especially hard to accurately measure due to age-related changes in older adults' faces (Phillips et al., 2008), which could be one possible reason (among many) for such mixed findings. Instead of using the traditional way of using coders to subjectively rate participants' expressions (Ekman & Friesen, 1978), electromyography (EMG) may minimize rater biases by measuring expressions (even if they are not overtly visible) via facial muscle activity (Cacioppo, Petty, Losch, & Kim, 1986), as done in the current study.

Similar to expression findings, some past work on age differences suggests that *autonomic* responses are reduced in older adults, particularly cardiovascular reactivity (e.g., Levenson, Carstensen, Friesen, & Ekman, 1991; Labouvie-Vief, Lumley, Jain, & Heinze, 2003). However, Kunzmann & Grühn (2005) reasoned that older adults might engage in more personalized cognition when watching videos of age-typical loss and experience higher levels of affect intensity and autonomic reactions, including cardiovascular measures as well as skin conductance level than shown by previous research, which has used age-neutral stimuli. However, a mixed pattern of findings have also been found in studies where some measures suggested age differences in physiological response while other measures did not (see Seider et al., 2011; Tsai et al., 2000). To summarize, findings with physiological reactivity and expression of negative emotions are hardly consistent across studies and it is unclear whether these differences are due to the relevance of the stimuli, type of measures assessed, or some other methodological differences, which still need to be determined. We still do not know much about *age differences* in using different emotion regulation strategies and their effects on aspects of emotional response (experiential, behavioral, and physiological systems) while regulating sadness, and it is still unclear which emotion regulation strategy is *more useful for older adults* to deal with sadness-eliciting situations. These outstanding questions formed the basis of the current study.

Overview of the current research

To answer these questions, the current study investigated age differences in the use of attentional deployment, positive reappraisal, and suppression while regulating sadness (Goal 1). For each group, we also tested the relative benefits of implementing attentional deployment versus positive reappraisal in managing age-relevant sad information (Goal 2). Participants were shown four sadness-eliciting video clips under different conditions – no-regulation, attentional deployment, positive reappraisal, and suppression. While participants

implemented the instructions for respective conditions, to get converging evidence of the impact of these strategies, multiple channels of emotional responding were measured including: experienced negative mood (assessed by mood self-reports), negative expressions (measured by corrugator muscle activity), and heightened physiological arousal (indexed by skin conductance level, SCL). We focused our predictions on the general negative emotional responses (cf. Barrett, 2006; Cacioppo, Berntson, Larsen, Poehlmann, & Ito, 2000; Mauss & Robinson, 2009) that the participants may have had while regulating responses to sadness eliciting content in order to capture the widest range of possible responses to the stimuli.

Goal 1 (testing age differences in implementing emotion regulation strategies)

We expected to replicate previous findings that the no-regulation condition would lead older participants to report worse mood and show the same or increased physiological activity than young (Kunzmann & Grühn, 2005; Seider et al., 2011). In order to address our Goal 1 about age-differences in successfully implementing emotion regulation strategies to manage sad information, we compared the degree of negative mood, expression, and physiological response in each condition between younger and older adults. Successful emotion regulation was defined as a decrease in negative experience of emotion without an increase in physiological response in the regulation condition relative to the no-regulation condition (adapted from Isaacowitz & Blanchard-Fields, 2012; Shiota & Levenson, 2009). Based on previous research, older adults were predicted to be more successful at implementing the attentional deployment condition as suggested by a decrease of negative experiences (Isaacowitz et al., 2008; Noh, Lohani, & Isaacowitz, 2011). As attentional deployment is considered to be less resource demanding (Isaacowitz & Blanchard-Fields, 2012; Sheppes & Meiran, 2008), it was predicted that older adults compared to young would not have an increased sympathetic arousal level during the attentional deployment condition relative to the no-regulation condition.

Older adults were also predicted to be more successful at implementing positive reappraisal as shown by a decrease in negative experiences without an increase in the sympathetic arousal level relative to the no-regulation condition (Shiota & Levenson, 2009). Due to lack of previous research on this specific question, testing age-differences in the expression channel across the positive reappraisal and attentional deployment conditions were exploratory in nature. Suppression has been found to have no change in negative experiences, decrease negative expressions, and increase physiological arousal levels (e.g., Gross, 1998b). Based on previous empirical work on age-differences with suppression of negative emotions (e.g., Phillips et al., 2008; Shiota & Levenson, 2009), we did not predict any significant age difference in negative mood, expression, or physiological activity while using suppression to regulate sadness-inducing stimuli.

Goal 2 (more useful strategy in regulating sadness)

As Goal 1 (between-subjects) predicted older adults to be more successful than young in implementing both the attentional deployment and positive reappraisal conditions, in Goal 2 (within-subjects) we wanted to further explore which of the two was more useful for older adults in regulating sad content. For balance, we compared the strategies for young adults as well. A strategy was considered more useful if, relative to the other regulation condition, it led to a greater improvement (decrease) in negative mood and less physiological response. In other words, the strategy led to a better mood with less physiological cost while implementing it. We had predicted that attentional deployment will be the more useful strategy compared to positive reappraisal as older adults can utilize it as a mood-regulatory tool (Isaacowitz et al., 2008) and that it will have a less sympathetic arousal level as it is less resource demanding (Sheppes & Gross, in press).

Method

Participants

Forty-two young (18–25 years; $M = 18.5$, $SE = .15$; 73.8% females) and 48 older adults (60–89 years; $M = 71.42$, $SE = 1.15$; 79.2% females) participated in the study. All participants either received credit toward their Introductory Psychology course or a monetary stipend for their participation. Only individuals who had normal or corrected vision were eligible to participate. Participants were highly educated; on average participants had either attended some college or were college graduates. They were from diverse ethnic backgrounds; 15.3% were Asian, 1.2% African American, 78% Caucasian, and 10.6% were from other races. No participant scored below our cutoff criterion of 24 on the Mini-Mental State Exam (Chayer, 2002). Young ($M = 3.85$, $SD = .83$) and older ($M = 3.84$, $SD = 0.95$) participants did not differ in terms of their overall health ratings on a 5-point scale (1 = *poor*, 5 = *excellent*), $t < 0.1$.

Video stimuli

There were four short film clips which depicted plots dealing with serious social, personal, and health-related losses. ‘21 Grams’ was four minutes long, always used in the no-regulation condition, and showed a woman mourning for her family’s death in a car accident. The other three clips were five minutes long and were counterbalanced across the regulation conditions; ‘family loss’ film depicted a dying mother’s final months in the care of her daughter and husband; ‘Alzheimer’s film’ was about an older couple’s struggles with the disease; and ‘The Champ’ showed a boy witnessing his father’s death. The ‘family loss’ and ‘Alzheimer’s’ films were used previously by Kunzmann and Grühn (2005), and ‘21 Grams’ and ‘The Champ’ were used by Shiota and Levenson (2009) and Seider et al. (2011); they were effective in eliciting sadness in both young and older participants.

In order to assess the gaze preferences away or towards the affective regions in each film clip, areas of interest (AOIs) were identified by the experimenter, which were defined as only those regions in the clip that provided significant affective meaning to the film. For example, in a scene from ‘The Champ’, the crying boy’s face and his father’s dead body that was covered in blood were identified as negative AOIs while the rest of the background, which did not have any emotionally-salient information, was part of the unemotional region. These AOIs were identified using a three stage process. First, three research assistants were asked to list as many negative AOIs in the clips. Based on these descriptions, the experimenter drew rectangular or elliptical areas around the AOIs in each clip followed by their verification from independent raters. Third, raters ($n = 7$) were asked to indicate whether the areas identified by the experimenter were one of the most negative areas in the video (1 = *yes*, 2 = *no*). All those areas which were rated as 1 by four or more judges were included as AOIs and were used to process fixation data.

To measure the baseline physiological activity, participants were shown a neutral video depicting colored lines with black background for 5 minutes, similar to previous studies (e.g., Rottenberg, Gross, Wilhelm, Najmi, & Gotlib, 2002; Rottenberg, Ray, & Gross, 2007). The last two minutes were used to calculate the mean baseline activity.

Measures and Equipment

Self-reported measure—Right after the film-view period, participants were asked to rate their “current” mood using an analog slider (Empirosoft Tech.). The left end point on the slider was *extremely negative* (rated as 0) and the right end point was *extremely positive* emotional states (rated as 100). In order to simplify interpretation of findings for all

measures, before analyses, the mood ratings were multiplied by -1 so that higher values would imply greater self-reported negative experience of emotion.

Physiological Measures—Physiological measures were collected using a MEDAC System/3 instrumentation unit and NeuGraph software (NeuroDyne Medical Corp., Cambridge, MA). Primary signal processing was carried out in real-time in hardware prior to being sampled at 250Hz.

Expressive behavior measure: In order to assess the facial expressive behavior of the participants (even that which is not overtly visible) while they were watching film clips, EMG activity of the corrugator muscles was recorded. Greater corrugator supercilii activity is elicited while viewing unpleasant stimuli (Bradley & Lang, 2007). The skin was cleaned with isopropyl alcohol and pre-gelled silver/silver chloride disposable electrodes were placed in a bipolar configuration over the left eye corrugator muscle according to standardized placement guidelines (Fridlund & Cacioppo, 1986). The EMG signal was bandpass filtered (25 to 425Hz) and RMS processed (common mode rejection ratio 150db at the 60-Hz notch filter to remove line frequency noise); the sensitivity range was 0.01 to 1000 microvolts.

Autonomic arousal measure: Compared to neutral, viewing negative stimuli is associated with higher physiological activation indicated by increases in skin conductance (Bradley & Lang, 2007). SCL was measured utilizing a constant current configuration and non-polarizing, low impedance gold plated electrodes that allowed electrodermal recording without the use of conductive gel. Sensors were placed on the underside of the outer segments of the middle fingers of the non-dominant hand.

Eye tracking: Participants' fixation patterns while viewing videos were measured with an eye tracker (Applied Science Laboratories Model D6) that records the movements and position of participants' right eye with a camera and a non-invasive beam of infrared light 60 times per second. Visual fixations were defined as those series of gazes in which an individual stays within 1° visual angle for 100 ms or longer (Manor & Gordon, 2003) within pre-determined AOIs. The average percent fixation duration in the negative AOIs was computed relative to the total possible viewing time. Eye-data was mainly collected as a manipulation check to ensure that participants followed the attentional deployment condition related instructions and actually looked less at AOIs relative to the no-regulation condition.

Procedure

Upon arrival in the lab, participants first signed the consent form followed by their vision being tested using three measures: the Snellen test of visual acuity, the Pelli-Robson test of contrast sensitivity, and the Rosenbaum Near-Vision Test. Next, the physiological sensors were attached to the participants to record the baseline resting state on each physiological measure; after which, participants reported their "current" mood (used as baseline mood in analyses). Finally, participants completed the film viewing part of the study. Throughout the film viewing section, gaze, SCL, and EMG data were recorded.

Film viewing section—The film viewing part comprised of four trials (one film per trial), each consisting of the following sequence: (1) instructions were provided to manipulate how the participants would look at upcoming film. There were separate instructions for each condition, (see the Instructions section for further details) followed by (2) a film-viewing period and (3) self-report period when participants reported their mood post condition. Lastly, (4) a distraction task (Gross, Sutton, & Ketelaar, 1998) was used in order to eliminate any emotional carryover effects. Participants copied an abstract geometric figure

that was presented for 40 seconds on the computer screen; they were assured that *the quality of the drawings is not important and that we just want to give them a break between the films*. The distracter task¹ was followed by the next trial. Participants could take breaks as needed.

Instructions—In the no-regulation condition, participants were instructed to “watch the film clips as if you are watching TV, while keeping your head as still as possible, and without looking away”. The attentional deployment instructions were: “keep on viewing the film but try to focus only on the emotionally neutral content rather than the upsetting content. It is important that you still look somewhere on the screen.” Similar to Shiota & Levenson (2009), positive reappraisal involved asking participants to “try to think about positive aspects of what you are seeing. Watch the film clip carefully, but please try to think about what you are seeing in such a way that you feel less negative emotion.” Suppression instructions were: “if you have any feelings as you watch the film clip, please try your best not to let those feelings show. Watch the film clip carefully, but try to behave so that someone watching you would not know that you are feeling anything at all.” After the final trial, the physiological sensors were removed. Participants were debriefed, thanked, and compensated for their time.

Analytic plan

In order to examine age-differences in emotion regulation strategies, a series of mixed-model analyses of variance (ANOVAs) were performed for each dependent measure (mood, physiology, expression, fixation duration)² with age-group as a between-subjects factor and instructed strategy as a within-subjects factor. Self-reported mood reports after the end of each experimental condition were reverse coded so that higher values implied more negative mood (0 = extremely pleasant; 100 = extremely unpleasant). In other words, the measures were coded such that higher values of mood ratings, SCL, and corrugator activity were associated with a heightened level of negative experience, expression, and physiological response respectively. Using the conventional method (Rogosa & Willett, 1983), for each participant, difference scores for mood, SCL and EMG data³ were calculated by subtracting the mean activity during baseline period from the respective film period (no-regulation, attentional deployment, positive reappraisal, and suppression). Mood scores reported by participants right after watching the neutral video were used as the baseline measure. For SCL and corrugator, mean values of the respective measures while participants had watched a neutral video were used as baseline activity. No meaningful baseline measure for fixation data was collected and it was the only measure for which raw scores were used in the analyses. A positive difference score implied an increase in negative emotional response from the baseline to the experimental condition. Thus our dependent measures were 1) mood change scores, 2) SCL change scores, 3) corrugator activity change scores, and 4) percent fixation duration in the most negative regions of the videos relative to the total fixation duration.

¹ There was an additional online monitoring system that we had adopted to check whether the distracter task was successful or not and to minimize variance in mood data due to variability in mood before a new trial. This check insured that the participants were not in a negative mood due to the previous trial before beginning a new trial: Right after completing the distracter task, the participants were asked to report their “current” mood. If participants reported their mood lower than 40 (on the mood slider, where 0 was *extremely negative* and 100 was *extremely positive*) then they were given a break from the study so that they can recover from any carryover negative mood before the next trial was started. However, there were very few trials (less than 5) where the next trial was not started right away. Also the pattern was not specific to a condition or an age group. This further suggests that the distracter task was mostly successful in resetting moods between trials.

² A failure of the equipment to detect signals resulted in missing data: for SCL (one young and old participant), EMG data (two young, one old), and eye data (one young participant). Analyses include all participants with relevant data.

³ The pattern of findings remained the same even when each measure was standardized on its respective baseline measure using baseline means and standard deviation estimates of the whole sample compared to the current individual-level difference scores.

For consistency, we used the same analytic approach⁴ for all the measures of emotional response. Our Goal 1 (*between-subjects* comparison) was to investigate age differences in the effects of implementing different regulation strategies on the dependent measures (negative mood ratings, physiological arousal, expressions, and fixations) relative to the no-regulation condition. As we expected there were age differences in the no-regulation condition, while comparing age-relevant differences in emotion regulation abilities, simple between-subjects comparisons were not suitable and it was important to compare the relative difference during the no-regulation condition compared to the regulation condition (for each strategy). Hence, we specified three *interaction contrasts* (the no-regulation condition compared to each of the three strategies) to compare whether the differences in each dependent measure between the no-regulation condition and each regulation condition varied for young versus older age-groups (Cohen, Cohen, West, & Aiken, 2003).

For Goal 2, for each age group, we tested whether the attentional deployment strategy or the positive reappraisal strategy was more useful in managing age-relevant sad content. To address this goal, we conducted *within-subjects pair-wise* comparisons amongst the three strategies to test which strategy led to more improved mood (less negative) without increased physiological reactivity. Whenever post-hoc comparisons were conducted, the alpha value was adjusted accordingly to correct for multiple comparisons, otherwise alpha was set at .05.

Results

Were there age differences in eye fixations across conditions?

Age difference in each condition—Fixation data was analyzed as a manipulation check to ensure that participants had followed the attentional deployment instructions and that they did not simply look away from negative information when told to reappraise and suppress. Mixed-model ANOVA was conducted to compare age differences in percent time fixated on the most negative areas (AOIs) in each video across conditions and we found that the main effect of condition was significant, $F(3, 237) = 28.00, p < .001, \eta_p^2 = .26$. No main effect of age was found, $F(1, 79) = .61, ns$; however, the interaction effect was significant, $F(3, 237) = 2.64, p = .05, \eta_p^2 = .03$, see Table 1. This interaction was decomposed to interpret age differences in fixation on negative content while participants were regulating their emotions.

During the no-regulation condition, on average, older participants ($M = 34.92, SE = 2.42$) fixated less on the most negative areas of the emotional clips compared to young ($M = 41.96, SE = 2.51$), $F(1, 79) = 4.07, p = .05, \eta_p^2 = .05$. Significant differences between the two age-groups were found in duration of fixation at the negative regions in the attentional deployment condition relative to the no-regulation condition, $F(1, 79) = 7.9, p = .006, \eta_p^2 = .09$. When asked to *deliberately* visually avoid the most negative regions, younger participants looked at these regions for shorter duration (Cohen's $d = 1.19$) than older participants (Cohen's $d = .66$).

Within age-group comparisons across strategies—Considering within-group results, younger participants looked less at negative information during the attentional deployment condition ($M = 20.11\%, SE = 2.33$) compared to *all* the other conditions, including reappraisal ($M = 37.05\%, SE = 2.73, t(38) = 5.00, p < .001$, Cohen's $d = .80$) and

⁴ The order of clips and instruction conditions were counterbalanced across participants. No significant main effect of counterbalancing order was found for any dependent measures: negative fixation ($p = .89$), mood ($p = .64$), SCL ($p = .54$), and EMG ($p = .67$). The pattern of findings for Goal 1 and Goal 2 involving the age x condition interaction still remained reliable when order was included as a factor in the model. Thus to have a parsimonious model we left the order variable from the model while reporting the findings of interest, discussed next.

suppression ($M = 36.86\%$, $SE = 2.71$, $t(40) = 4.83$, $p < .001$, Cohen's $d = .76$). Similarly, older adults also looked less at negative areas during the attentional deployment condition ($M = 24.03\%$, $SE = 2.25$) compared to reappraisal ($M = 33.95\%$, $SE = 2.63$, $t(42) = 3.95$, $p < .001$, Cohen's $d = .61$) and suppression ($M = 34.82\%$, $SE = 2.61$, $t(42) = 4.19$, $p < .001$, Cohen's $d = .64$), suggesting that the instruction manipulations to implement the attentional deployment strategy were successful and participants did look less at the negative content.

Experienced mood during instruction conditions

Goal 1: Were there age differences in experienced mood across conditions?—

For raw mood scores reported by the participants post each condition, see Figure 1. In order to test how participants' mood was affected after implementing each instruction condition, a mixed-model ANOVA was conducted on the mood difference scores (mood post condition – mood baseline) with age as a between-subjects factor and condition (no-regulation, attentional deployment, positive reappraisal, and suppression) as a within-subjects factor. The main effect of age was significant, $F(1, 87) = 10.55$, $p = .002$, $\eta_p^2 = .11$. The main effect of condition was significant, $F(3, 261) = 10.554$, $p < .001$, $\eta_p^2 = .108$. The age $\times$ condition interaction was also significant, $F(3, 261) = 3.57$, $p = .02$, $\eta_p^2 = .04$, see Table 1. Planned comparisons revealed that compared to young ($M = 25.10$, $SE = 4.16$), older participants ($M = 49.51$, $SE = 3.94$) experiences a worse mood during the no-regulation condition, $F(1, 87) = 18.17$, $p < .001$, $\eta_p^2 = .17$.

To investigate age differences in successfully implementing regulation strategies to improve negative mood from the no-regulation condition, three interaction contrasts (Cohen et al., 2003) were specified. These contrasts compared whether the differences in negative mood between the no-regulation condition and each regulation condition varied for young versus older age-group. For the attentional deployment condition, we found that older participants implemented it more successfully compared to the younger participants, $F(1, 87) = 4.46$, $p = .04$, $\eta_p^2 = .05$. The older group had less negative mood after implementing the attentional deployment condition (Cohen's $d = .56$) relative to the no-regulation condition versus younger participants whose scores were similar during this strategy and the no-regulation condition (Cohen's $d = .18$).

Similarly, compared to younger participants, older participants experienced a decrease in negative mood while implementing the positive reappraisal condition relative to the no-regulation condition, $F(1, 87) = 9.14$, $p = .003$, $\eta_p^2 = .10$. Older participants had a less negative mood after using the positive reappraisal condition compared to the no-regulation condition (Cohen's $d = .78$), while younger participants reported similar moods after using reappraisal compared to the no-regulation condition (Cohen's $d = .26$). As predicted, we did not find any significant age differences in the suppression condition, $F(1, 87) = 1.6$, $p = .21$, $\eta_p^2 = .02$.

Goal 2 (within-subjects): Which strategy led to least negative mood for each age-group?—In order to test whether the attentional deployment condition or the positive reappraisal condition led older and younger adults experience less negative mood, we conducted planned pair-wise within-subjects comparisons. These comparisons were done separately for each age group.

Older adults: As shown in Table 1, planned pair-wise comparisons among the regulation strategies suggested that older participants reported better mood in the positive reappraisal condition than the attentional deployment condition, $F(1, 46) = 3.97$, $p = .05$, $\eta_p^2 = .08$. Post hoc comparison also suggested that older adults reported better mood after implementing the positive reappraisal condition compared to the suppression condition, $F(1, 46) = 6.06$, $p = .$

02, $\eta_p^2 = .12$. Furthermore, no significant difference was found between the attentional deployment and suppression conditions, $F(1, 46) = .11, p = .75, \eta_p^2 = .002$.

Younger adults: No significant differences were found between younger adults' mood in the attentional deployment condition compared with the positive reappraisal condition, $F(1, 41) = .31, p = .58, \eta_p^2 = .01$. Post hoc comparisons suggested that there were no significant differences between the attentional deployment condition and the suppression condition, $F(1, 41) = .54, p = .47, \eta_p^2 = .01$, or between the positive reappraisal and suppression conditions, $F(1, 41) = .09, p = .77, \eta_p^2 = .002$.

Physiological response during instruction conditions

Goal 1: Were there age differences in physiological response across conditions?—Mixed-model ANOVA was conducted on SCL difference scores with age as a between and the four instruction conditions as a within-subjects factor. There was a significant main effect of age, $F(1, 80) = 18.03, p < .001, \eta_p^2 = .18$, with young participants showing a significantly greater physiological response ($M = 2.21, SE = .22$) than older participants ($M = .93, SE = .21$). The main effect of condition was significant, $F(2.62, 208.43) = 7.18, p < .001, \eta_p^2 = .08$, and age $\times$ condition interaction was marginally significant, $F(2.62, 208.43) = 2.55, p = .07, \eta_p^2 = .03^5$, see Table 1. Planned comparisons revealed that compared to older participants ($M = .75, SE = .20$), younger participants ($M = 1.65, SE = .20$) had an increased physiological reactivity during the no-regulation condition, $F(1, 80) = 10.21, p = .002, \eta_p^2 = .11$.

In order to compare age-differences in physiological arousal level during each emotion regulation condition relative to the no-regulation condition, interaction comparisons were conducted. No significant age differences in SCL were found for the attentional deployment condition, $F(1, 80) = 2.37, p = .13, \eta_p^2 = .03$. Compared to the no-regulation condition, older (Cohen's $d = .39$) as well as young participants (Cohen's $d = .77$) showed an increase in SCL level during the attentional deployment condition.

For positive reappraisal, significant age-differences were found, $F(1, 80) = 7.0, p = .01, \eta_p^2 = .08$, where relative to the no-regulation condition, older participants' SCL levels were less (Cohen's $d = .12$) compared to young participants' increase in physiological levels (Cohen's $d = .79$) while implementing the positive reappraisal condition.

For suppression, there was a marginally significant difference between younger and older adults, $F(1, 80) = 3.79, p = .06, \eta_p^2 = .05$. Relative to the no-regulation condition, older participants' SCL levels in the suppression condition were less (Cohen's $d = .20$) compared to young participants who had increased physiological levels while implementing the suppression condition (Cohen's $d = .48$).

Goal 2 (within-subjects): Which strategy led to least physiological response in each age-group?—Pair-wise within-subjects comparisons were done for the attentional deployment condition versus the positive reappraisal condition to test which of the two led to least physiological response in each age group.

Older adults: The positive reappraisal condition led to less physiological response than the attentional deployment condition, $F(1, 41) = 4.65, p = .04, \eta_p^2 = .1$. In addition, post-hoc comparisons suggested that attentional deployment led to marginally less (adjusted-alpha)

⁵ Mauchly's test indicated that the assumption of sphericity had been violated ($p < .05$), therefore degrees of freedom were corrected using Huyn-Feldt estimates of sphericity.

physiological response in the suppression condition than the attentional deployment condition, $F(1, 41) = 5.1, p = .03, \eta_p^2 = .11$. Post-hoc comparisons also suggested that no significant difference was found between the positive reappraisal and suppression conditions, $F(1, 41) = .33, p = .57, \eta_p^2 = .01$.

Younger adults: No significant differences in physiological arousal level was found while implementing the attentional deployment and the positive reappraisal conditions, $F(1, 39) = .30, p = .59, \eta_p^2 = .01$. Post-hoc comparisons suggested that no significant differences were found between the attentional deployment and suppression conditions, $F(1, 39) = .06, p = .80, \eta_p^2 = .002$, or between the positive reappraisal versus suppression conditions, $F(1, 39) = .003, p = .96, \eta_p^2 = .00$.

Were there age differences in *negative expressions* across conditions?

To examine age differences in the negative expression of emotions we looked at the corrugator (frown) muscle activity difference scores. No significant age differences were found between younger ($M = .10, SE = .76$) and older participants ($M = .12, SE = .74$), $F(1, 80) = .0003, p = .99, \eta_p^2 = .00$. The main effect of condition was significant, $F(3, 240) = 11.36, p < .001, \eta_p^2 = .12$. The age $\times$ condition interaction effect was not significant, $F(3, 240) = 1.08, p = .38, \eta_p^2 = .01$, see Table 1. No age differences were found in interaction contrasts comparing differences during suppression relative to the no-regulation condition, $F(1, 80) = 1.18, p = .28, \eta_p^2 = .02$. Thus both the age groups successfully decreased their negative expression during the suppression condition. Similarly, no significant age differences were found for the positive reappraisal $F(1, 80) = .81, p = .37, \eta_p^2 = .01$, or the attentional deployment conditions, $F(1, 80) = 2.96, p = .09, \eta_p^2 = .04$, suggesting that no age differences were found in negative expression across all the regulation strategies.

Within age-group comparisons across strategies—We had not made any a priori hypotheses about expression channel; however, we conducted three additional post-hoc ($\alpha = .0167$) comparisons to explore the differences in negative expression across the regulation strategies separately for younger and older adults.

Older adults: No significant differences in negative expression of emotions was found between attentional deployment and positive reappraisal, $F(1, 41) = .15, p = .70, \eta_p^2 = .004$, attentional deployment and suppression, $F(1, 41) = .92, p = .34, \eta_p^2 = .02$, or between positive reappraisal and suppression, $F(1, 41) = 1.83, p = .18, \eta_p^2 = .04$.

Younger adults: No significant differences in negative expressions were found between attentional deployment and positive reappraisal, $F(1, 39) = 3.43, p = .07, \eta_p^2 = .08$, or between attentional deployment and suppression, $F(1, 39) = .12, p = .73, \eta_p^2 = .003$. There was marginal significance between the positive reappraisal condition compared to the suppression condition where more negative expressions were shown by younger adults in the positive reappraisal condition compared to the suppression condition, $F(1, 39) = 5.77, p = .02, \eta_p^2 = .13$.

Discussion

Sadness reactivity is maintained or even increases in late life (Kunzmann & Grühn, 2005; Seider et al., 2011). In the current study we investigated age differences in implementing three emotion regulation strategies to regulate responses to sadness-inducing videos. In a within-subjects design framework, participants were instructed to either visually avoid negative content (attentional deployment), think about positive aspects of the situation (positive reappraisal), or to suppress their reactions while viewing age-relevant sadness

eliciting videos. For a comprehensive assessment of emotional response (Lang, 1988) in younger and older adults, we examined the effects of these instructions on the negative experiences, negative expressions, physiological arousal level, and fixation to negative content.

Goal 1: Age differences across instruction conditions

Consistent with previous studies using similar stimuli (Kunzmann & Grühn, 2005; Seider et al., 2011), sadness-eliciting clips were more upsetting for older adults; our findings revealed that during the no-regulation condition older participants reported greater levels of negative mood than their younger counterparts. However, younger participants were more physiologically reactive than older adults even though we used stimuli relevant for both age groups as suggested by Kunzmann & Grühn (2005). Past work on age differences in physiological arousal has reported a mixed pattern of findings across studies and it is hard to interpret why younger participants had higher levels of physiological arousal, especially because we had assessed only one measure of physiological arousal i.e. SCL. A number of possibilities for age differences in SCL exist: for example, young participants may have displayed increased physiological arousal reflecting elevated reactivity or effort to deal with the emotional situation (Dawson, Schell, & Filion, 2007). Alternatively, dampening of end-organ autonomic reactivity with age (e.g., Levenson et al., 1991), or slower physiological response time to short-lived negative events may have lessened SCL levels for older adults (Charles, 2010). Older adults may also have adopted emotion regulation strategies that mitigate physiological arousal, which may be employed automatically earlier in the emotion generation process (Magai, Consedine, Krivoshekova, Kudadjie-Gyamfi, & McPherson, 2006). For instance, in line with previous eye-tracking findings with faces (e.g., Isaacowitz et al., 2006a, 2006b) and images (e.g., Allard & Isaacowitz, 2008; Isaacowitz & Choi, 2011) as emotional stimuli, in the current study older adults were found to fixate less on negative areas of the video clips than their younger counterparts. In order to objectively index negative expressions of emotion (Cacioppo et al., 1986) we had used facial EMG. Results revealed no significant age differences in negative expression of emotions across all conditions.

Consistent with our predictions, older adults compared to younger adults were more successful in implementing attentional deployment to regulate their mood. Older adults reported less negative mood during attentional deployment relative to the no-regulation condition. Extending past work with gaze-based mood regulation using emotional schematic faces (Isaacowitz et al., 2008) and images (Noh et al., 2011), this study suggests that older adults compared to younger adults may prefer attentional deployment as a regulatory strategy because it helps them to lessen their negative experiences while watching sadness-eliciting videos. As older adults use attentional deployment more than young during passive viewing (e.g., Isaacowitz et al., 2006a, 2006b), we were surprised that no age differences were found in SCL levels for the two age groups relative to the no-regulation condition. However, it is important to point out that during attentional deployment participants were asked to *focus only on the emotionally neutral content*. Nevertheless, even though participants were able to visually look away successfully from the unpleasant areas on the screen (as suggested by eye tracking data), they could still hear the auditory information from the videos. This may have hindered deploying attention away from the emotional content which could lead to physiological costs relative to the no-regulation condition.

The positive reappraisal strategy was implemented more successfully by older adults to regulate their responses to sad content. This was suggested by a decrease in older adults' negative mood, without heightened physiological response, relative to the no-regulation condition. These findings are congruent with prior work (Shiota & Levenson, 2009), which

has reported that older adults show enhanced abilities to use positive reappraisal to regulate negative emotions. Younger adults did not experience a decrease in negative mood but an increase in physiological response compared to the no-regulation condition, suggesting that positive reappraisal was not successfully implemented by them to regulate their response to sad content. In the suppression condition, unlike younger adults, older adults reported less negative mood compared to the no-regulation condition. Suppression was associated with a decrease in corrugator activity (e.g., Jackson, Malmstadt, Larson, Davidson, 2000) and no age differences were found in suppressing negative expressions, supporting the argument that suppression abilities are maintained in older adults (e.g., Phillips et al., 2008). Younger adults however, were significantly more physiologically reactive during the suppression condition than the no-regulation condition, as has been found in previous research (Gross & Levenson, 1993; Gross, 1998b).

Goal 2: The more useful strategy for younger and older adults to manage sadness

The main question of interest was *which* emotion regulation strategy was more useful for each age group to manage their responses to sad information. Compared with the no-regulation condition, older age was associated with decreases in subjective negative experiences when they adopted the attentional deployment as well as positive reappraisal condition; however, the positive reappraisal strategy led to a greater decrease in negative mood than attentional deployment. In addition, the attentional deployment strategy was significantly more physiologically taxing, indicated by an increased SCL, and may be a somewhat costly strategy in the current context. Thus, the findings suggest that while regulating their response to sadness-eliciting situations, positive reappraisal was more useful for older adults than attentional deployment as it made them experience a less negative mood and led to less physiological costs.

Why did positive reappraisal benefit older adults more compared to the attentional deployment strategy? Additional comparisons with suppression also suggested that positive reappraisal was the more useful strategy for older adults. It is important to highlight the role of different emotion regulation foci of these strategies because they may have played an integral role in the current pattern of findings. Current findings may be explained by the regulatory foci for positive reappraisal, which are positive aspects of the unpleasant situation versus neutral content for attentional deployment and negative for suppression. In the light of positive preferences shown by older adults, this kind of reappraisal may be useable for them. Perhaps during positive reappraisal, older adults are able to utilize their positive attentional preferences to their advantage to give a positive spin to the sad content they were dealing with, and thus successfully recover from the sad content, as suggested by a decrease in negative mood. However, attentional deployment could only be used to focus on the neutral content away from the sad content, which may not be as effective as appraising positive outcomes. It is important to note that not all kinds of reappraisals may be useful to older adults. For instance, relative to younger age-group, they do not benefit from using detached reappraisal, which involves using a third person perspective to regulate emotions (Shiota & Levenson, 2009). Some forms of cognitive reappraisal may be more demanding for older adults (Opitz et al., 2012) and could be difficult to implement frequently.

Nevertheless, researchers have acknowledged that compared to young, older adults may adopt strategies to disengage from unpleasant situations (e.g., Charles, 2010; Isaacowitz & Blanchard-Fields, 2012). Contrary to expectation, attentional deployment was not the more useful emotion regulation strategy for older adults, even though the fixation patterns suggested that during the attentional deployment condition, older adults were able to successfully look away from the negative content compared to the reappraisal and suppression conditions. Furthermore, the mood outcomes for older adults did not differ

while implementing the attentional deployment condition versus the suppression condition. In addition, the attentional deployment condition was slightly more physiologically taxing than the suppression condition. These comparisons between attentional deployment and other strategies are somewhat surprising given past work with passive viewing instructions that older adults use attentional deployment to regulate their mood (Isaacowitz et al., 2008; Noh et al., 2011). It is possible that deliberate instructions to use attentional deployment could have made it more resource demanding than it is in a more automatic setting (see distinction between automatic and deliberate emotion regulation; Mauss, Bunge, & Gross, 2007). In other words, deliberate instructions may have “messed up” or interfered with older participants’ natural tendencies to use gaze-based mood regulation. Alternatively, these patterns of findings could be due to the use of video stimuli which did not provide older adults any option to “focus away” from the negative audio content. As this is the first attempt to manipulate attentional deployment (to our knowledge), more work is required to understand the attentional deployment strategy in the context of aging. In future work, a different paradigm could be utilized that would let older adults to visually as well as aurally deploy their attention away from the negative content.

Among younger adults, all the three strategies were equally unsuccessful in regulating emotional experience. In all the regulation conditions, compared to the no-regulation condition, younger participants did not show a decrease in negative mood and were more physiologically reactive than older participants; however they were able to decrease their negative expressions. This pattern is puzzling and various explanations are possible. One explanation is that younger adults could not implement these strategies to regulate their negative experiences to sadness-eliciting stimuli. Alternatively, emotional goals are important to initiate emotion regulation process (Mauss & Tamir, in press) and these goals may change as a function of age (Carstensen et al., 1999). Younger participants may be more likely to maintain or enhance the experience of negative emotions compared to their older counterparts (Riediger, Schmiedek, Wagner, & Lindenberger, 2009). It is possible that despite the explicit emotion regulation instructions, younger participants might not have felt the need or desire to regulate their negative mood. Nonetheless, they also showed a significant increase in sympathetic arousal during each of the regulation conditions compared to the no-regulation condition, which instead suggests attempted but unsuccessful emotion regulation. Not all regulatory efforts are successful (Isaacowitz & Blanchard-Fields, 2012), and future research is needed to help clarify whether young adults patterns resulted from failed attempts, different motivation, or some other factor entirely.

Limitations

Some caution must be applied to the interpretation of the findings given the following limitations of the current research: one important limitation is that the outcome measures in this study were not sadness-specific but were assessed in terms of negative emotional responses that participants may experience to sadness-eliciting content. We did not use sadness-specific labels to avoid modification of emotional experiences due to emotion labeling (Barrett, Lindquist, & Gendron, 2007). In addition, consistent support for discrete emotions has not been found (cf. Barrett, 2006; Cacioppo et al., 2000; Mauss & Robinson, 2009). It is possible that participants may have experienced and expressed other distressing emotions (such as anger or fear) while watching sad videos, at least to a moderate degree, and we wanted to cast a wide net to capture the full range of possible negative responses. Furthermore, only one physiological activity measure was assessed. SCL has been linearly related to arousal level of the emotional stimuli (Bradley & Lang, 2000) and can be indicative of both emotional reactivity as well as effort (Dawson et al., 2007). However, it is possible that our single physiological measure findings may not reliably generalize to other autonomic measures and thus these findings should be interpreted with caution. Use of more

exhaustive autonomic measures, especially cardiovascular measures, might have been useful to understand age and individual differences in autonomic activity across strategies.

Second, we had made the assumption that after watching each film clip, the distracter task was effective in giving participants a break from the emotional content and eliminating any emotional carryover effects before watching the next clip. This assumption was based on successful use of such distracter tasks in past research with film clips (Gross, Sutton, & Ketelaar, 1998); however, even though the regulation conditions were counterbalanced, there is still the possibility that some participants might not have completely returned to their baseline levels before the next trial started. Assessments of self-report and physiological response before each film clip will help in order to test the effectiveness of the distracter task. Third, we did not record the cry-status of the participants while they watched the clips; crying individuals exhibit increased SCL while non-crying ones show decreased SCL (Kreibig, 2010). However, we did not expect systematic group differences in participants' crying status.

Conclusion

Together, these results indicate that attentional deployment is more useful for older adults than young as a mood regulatory tool, at least when they are instructed to use it. Positive reappraisal can nonetheless be the more useful strategy for older adults to deal with their responses to sadness-eliciting situations, as it helps decrease negative mood without heightened physiological activity. Ability to suppress emotions seems to remain stable with age. Which strategies are efficient for young adults still remains a nagging question and will be an important venue for further research. These cross-sectional comparisons suggest that older adults are able to effectively use multiple emotion regulation strategies to reduce the negative experience of sadness elicitors.

Acknowledgments

This research was supported by National Institutes of Health Grant R01 AG026323 to Derek M. Isaacowitz

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Figure 1.

Means and standard errors of mood reported after each instruction condition by young and older participants. Higher mean values implied more negative mood. Note: in the analysis difference scores (post condition – baseline mood) were used.

Table 1

Descriptive Statistics: Means (Standard Errors) for Mood change, EMG change, SCL change, and % fixation scores across the different instruction conditions. Higher values are associated with more negative experience, expression, physiological arousal, and fixation duration respectively.

Condition	Young Adults				Older Adults			
	Mood	EMG	SCL	Fixation	Mood	EMG	SCL	Fixation
No-regulation	25.10 (4.16)	1.93 (.89)	1.65 (.20)	41.96 (2.51)	49.51 (3.94)	1.12 (.86)	.75 (.20)	34.92 (2.42)
Attentional Deployment	21.64 (4.27)	-.79 (.94)	2.35 (.26)	20.11 (2.33)	36.47 (4.03)	-.09 (.91)	1.12 (.26)	24.03 (2.25)
Positive Reappraisal	20.00 (4.28)	.24 (.90)	2.43 (.25)	37.05 (2.73)	29.98 (4.04)	.15 (.88)	.88 (.24)	33.95 (2.63)
Suppression	19.26 (4.43)	-1.00 (.65)	2.42 (.26)	36.86 (2.71)	37.55 (4.19)	-.72 (.64)	.95 (.26)	34.82 (2.61)