Effective Regulation of the Experience and Expression of Negative Affect in Old Age

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We investigated age differences in the experience and expression of emotion in 64 younger and 62 older adults. By manipulating emotion-regulation instructions, we investigated the effects of age on the control of both the inner experience and the outward expression of emotion. We predicted that there would be age improvements in regulating the inner experience of emotion. Indeed, our results indicated that older adults were more effective than young adults in following instructions to reduce the early experience of negative emotion. There were no age differences in following another emotion-regulation strategy involving the suppression of emotional display. In contrast to the well-documented difficulties in cognitive regulation of other studies, these data suggest that the ability to control experience and expression of emotions operates effectively in older adulthood.

Key Words: Emotion regulation—Negative affect—Regulatory skills.

Contrary to negative stereotypes of aging, older adults often report that during everyday life they experience fewer negative emotions and more positive emotions relative to their younger counterparts (Gross et al., 1997; Lawton, 2001). Older adults report displaying low levels of emotional expression (Lawton, Kleban, Rajagopal, & Dean, 1992; Gross et al.), and they consider themselves to have effective regulatory skills with which to control emotional experience and expression (Gross et al.; Lawton et al.; Phillips, Henry, Hosie, & Milne, 2006).

A number of studies have investigated age differences in the intensity of emotional experience and expression in controlled settings. Some studies have found no age differences in the intensity of negative mood that people experienced following Velten self-referent statements (Knight, Maines, & Robinson, 2002) or the reexperiencing of past emotional events (Levenson, Carstensen, Friesen, & Ekman, 1991). Relative to these methods of emotion elicitation, the use of video clips allows greater parity of the emotional situation across participants (Rottenberg, Ray, & Gross, 2007). Age differences in emotional experience while people are viewing film clips vary considerably in different studies. In some studies, film clips designed to elicit sadness and happiness resulted in no age difference in rated affect (Tsai, Levenson, & Carstensen, 2000; Phillips, Smith, & Gilhooly, 2002). However, in another study, while viewing a medical procedure, older adults reported lower levels of disgust than did young adults (Kunzmann, Kupperbusch, & Levenson, 2005). In contrast, some studies have found older adults to experience greater levels of negative affect than did young adults during films about loss (Kunzmann & Grühn, 2005), suffering (Kliegel, Jäger, & Phillips, 2007), and injustice (Charles, 2005).

Less is known about the behavioral expression of emotions in older adults (Lawton, 2001). One study found similar displays of positive and negative emotional expression in younger and older participants when they were viewing emotional films (Tsai et al., 2000), whereas another study showed that there is less outward display of negative emotions in older married couples relative to middle-aged ones (Carstensen, Gottman, & Levenson, 1995). In a different study, when they were reliving emotional experiences, older adults were rated as showing greater expression of negative emotions (Malatesta-Magai, Jonas, Shepard, & Culver, 1992).

Emotion regulation is an important factor in determining levels of experienced and expressed emotion. To provide objective evidence on how effectively different age groups can implement strategies for emotion regulation, researchers must vary regulation instructions in a controlled experimental setting (Gross et al., 1997; Gross, John, & Richards, 2000). To our knowledge, only two studies to date have experimentally manipulated the use of online emotion-regulation strategies in older adults (Kunzmann et al., 2005; Magai, Consedine, Kurosheva, Kudadjie-Gyamfi, & McPherson, 2006). Kunzmann and colleagues investigated age differences in following instructions to amplify or suppress emotional behavior while people were watching videos depicting medical procedures, and they found that no age differences emerged in behavioral or physiological measures. The authors argued that, in contrast to age improvements in self-rated emotion-regulation capacity, objective data suggest no age change in emotional regulation skills. Magai and associates also reported no age differences in implementing instructions to suppress emotional behavior while people were recounting sad and angry experiences. Kunzmann and colleagues pointed out that it is important to investigate age differences in emotion regulation by using other forms of regulatory strategy.

Both of these studies manipulated emotion regulation in terms of suppressing the outward display of emotion. Gross and colleagues make an important distinction between different kinds of emotion-regulation strategies, which can differ in their temporal and processing characteristics (e.g., Gross et al., 1997; John & Gross, 2004). Emotional processing starts with attention to and appraisal of emotional cues, and it continues with the internal experience and expression of emotions. Regulatory processes may act on either the experience or expression of emotion. Here we investigate age differences in the use of two
emotion-regulation strategies. The first is positive refocusing, which occurs during the early appraisal phase of emotion generation, acting to change emotional experience. The second is expressive suppression, which occurs after an emotion has been experienced and acts to change outward behavioral expression. Positive refocusing strategies involve replacing negative emotions with positive ones in order to diminish the experience of negative affect (Kraaj, Pruymboom, & Gamelski, 2002). Expressive suppression involves reducing the outward display of emotion after an individual has experienced an emotional state (John & Gross). John and Gross argue that older adults make more effective use of reappraisal strategies to regulate emotions but are less likely to use emotion suppression. Magai and colleagues (2006) predict that older adults regulate the experience of emotions earlier in the emotion-generation process than do their younger counterparts, who instead rely more on the suppression of expression. This could occur because of declining cognitive resources with age. Given the high cognitive load associated with the suppression of emotions (Richards & Gross, 1999), and the difficulties in behavioral suppression experienced by older adults (Phillips & Henry, 2005), emotional suppression might be a difficult regulation strategy for this group. An alternative explanation is that older adults learn with experience that early reappraisal is an effective way of managing emotions.

Aims of the Current Study

In this study, we investigate age differences in people’s experience, expression, and regulation of negative affect in response to watching video clips that depict some form of injustice. We look at both expressive suppression and positive refocusing of emotions as regulatory strategies. We give detailed predictions in the paragraphs that follow.

Self-rated intensity of emotional experience.—Previous findings indicate that, in response to watching videos, people display a mixed pattern of age effects on self-rated emotions, depending on the stimuli used. In a previous study, Charles (2005) found greater experienced emotional intensity in a wide range of negative emotions in older compared with younger adults when the participants were viewing some form of injustice. We therefore predicted greater levels of self-rated negative emotions in older relative to younger participants.

Expression of emotion.—While participants were watching the emotional video, their behavior was filmed and subsequently rated by observers for the levels of negative affect expressed, as well as the frequency of two specific emotion-related behaviors: gaze aversion and face touching. A previous study investigating age differences in these specific types of behaviors in response to an emotional video clip found that older adults were less expressive relative to their younger counterparts when they were watching disgust-provoking scenes (Kunzmann et al., 2005). However, the older adults also experienced less subjective emotional intensity while viewing the video. In the current study, we expect to find greater emotional experience among older participants. It can therefore be predicted that older adults should be rated by observers as showing a correspondingly greater level of emotional expressivity.

This prediction should be considered exploratory, as few studies have investigated both the inner experience and outer display of emotions in younger and older adults. It is possible that as a result of either an increased ability to regulate emotions with age or age-related physical changes that occur in the face, observers will find it more difficult to interpret older adults’ displays of emotion. This could explain the results found by Kutzmann and colleagues (2005): Observers may always perceive older adults as being less emotionally expressive. To further investigate this issue, for a subset of participants, we included ratings of behavior while they were watching an emotionally neutral situation.

Use of emotion-regulation strategies.—We also investigated the effects of age on the experience and expression of emotions when participants were instructed to use one of two different emotion-regulation strategies while viewing a second video depicting injustice. Prior empirical research predicts that positive refocusing should result in less subjective experience of negative emotion (and correspondingly reduced behavioral expression of negative emotion), whereas expressive suppression should reduce the outward expression of emotions but have no effect on subjectively experienced affect (Gross, 1998). It has been proposed (John & Gross, 2004; Magai et al., 2006) that older adults are particularly effective at the early reappraisal of negative emotional situations, but they may have difficulty in implementing cognitively demanding suppression strategies. If so, then the implementation of positive refocusing might be particularly effective in reducing the experience of negative affect in older adults, whereas a regulatory strategy of suppressing outward expression might be more difficult for this age group.

Methods

Participants

There were 126 participants who contributed to these analyses; 64 were young (18–40 years of age, \( M = 22.7, SD = 6.90; 54.7\% \) female and 45.3\% male), and 62 were old (60–88 years of age, \( M = 72.2, SD = 6.33; 54.8\% \) female and 45.2\% male). We recruited older adults by advertising in community newsletters, approaching local organizations, or going through the Public Participation Panel at the University of Aberdeen; the adults received a small reimbursement. We also recruited the majority of younger adults in this way, although others were undergraduate students who completed the study in return for course credits. Young and old groups differed significantly in number of years of education: \( t(122) = 3.74 \) (young, \( M = 14.1 \) years, \( SD = 2.07 \); old, \( M = 12.2 \) years, \( SD = 3.35 \)). Therefore, we also carried out all of the analyses detailed here by covarying education, but this did not influence the results. Participants rated their health on a 7-point scale from 1 (very poor) to 7 (excellent). There was no age difference, with \( M = 5.3 \) for both groups; \( t(122) = 0.76 \).

Materials

Film clips.—We chose two video clips, following pilot work in which younger and older adults rated emotional responses to
four video clips. The two clips that we chose were those that most reliably elicited negative affect in both young and old participants. The video clips portrayed injustice, which Charles (2005) argues is likely to invoke a range of negative emotions: anger, sadness, and (moral) disgust. We extracted Emotion Video 1 from the movie “Cry Freedom.” Gross and Levenson (1995) identified this clip as eliciting high levels of self-reported negative affect. The clip depicted the shooting of innocent protesters during the Soweto Massacre in South Africa, and it lasted approximately 4.5 minutes. Emotion Video 2 was real-life footage from an undercover documentary investigating animal abuse in British circuses. This clip lasted approximately 4 minutes and was previously used by Hosie, Milne, and McArthur (2005) to induce anger. All participants completed the spontaneous viewing of Emotion Video 1, and then we assigned most of them to groups given specific instructions manipulating emotion-regulation strategy prior to seeing Emotion Video 2.

Positive and Negative Affect Scales.—To assess the participants’ age differences in positive and negative affect prior to watching the videos, we had the participants complete the Positive and Negative Affect Scales (PANAS; Watson, Clark, & Tellegen, 1988). This involved having the participants rate from 1 to 5 the extent to which 10 negative and 10 positive adjectives described their current emotional state. The PANAS is a valid, reliable measure of the constructs it was intended to assess (Crawford & Henry, 2004).

Emotion rating scales.—We asked participants before and after viewing each of the two videos to rate their current feelings (angry, disgusted, upset, and sad) on a scale of 0 (not at all) to 7 (very). We chose these terms after performing pilot work that indicated that each of these emotions was highly elicited by both of the emotion video clips. Ratings of these emotions before the video clips were nearly always zero, so we do not consider these further. Self-ratings of the four different emotions after the participants watched the video were highly correlated. The mean intraclass correlation for the four emotions was .91 for Emotion Video 1 and .93 for Emotion Video 2. As these ratings were so highly correlated, we calculated the mean score across the four negative emotion adjectives.

Procedure

Before they provided consent to take part in the study, we asked participants for their permission to be videotaped throughout the entire testing session; all consented.

Emotion measures and viewing of Emotion Video 1.—At the beginning of the session, participants completed the PANAS and the first set of emotion rating scales. Participants then watched Emotion Video 1. They were informed that the events depicted in the clip were negative in content, but that they should watch the film as carefully as possible. Further instructions were given that, if at any point they found the film too upsetting, they could stop watching. Immediately after watching the video clip, participants completed the emotion rating scales, then a series of cognitive tasks such as the Mill Hill Vocabulary Test (Raven, Court, & Raven, 1988) to assess crystallized ability, the Digit Symbol Substitution Test from the Wechsler (1981) Adult Intelligence Scales to assess speed of processing, and the FAS measure of initial letter verbal fluency to measure executive function; this process took approximately 30 minutes.

Neutral video condition.—We then assigned 15 older and 16 younger participants to watch a neutral video; they did not view the second emotional clip. We did this in order to identify whether any age differences in behaviors observed during Emotion Video 1 might be due to physical differences between young and older adults (e.g., older adults always being perceived by viewers as more or less emotional). These participants viewed a 4-minute video clip from a wildlife documentary that pilot work had revealed to have little effect on mood. Participants completed the emotion rating scales for anger, sadness, disgust, and upset before and after viewing the neutral clip.

Manipulation of emotion-regulation instructions while viewing Emotion Video 2.—All other participants watched Emotion Video 2. We used a between-participants design for the emotion-regulation manipulation, in order to avoid carry-over effects from different emotion-regulation strategies. For example, once positive-refocusing instructions had been given, it would be difficult to prevent participants from continuing to think about the positive memory in subsequent viewings of negative films. Before viewing Emotion Video 2, participants completed the emotion rating scales. We randomly assigned participants to one of three emotion-regulation conditions, with 16 younger and 16 older participants assigned to each (because of problems with recording, only 15 older participants’ full data were available for the refocusing condition).

Spontaneous expression condition.—The participants in this condition were encouraged to “react spontaneously and naturally to the events shown in the film. Watch the film as you would at home or in the cinema.”

Expressive suppression condition.—The participants in the expressive suppression condition were instructed as follows: “If you have any feelings during the clip, it is essential that you try not to let them show—in order that someone watching you would not know that you were feeling anything at all” (Gross, 1998).

Positive refocusing condition.—Immediately after rating emotions for Video 1, the participants in the positive-refocusing condition were instructed as follows: “Picture something that makes you feel good. It could be a particular event or person. Please take a few minutes to think about that memory. Later in the session you will be asked to recall that memory.” Participants in the positive-refocusing condition were thus instructed prior to watching the second video as follows: “You may find yourself becoming upset by the events in the film. If you do begin to experience negative emotions at any point in time, please try to think about the positive memory that you focused on earlier.”

Immediately after watching the video clip, participants in all three groups completed the emotion rating scales. In order to
ensure no lasting effects of negative mood induction, we had participants watch a video clip that elicited positive affect.

**Independent Coding of Emotion Expression**

To provide an independent assessment of participants’ emotional display while they were viewing the video clips, we asked four coders who had not taken part in the study (one man and one woman in their sixties, and one man and one woman in their twenties) to watch the video clips of participants’ responses. We did not tell the coders about either the content of the video clips or the different emotion-regulation conditions, and they watched the participants’ responses with the volume turned off. Coders indicated the degree to which participants appeared angry, disgusted, upset, and sad on a scale of 0 (not at all) to 7 (very). Intraclass correlations of coders’ ratings for these four different emotions were very high for Emotion Video 1 (.90) and Emotion Video 2 (.87), and so we obtained a mean score for negative affect. For these ratings of overall negative affect, we found a mean intraclass correlation of .78 between the four raters for Emotion Video 1 and .75 for Emotion Video 2, and so we calculated mean scores across all four raters.

To provide behavioral indices of emotion expression, we also asked the coders to rate the number of times the participants made specific movements, such as touching the face with a hand and averting one’s gaze (see also Gross & Levenson, 1993; Wallbott, 1998). For the behavioral ratings, mean intraclass correlations for the four raters were .81 (Emotion Video 1) and .89 (Emotion Video 2) for touching the face and .86 (Emotion Video 1) and .78 (Emotion Video 2) for averting the eyes. We calculated mean scores collapsed across the four coders.

**RESULTS**

Baseline levels of positive affect and negative affect are shown in Table 1, along with the results of independent-samples t tests. We also present the standardized difference between the younger and older groups, which we express as Cohen’s $d$. Cohen (1988) defines effect sizes of 0.2 as small, 0.5 as moderate, and 0.8 as large in magnitude. Our analyses of the PANAS scores indicated that, compared with younger adults, the older adults reported higher levels of positive affect and lower levels of negative affect. All of the significant age effects subsequently described here remained significant when we carried out analyses of covariance with the PANAS scores covaried.

**Video 1: Emotional Experience and Expression During Spontaneous Viewing of Emotion Video 1**

Means and standard deviations for the self-rated negative emotions reported immediately after watching Emotion Video 1 are presented in Table 1, along with $t$ tests investigating age differences in these ratings. Older participants experienced significantly higher negative affect than their younger counterparts did. This was also reflected in the independent ratings reported in Table 1: Older adults were rated as expressing more negative affect than younger adults. There was no age difference in the number of face touches. However, older adults averted their eyes significantly less often than did younger adults.

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**Table 1. Descriptive Statistics for Baseline Positive and Negative Affect, and Self- and Coder-Rated Responses to Viewing Emotion Video 1**

<table>
<thead>
<tr>
<th>Affect or Response</th>
<th>Younger M</th>
<th>Younger SD</th>
<th>Older M</th>
<th>Older SD</th>
<th>t Test (d.f.)</th>
<th>Effect Size: $d$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive Affect (PANAS)</td>
<td>29.9</td>
<td>7.06</td>
<td>33.4</td>
<td>6.33</td>
<td>2.91*</td>
<td>0.52</td>
</tr>
<tr>
<td>Negative Affect (PANAS)</td>
<td>14.3</td>
<td>4.94</td>
<td>11.1</td>
<td>1.95</td>
<td>4.73*</td>
<td>0.85</td>
</tr>
<tr>
<td>Response to video clip</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-rated</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total negative affect</td>
<td>4.48</td>
<td>1.62</td>
<td>5.50</td>
<td>1.73</td>
<td>3.43*</td>
<td>0.62</td>
</tr>
<tr>
<td>Coder-rated</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total negative affect</td>
<td>3.04</td>
<td>1.51</td>
<td>5.33</td>
<td>2.92</td>
<td>5.58*</td>
<td>1.00</td>
</tr>
<tr>
<td>Touching face</td>
<td>0.72</td>
<td>1.10</td>
<td>1.02</td>
<td>1.18</td>
<td>1.46</td>
<td>0.26</td>
</tr>
<tr>
<td>Gaze aversion</td>
<td>1.46</td>
<td>1.45</td>
<td>0.75</td>
<td>0.96</td>
<td>3.23*</td>
<td>0.58</td>
</tr>
</tbody>
</table>

Notes: PANAS = Positive and Negative Affect Scales; SD = standard deviation.

*p < .05.

**Ratings of Behavior During the Neutral Control Video Clip**

In order to identify whether age differences in rated behavior were also seen in a nonemotional video clip, we analyzed the coders’ ratings for the subgroup viewing the neutral clip. For measures of coder-rated negative affect, there was no difference between older ($M = 1.62, SD = 0.89$) and younger ($M = 1.51, SD = 0.88$) participants, $t(29) = 0.37, d = 0.14$. There was no effect of age on face touching (younger $M = 0.73, SD = 0.93$; older $M = 0.87, SD = 1.39$), $t(29) = 0.31, d = 0.12$, or gaze aversion (younger $M = 1.12, SD = 0.79$; older $M = 0.88, SD = 0.81$), $t(29) = 0.84, d = 0.32$. Participants’ self-ratings of emotion before and after viewing this clip were almost all 0 out of 7.

**Emotion Video 2: Age Differences in Effects of Regulation Strategies**

In order to check that participants assigned to the three different emotion-regulation groups (spontaneous expression, expressive suppression, and positive refocusing) did not differ in baseline cognitive or emotional variables, we carried out a series of one-way analyses of variance (ANOVMAs). These showed no differences between the three regulation conditions with regard to age, education, health, vocabulary, Digit Symbol Substitution scores, FAS fluency, or positive or negative affect (all $F < 1$). Most importantly, there was no difference between the regulation groups in terms of the participants’ self- or coder-rated negative affect while they were viewing Emotion Video 1, $F < 1$, indicating that the three regulation groups were matched on baseline experience and expression of emotion.

Figures 1 and 2 show mean scores on the self- and coder-rated emotion measures in response to the different emotion-regulation instructions. To investigate the interaction between age and emotion-regulation condition (spontaneous expression, expressive suppression, and positive refocusing), we carried out a series of ANOVAs; statistics are reported in Table 2. In those instances in which we did find significant interactions, we used Tukey’s honestly significant difference tests (with $\alpha = .05$) to investigate.
The first ANOVA (see Table 2) investigated the effects of regulation condition and age group on self-rated affect. Compared with young adults, older adults reported experiencing more negative affect. There was a main effect of regulation condition, with the refocus condition resulting in less negative affect compared with spontaneous expression and expressive suppression. This was qualified by a significant interaction. Our post hoc analysis revealed that the older group experienced more negative affect than did the young group in both spontaneous expression and suppression conditions, but there was no age difference in negative affect in the positive refocusing condition. Looking at the older adults only, we found a significant effect of instruction condition on emotional experience, with the refocus condition resulting in less negative affect compared with the spontaneous expression and expressive suppression conditions. The young adults showed no effect of regulation condition on self-rated emotions.

The next ANOVA looked at independent coders’ ratings of participants’ expressed negative affect; for statistics see Table 2. A significant effect of age revealed that older participants were judged to express greater negative affect than young participants. A significant effect of regulation condition was qualified by a significant Age Group × Regulation Condition interaction (see Figure 1b). Older adults were judged to express greater negative affect than young adults in the spontaneous expression condition, but there were no age differences in expressed emotion during expressive suppression or positive refocusing. Comparisons within each age group revealed differences between the conditions: older participants showed less affect during both positive refocusing and expressive suppression conditions than they did in spontaneous expression, whereas younger participants showed less affect during the expressive suppression condition than they did in spontaneous expression and positive refocusing conditions.

Independent coders also rated face touching and gaze aversion behaviors, and statistics are reported in Table 2. There were no effects of age or regulation condition on number of face touches, and no interaction between these factors. There was also no overall age group effect on averting gaze. However, there was a significant Age Group × Regulation Condition interaction (see Figure 2b). In the spontaneous expression condition there was no age difference in frequency

![Figure 1. Effects of age and regulation condition on (a) self-rated and (b) coder-rated negative affect. Error bars indicate standard error of the mean.](https://academic.oup.com/psychsocgerontology/article-abstract/63/3/P138/586802)

2. A significant effect of age revealed that older participants were judged to express greater negative affect than young participants. A significant effect of regulation condition was qualified by a significant Age Group × Regulation Condition interaction (see Figure 1b). Older adults were judged to express greater negative affect than young adults in the spontaneous expression condition, but there were no age differences in expressed emotion during expressive suppression or positive refocusing. Comparisons within each age group revealed differences between the conditions: older participants showed less affect during both positive refocusing and expressive suppression conditions than they did in spontaneous expression, whereas younger participants showed less affect during the expressive suppression condition than they did in spontaneous expression and positive refocusing conditions.

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of gaze aversion. For the expressive suppression condition, older participants showed more gaze aversion than did young participants. In contrast, for the positive refocusing condition, older adults showed significantly less gaze aversion than did young adults. Looking at the young group only, we found that there were no significant differences between the regulation strategies in their effects on gaze aversion. In the old group, the expressive suppression condition caused significantly greater gaze aversion than did positive refocusing.

**DISCUSSION**

In the current study we found older adults, compared with their younger counterparts, to rate themselves as having a more intense emotional experience when viewing acts of injustice. Previous studies also found greater self-reported emotional reactivity in older adults to films portraying injustice (Charles, 2005), suffering (Kliegel et al., 2007), and loss (Kunzmann & Grünn, 2005). The current results suggest that older adults’ high level of subjectively experienced affect was communicated to external observers. Coders perceived older adults as expressing more negative emotion than young adults during the emotional film clips. Some previous studies have indicated age-related increases in expressed negative emotions (Malatesta-Magai et al., 1992); other studies have found no age effects (Tsai et al., 2000); and still others have reported evidence of lower levels of expressed negative emotion with age (Carstensen et al., 1995; Kunzmann et al., 2005; Magai et al., 2006). The effect of age on expressed emotion is likely to depend on the nature of the task along with the extent and type of experienced emotion.

We found no age differences in coders’ ratings of expressed emotion when a subset of participants was rated while they were viewing a neutral film. This indicates that the differences in the coders’ ratings of the expressed emotions of young and old participants were linked to the emotions felt while the participants were viewing acts of injustice, and that they were not due to physical differences such as changes in physiognomy between the two groups. In terms of emotional behaviors while watching the film clip, younger adults averted their gaze more often than did older adults. This could indicate a strategic avoidance of unpleasant material, or poorer adherence to task instructions to attend to the film.

In this study we also investigated age differences in implementing two different emotion-regulation strategies. Numerous studies indicate that older adults rate themselves highly on questionnaire measures of emotion regulation (e.g., Gross et al., 1997; Lawton et al., 1992; Phillips et al., 2006). However, the only previous experimental studies that we know of investigated age effects in implementing an expressive suppression strategy (Kunzmann et al., 2005; Magai et al., 2006), and they found no age differences in the extent to which behavioral display was attenuated. Here, we extended the investigation of age differences to look at emotion regulatory strategies that make demands on different aspects of the emotion experience: positive refocusing, which acts to reduce the negative experience of emotion early in its trajectory, and expressive suppression, which should reduce the external display of emotion while not influencing internal experience.

Results indicated that older adults were able to use both emotion-regulation strategies as instructed. Older adults showed low levels of self-rated negative affect following positive refocus compared with spontaneous expression instructions. This reduction in experienced negative affect was significant for old but not young participants, suggesting that older adults were able to more effectively than young adults follow instructions to positively refocus attention. This is a striking finding that supports the proposal that older adults may be particularly well equipped to regulate emotions through reappraisal processes early in the experience of emotions (John & Gross, 2004; Magai et al., 2006). This evidence of effective ability to regulate emotion in old age provides an intriguing contrast to the age-related declines in other types of regulatory process (Phillips & Henry, 2005).

Both young and older adults were effectively able to follow instructions to suppress the outward display of emotional expression—both groups were rated as showing less negative affect during suppression than during spontaneous expression conditions. This result is similar to that reported by Kunzmann and colleagues (2005) in relation to disgusting film clips. This concurs with older adults’ self-ratings of effective emotion regulation, and it contrasts strongly with age-related difficulties in deliberately regulating thoughts and behaviors (Kramer, Humphrey, Larish, Logan, & Strayer, 1994; Rabbitt, Lowe, & Shilling, 2001). One caveat to these findings is the fact that older adults spontaneously experienced and expressed

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**Table 2. ANOVA Statistics of the Effects of Age and Emotion-Regulation Condition on Self- and Coder-Rated Responses to Emotion Video 2**

<table>
<thead>
<tr>
<th>Response</th>
<th>Age</th>
<th>Regulation</th>
<th>Age × Regulation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(F(df = 1, 89))</td>
<td>(\eta^2)</td>
<td>(F(df = 2, 89))</td>
</tr>
<tr>
<td>Self-rated</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total negative affect</td>
<td>4.24*</td>
<td>.046</td>
<td>7.53*</td>
</tr>
<tr>
<td>Coder rated</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total negative affect</td>
<td>4.97*</td>
<td>.053</td>
<td>8.05</td>
</tr>
<tr>
<td>Touching face</td>
<td>0.65</td>
<td>.007</td>
<td>0.24</td>
</tr>
<tr>
<td>Gaze aversion</td>
<td>2.97</td>
<td>.033</td>
<td>1.21</td>
</tr>
</tbody>
</table>

**Notes:** ANOVA = Analysis of variance. This analysis compares three regulation conditions: spontaneous expression, expressive suppression, and positive refocusing.

\(*p < .05.*

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higher levels of emotion than did young adults, which might have influenced the magnitude of age differences in regulation. It would be useful in future research to explore age differences in regulation under conditions of equal emotional experience for old and young participants.

Gaze aversion was differently influenced by regulation instructions in old and young adults. Older adults showed more gaze aversion than did young adults in the suppression condition. Rather than controlling emotional expression by suppressing emotional display, older adults may use an experiential strategy to avoid the cause of negative emotion (Magai et al., 2006). In contrast, younger adults averted gaze more than did older adults during refocus instructions. This suggests that older adults may have been able to effectively follow the refocus instructions and focus mentally on the positive memory while still looking toward the video, whereas younger participants had to look away from the negative video to refocus more positively.

Although important gender differences in emotion regulation do exist (e.g., Hosie et al., 2005), the current study lacked sufficient power to investigate whether men and women show different patterns of emotion regulation. The interaction between age and gender in use of emotion regulatory strategies is an important topic for future research. Furthermore, the current sample of both younger and older adults represented an elite group of relatively well-educated, healthy individuals. It is important in future research to extend experimental studies of aging and emotions to look at more representative samples from the community.

More information is needed about age differences in emotions experienced and expressed during a wide range of film clips, given the mixed evidence to date (Charles, 2005; Kunzmann & Grünn, 2005; Knight et al., 2002; Levenson et al., 1991; Phillips et al., 2002; Tsai et al., 2000). Factors such as the age relevance of the material, the type of emotions invoked, personal involvement and empathy with protagonists, arousal and valence levels of the film clips, and the nature of the clips (e.g., documentary vs drama) have to be explored in relation to age differences. Further, the current study did not address the heterogeneity of experiencing and expressing a range of specific negative and positive emotions (Charles; Magai et al., 2006), and it would be useful in future work to explore distinctions between different emotions in more detail.

Conclusions
In the current study we investigated the experience, expression, and regulation of negative affect to depictions of injustice among younger and older adults. Older adults responded with greater levels of negative affect than did young adults, and this emotional experience was found both in the subjective experience of negative emotions and the coder-rated expressive display of emotions. When instructed to suppress emotional expression, both older and younger adults showed reduced external display of negative affect. Instructions to regulate emotions by positive refocusing resulted in lower levels of experienced and expressed emotions in the older sample but had no effect on emotions experienced or displayed by the young sample. This suggests that older adults were more effective than young adults in implementing a regulation strategy acting early in the experience of emotion. In contrast to widely reported problems in regulating cognition, older adults were able to effectively use emotion-regulation strategies to reduce the experience and expression of negative emotions.


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