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Emotion control during later life: The relationship between global perceptions and daily experience

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Abstract

The extent to which individuals generally believe that they can successfully manage their emotions is related to healthy coping and well-being. Nevertheless, it is unclear how this general belief is related to daily affective experiences. In the current study, the relationship between global emotion control beliefs and daily affect reports across 56 days were assessed in a sample of 298 older adults. Results indicate that higher global emotion control beliefs were related to lower mean daily negative affect and higher mean daily positive affect. Additionally, variability analyses investigating multiple potential time scales revealed that global beliefs were related to lower variance in daily negative affect and less variable speeds of daily negative affect change across a range of time scales (from windows of 3 days to windows of approximately 2 weeks). Alternatively, global control beliefs were not significantly related to variance in daily positive affect or variance in speeds of daily positive affect change. Together, results suggest that global emotion control beliefs predict average experience of daily affect and variability in daily negative affect.

Keywords

Emotion control; Daily emotions; Affect variability

1. Introduction

Individuals are affected by countless significant occurrences in their lifetime, and although events are a normal and expected part of daily life, people differ in how much control they believe they have during these times. Individuals' sense of control has been consistently explored as a beneficial and protective factor for health and well-being. In this literature, two main types of control beliefs have been distinguished (Heckhausen & Schulz, 1995; Rothbaum, Weisz, & Snyder, 1982). These types include primary or central control, which indicates control over environment, and secondary control, which denotes control over one's self, including one's thoughts, appraisals, reactions, and interpretations. Whereas

environmental control is characterized by actions directed at attempting to change the world to fit one's needs and desires, emotional control involves processes directed at making the individual adapt to the world. The two types of control are considered complementary, with control over events and control over self to be two important pieces in healthy adjustment (Rothbaum et al., 1982). Although both types of control are important, the present study focuses on secondary control; specifically, emotion control will be assessed in a sample of older adults.

With regard to the literature on emotion control, there is no established consensus concerning its definition or manifestation, and the construct is often measured in distinct ways. One way that emotional control has been assessed is in terms of self-reported perceptions about emotion regulation. Individuals higher in emotion control, according to this view, are those who believe they are successful regulators of their emotional experiences. Individuals' belief in their ability to control their emotions has been associated with a variety of psychological well-being outcomes, including lower levels of perceived stress and greater life satisfaction (Pallant, 2000) and better adjustment in men with HIV (Thompson, Nanni, & Levine, 1994).

A second way that emotion control has been assessed is as the reported experience of affect. Successful emotion regulation has been described as the ability to maintain positive moods and preserve the absence of negative moods, which includes active self-initiated movement away from negative toward positive emotions (Carstensen, Pasupathi, Mayr, & Nesselroade, 2000). This conceptualization of emotion regulation implies that an individual higher in emotion control experiences more positive and fewer negative emotions when compared to individuals lower in emotion control. Relatedly, emotion regulation has been conceptualized in terms of individual differences in how quickly one's mood fluctuates. Studies have shown that moods may oscillate around a certain consistent equilibrium (Headey & Wearing, 1989). It has been theorized that the degree to which people fluctuate around their own equilibrium varies, with some people experiencing large fluctuations in mood and other people remaining consistently closer to their set equilibrium (Boker, 2002; Eid & Diener, 1999). Thus, higher emotion control in this view is exhibited by a more stable, less volatile experience of affect.

Although emotion control is theoretically important to coping and well-being, the study of emotion control may be incomplete, because studies utilize these different conceptualizations. Because people may not accurately describe themselves on global measures, global perceptions of emotion regulation may be inconsistent with the daily emotional experience. In fact, research on affective forecasting indicates that individuals are often inaccurate when predicting their own affective responses, intensity, and duration to various events (for review, see Lowenstein, 2007). If individuals incorrectly forecast their own emotions, it may also be that they are unable to accurately judge their ability to manage emotions as well. More generally, the relationship between global control beliefs and actual daily emotional experiences has not been well established. For instance, it is unclear if global emotion control beliefs predict overall daily affective experiences, variability or volatility in daily affect, and whether global beliefs are more predictive of daily, weekly, or monthly variability in affect.

Although an important tool across the lifespan, emotion regulation may be especially important for older adults. Aging is accompanied by a decreasing number of opportunities (Baltes, 1987; Heckhausen, 1999; Heckhausen & Schulz, 1995), and the aging process is often accompanied by normative life events that are unavoidable. In uncontrollable situations, individuals lack the ability to change their external environment, yet they do have the ability to regulate how they react internally to the situation (Thompson et al., 1994). There is an increase in this type of uncontrollable event with older age, for example, the loss of a spouse or physical illness and decline (Schaie & Willis, 2002). These normative losses and uncontrollable stressors may make secondary control more beneficial and important for the elderly (Wrosch, Heckhausen, & Lachman, 2000). Thus, it may be particularly relevant to investigate emotion control in older adults.

In the present study, the relationship between global emotion control beliefs and daily affect was explored in a sample of older adults. Two approaches were utilized in the assessments of daily affective experience. In the first approach, emotion control was considered in terms of mean affect; greater mean positive affect and lower mean negative affect across days was regarded as evidence of successful emotion regulation. In the second approach, reduced variance in daily affect and variance in speed of daily affect change was considered as evidence of emotion control, and affect variability in a range of time windows was explored. Overall, it was investigated how global emotion control beliefs are manifested in older adults, namely, whether global beliefs are associated with overall daily affect, less variable daily affect and speed of change of daily affect, and over what time scales affective variability may be most related to global beliefs.

2. Method

2.1. Participants

Participants included 337 individuals from a five-county region in northern Indiana. Of these participants, 57% were female. The sample was 83.1% Caucasian, 10.7% African American, 3% Hispanic/Latin American, 0.3% Native American, and 0.6% Asian, along with eight individuals who reported "Other" or did not respond to the ethnicity item. Participants ranged in age from 59 to 91 ($M = 68.3$, $SD = 5.26$). With regard to marital status, 46.3% were married, 22% were widowed, 22% were divorced, and the remaining individuals were either single or separated.

2.2. Procedure

Participants were sent packets that included a cover letter explaining the study, an invitation to participate, and a consent form. Also included in the packet were the global measures for participants to complete and return if they chose to participate. Those who completed the packet of measures received daily diary questionnaires to complete each day for 56 days. Daily questionnaires were counterbalanced across and within participants so that individuals either received 1 week, 2 weeks, or 3 weeks worth of daily diaries to fill out. Participants were provided with postmarked envelopes to place all of their completed daily questionnaires; after sending those, individuals then received their next packet of 1 week, 2 weeks, or 3 weeks worth of questionnaires. Participants were instructed to fill out the daily

diaries each night before going to bed, and to leave any days blank if they could not fill out the questionnaires that day. Daily diaries were completed for 298 (88.43%) of the original participants. Participants were given \$20 for completion of the large initial questionnaire and \$10 per week of completed daily diaries.

2.3. Global packet measure

2.3.1. Perceived control of internal states—The Perceived Control of Internal States Scale (PCOISS; Pallant, 2000) measures the amount of control people feel that they have over their emotions and reactions. Sample questions include, “I don’t have much control over my emotional reactions to stressful situations,” and, “I can usually talk myself out of feeling bad.” The respondents are asked the extent to which they agree with such statements, on a scale of 1, indicating “strongly agree,” to 5, indicating “strongly disagree.” Scores range from 18 to 90, with higher scores indicating higher levels of perceived control of internal states. In the current study, the PCOISS had an internal reliability of 0.91.

2.4. Daily diary measure

2.4.1. Daily affect—The Positive and Negative Affect Schedule (PANAS) scale (Watson, Clark, & Tellegen, 1988) measures the presence and intensity of positive and negative affect. It is a 20-item measure with 10 items measuring negative affect and 10 items measuring positive affect. Respondents are presented with an emotion, for example, “distressed,” “enthusiastic,” or “nervous,” and are instructed to indicate the extent to which they felt that emotion today on a five-point scale, with a response of 1 indicating “very slightly or not at all” and 5 indicating “extremely.”

3. Results

3.1. Descriptive statistics

Scores on the PCOISS ranged from 29 to 71 ($M = 52.3$, $SD = 5.79$) and it was not significantly associated with gender ($F = 0.22$, $p = 0.64$), age ($r = 0.07$, $p = 0.24$), or race ($F = 0.87$, $p = 0.50$) in the current sample.

In the present study, participants’ scores on the PANAS were included in the daily assessment if they had no more than 10% missing data on the PANAS on a given day. Specifically, a participant must have completed at least 9 of the 10 items on each of the affect scales on a given day for their data on that day to be included in analyses. Additionally, for the overall mean affect analyses, participants also needed to have at least 50 of the 56 days completed to be included. Of the 298 participants who completed the PCOISS as part of the questionnaire packet and completed daily data, 293 individuals met the criteria and were included in the analysis of the PANAS mean daily scores. Mean levels of positive affect across the 56 days were significantly correlated with mean negative affect ($r = -0.14$, $p = 0.04$). Age was not related to either mean positive affect ($r = -0.05$, $p = 0.44$) or mean negative affect ($r = 0.09$, $p = 0.18$), and gender was likewise not significantly related to either mean positive affect ($F = 0.86$, $p = 0.36$) or mean negative affect ($r = 0.23$, $p = 0.64$).

Subsequent analyses were performed to test for differences between individuals who completed both the packet data and the daily diaries, and those who completed only the packet data but were not included in the daily diary assessments. Results showed no significant differences between the groups in age ($t = 0.57, p = 0.58$), gender ($\chi^2 = 0.04, p = 0.84$), or race ($\chi^2 = 1.56, p = 0.91$). Additionally, there was no significant difference between the groups on scores on the PCOISS ($t = -0.38, p = 0.71$).

3.2. Mean daily affect

As discussed, emotion control has been conceptualized as the ability to promote positive affect and reduce negative affect. Thus, the relationship between global emotion control and mean positive and mean negative daily affect across the 56-day period was assessed, to test whether mean affect across days was related to perceived emotion control. Results indicated that the PCOISS was significantly related to mean negative affect across days ($r = -0.48, p < 0.01$) as well as mean positive affect across days ($r = 0.42, p < 0.01$). This suggests that higher perceived emotion control predicts lower average levels of daily negative affect and higher average levels of daily positive affect.

3.3. Variance in daily affect

The second approach to emotion control explored considers affect stability to be indicative of successful emotion control. In this vein, we explored the relationship between perceived global emotion control and the variance in affect at the daily level. Daily affect variance was assessed using Derivative Variability Analysis (DVA; Deboeck, Montpetit, Bergeman, & Boker, 2009). This method was chosen for a variety of reasons. First, as Deboeck and colleagues explain, standard deviation alone may not be the best method to show daily variability. Standard deviation looks at a wide range of scores, not taking into account the order of observations; as a result, it can mask how consecutive daily scores may change with respect to time. When considering daily affect, however, the order of observations may be important; affect on any given day is not independent of the day previous or the day following. Using DVA, one can assess variability in how quickly scores change with respect to time. DVA, moreover, allows for the exploration of different windows of time to investigate the different time scales for which affect variability may be observed, for example, variability in windows of a few days, a week, or a month.

Two relationships were explored using DVA in the present study. First, differences in variance in daily emotions, based on observed scores of daily affect, were assessed for relationship with the PCOISS. Second, differences in the variance in the speed with which individuals change emotional states (using the first derivative of daily affect scores) were likewise assessed in relation to the PCOISS.

The following procedure was performed for the first DVA exploration, that of variance in observed scores for daily affect. Each individual's time series was recorded, and then organized into a particular window size, or embedding. For example, an embedding of three indicates a window of three consecutive days' PANAS scores; specifically, the first window of observations using embedding three would include day 1 through day 3, the next window would be day 2 through day 4, the next would be day 3 through day 5, and so on. The

smallest embedding in the current study was 3 days, and the largest was 34 days. Within each window the average score was calculated (e.g., using embedding 7, average weekly scores were calculated). The variance of scores was calculated for each person for each embedding (for example, the variance of all of the 3 days windows), and those variances were each assessed for potential correlations with the PCOISS.

The procedure for the second variance exploration, assessing the variance in the first derivative of daily affect scores, was essentially the same as that for the observed scores. Once again, individuals' time series were divided into windows using a particular embedding dimension; in this analysis, however, it was the first derivative of affect scores that was estimated within each window rather than average score. Thus the variance of each of the embeddings of the first derivative affect scores was calculated, and those variances were assessed for potential correlations with the PCOISS.

Participants were required to have at least 10 complete windows for a variance estimate to be computed. About 294 participants met this criterion at embedding 3, and there was a steady decline as the embedding dimension increased. Nevertheless, 50.7% of people had 10 or more windows at even the highest embedding dimension (34 consecutive days). Subsequent analyses were performed to test for differences between individuals who met criteria for this 34-days embedding and those who did not. Results showed no significant differences between the groups in age ($t = 0.37, p = 0.72$) or gender ($\chi^2 = 0.09, p = 0.77$). There was a significant difference in race ($\chi^2 = 17.2, p < 0.01$), with a greater proportion of Caucasians and a smaller proportion of African Americans having complete data at the highest embedding level. Additionally, there was a marginally significant difference between the groups on scores on the PCOISS ($t = 2.0, p = 0.05$), with the mean slightly higher for those who had complete data at the highest embedding level ($M = 52.9$) than for those who did not ($M = 51.6$); however, this difference (1.3 points) is relatively small compared to the standard deviation of PCOISS scores ($SD = 5.79$).

It was considered important to include all the various time scales in these variability analyses, in order to explore all of the potential time windows in which affect variability may relate to global emotion control in the present study. In light of this decision, all of the analyses reported have been Bonferroni-corrected within each family of tests. This conservative correction was chosen given the large number of analyses included in the present study, in order to minimize any risk of capitalizing on chance and to give the best representation of the time scale effects (Deboeck et al., 2009). Specifically, the family-wise Type I error rate was maintained at 0.05 for the 32 tests (one test for each time scale, 3-34) in each DVA analysis.

3.3.1. Results of DVA for variability in negative affect observed scores—Results of DVA analysis show a significant negative correlation between variance in negative affect and the PCOISS for several window sizes. Graph (a) in Fig. 1 shows the correlations between the variance in negative affect at each embedding level with the PCOISS. The strongest correlation occurred at smaller window sizes, with the relationship becoming less strong as the embedding dimension gets larger.

3.3.2. Results of DVA for variability in negative affect first derivative scores—

Results of DVA analysis for the first derivative of negative affect scores show a similar pattern to the observed scores; there was a significant negative correlation between variance in the first derivative of negative affect and the PCOISS for several embeddings. Graph (b) in Fig. 1 shows the correlations between the variance in the first derivative of each embedding level with the PCOISS. The relationship was again especially strong for smaller embeddings.

3.3.3. Results of DVA for variability in positive affect observed scores—

DVA results show that there was no significant relationship between the variance in positive affect with the PCOISS at any embedding. Graph (a) in Fig. 2 shows the correlation between the variance in positive affect at each embedding level with the PCOISS.

3.3.4. Results of DVA for variability in positive affect first derivative scores—

Similar to the observed score variance assessments, there was no significant correlation between variance in the first derivative of positive affect and the PCOISS. Graph (b) in Fig. 2 shows the correlation between the variance in the first derivative of positive affect at each embedding level with the PCOISS.

3.4. Discussion and directions for future research

Results of the present study suggest that older adults' global perceptions of emotion control predict overall mean affect across days; higher belief in emotion control was associated with lower overall daily negative affect and higher overall daily positive affect. Additionally, the analysis of the daily affect variance using DVA indicated a significant negative correlation between variance in negative affect scores and perceived emotion control. Those with greater global perceived emotion control had less variability in negative affect than those with lower levels of perceived emotion control. This provides evidence that those who believe they can control their emotions indeed tend to experience a narrower range of negative affect scores; they are less volatile in their experience of daily negative emotion. The analysis of the first derivative of negative affect scores indicated a similar result. Again, there was a negative correlation between global emotion control beliefs and variance in negative affect change with respect to time. This further suggests that people with lower perceptions of emotion control not only experience a wider range of negative affect, but they are also more variable in how quickly they change from one level of negative affect to another.

Furthermore, for both negative affect analyses (the observed scores and the first derivative scores), relationships were most strongly established at shorter time scales, in particular for 3-days windows through about 2-weeks windows. Although variability in emotions has been considered theoretically indicative of a lack of emotion control, the different time scales over which individuals may fluctuate has not been heretofore investigated. The present study provides support that variability across smaller windows of time is more associated with global emotion control beliefs, but nonetheless that variability in negative affect across weeks was also related to global beliefs. When appraising their own emotion control, individuals may consider more frequent, smaller time-scale fluctuations (such as across days

and weeks) to be more indicative of a lack of control than variability across longer time periods (such as from month to month). Although this potential pattern merits consideration, the attenuated relationship may instead be due to reduced power at higher embeddings. Research can further explore the different time scales for which negative affect may vary, for example, by measuring individuals within a day or by sampling subjects less frequently, but for a longer period of time.

Results of the present study suggest that variance in daily positive affect did not significantly correlate with global emotion control beliefs, either at the observed score level or at the first derivative level, at any embedding. That is, higher belief in emotion control did not have a clear relationship with variance in positive affect or change in speed of positive affect in the present study. Why might this be? Of note is the content of the PCOISS questionnaire; the items of this scale primarily focus on negative affect. Therefore, the scale is designed to be a measure of negative emotion control, and the regulation of positive emotions is not within its scope. Nevertheless, the PCOISS was related to average positive affect across days in the present study. Taken together, results of the present study suggest that the PCOISS is a good predictor of overall daily positive emotions, but not of variability in positive emotions at the daily level. It may be that while individuals consider it important to keep negative affect stable, it may be less important to avoid these fluctuations with positive affect. In general, more research is needed to explore potential disparity in the relationships between global emotion control beliefs and variability in positive versus negative daily affect.

The present study explored the relationship between global perceptions of emotion control and actual reported emotions at the daily level. Although the type of report in each of these measures is different, with the global report asking specifically for perceptions and the daily measure asking for reports of actual experience of emotion, both require reports from the individual. Future studies can assess the consistency between perceptions and non-report indicators of emotion regulation. For example, studies can assess whether individuals who report high global emotion control exhibit fewer physiological markers of emotional distress in stressful situations. This could be particularly enlightening, given the growing number of studies suggesting there is an increased risk of cortisol elevation, chronic pain, and cardiovascular and neurological problems associated with specific types of emotional reactions and instability (Dickerson & Kemeny, 2004; Kendler, Thornton, & Gardner, 2001).

Furthermore, in the present study it was investigated whether global emotion control beliefs predict the daily affective experience. Nevertheless, that causal direction is not certain; it may also be that daily experiences predict global beliefs. As longitudinal data becomes available in the present sample, analyses investigating how changes in daily experience predict changes in global beliefs across years can be explored to confirm the process and directionality in this relationship.

Finally, the present study investigated emotion control in older adults, because emotion control may be especially utilized by and important for this age group. Nevertheless, future studies should investigate additional age groups, as well as study adults longitudinally, to

investigate the impact of age and cohort on emotion control beliefs, daily affective experience, and the relationship between the two.

In conclusion, the present study provides evidence that global self-assessments of emotion control are related to greater mean levels of daily positive affect, lower mean levels of daily negative affect, and less variability in negative affect across days and weeks, suggesting that global indicators predict specific affective outcomes at the daily level. The lack of relationship between global emotion control beliefs and variability in positive affect suggests that global beliefs may not be a good indicator of the variability of daily positive affect. Future studies can further explore and expand on these findings in order to better understand the implications and outcomes of emotion control and affective experiences.

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Fig. 1.

Correlations between negative affect variance and the PCOISS. Correlations are shown (a) between observed scores of NA variance and the PCOISS and (b) between the first derivative scores of NA variance and the PCOISS. The solid black line tracks correlations across different time scales, from 3 to 34. Every third correlation value is reported. The circle points represent estimates of the Bonferroni-corrected confidence intervals; the black circles indicate that the correlation at that embedding is significant and the empty circles indicate the correlation is not statistically significant. A red horizontal line is marked at a correlation of zero as a reference point. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

Fig. 2.

Correlations between positive affect variance and the PCOISS. Correlations are shown (a) between observed scores of PA variance and the PCOISS and (b) between the first derivative scores of PA variance and the PCOISS. The solid black line tracks correlations across different time scales, from 3 to 34. Every third correlation value is reported. The circle points represent estimates of the Bonferroni-corrected confidence intervals; empty circles indicate that the correlation is not statistically significant. A red horizontal line is marked at a correlation of zero as a reference point. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)