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Aging and Emotions: Experience, Regulation, and Perception

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Abstract

Whereas some theories suggest that emotion-related processes become more positive with age, recent empirical findings on affective experience, emotion regulation, and emotion perception depict a more nuanced picture. Though there is some evidence for positive age trajectories in affective experience, results are mixed for emotion regulation and largely negative for emotion perception. Thus, current findings suggest that the effects of age on emotion vary across different affective domains; age patterns are also influenced by different moderators, including contextual factors and individual differences.

Early findings that individuals in their 60s and 70s report greater positive affect and less negative affect than those in their 20s and 30s [1] were surprising enough to generate newspaper headlines. Findings accumulated over the following decade, using different samples and methods, generally supported this positive age-related pattern [2,3,4]. However, recent work has called into question whether aging is actually characterized by positive or improved trajectories across different affective processes. Below, we use very recent work to flesh out the complexity of age effects on emotion, across the domains of affective experience, emotion regulation, and emotion perception. We conclude that age-related changes in affect may not be quite so positive after all.

Emotional Experience

Despite earlier evidence of older adults reporting more positive affective experience, more recent work suggests a nuanced picture of affective experience and aging that is not quite as positive. These “next-generation” studies of affective experience have considered factors like to what extent there may be cultural differences, or different patterns for particular emotional states.

One study considered cultural specificity of age differences in affective experience [5]. The typical positive age-related pattern emerged among American participants, with older adults demonstrating less negative affect in negative situations, but not in Japanese samples.

Most studies of affective experience in aging have measured simple positive and negative affective states. What is known, then, about discrete emotional states, such as sadness and

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anger? Age differences in self-reported experience appear to vary among these two emotional states, even though they are both negative in valence [6]. Whereas older adults report less frequent anger (similar to the overall pattern for negative affect), they also report more frequent sadness (different from the overall negative valence pattern). Thus, one constraint on age-related positivity in self-reported affective experience is that it applies more to the global positive-negative affect dimension than to specific negative emotional states.

Recent work has approached the question of whether older adults have more mixed and/or complex affective states using different methods and reaching different conclusions. Using data from several national samples, one study found a small increase in self-reported mixed emotional experiences with age [7]. However, another study where individuals reported on their affect numerous times over multiple days found that older adult's self-reported states were less variable and less complex; their positivity seemed to result from declining complexity [8].

When studies find older adults reporting more positive affective experience, a typical explanation involves socioemotional selectivity theory [SST, 9]. According to SST, age-related motivational shifts related to more limited time perspective influence emotional experience. Older adults' limited time perspective leads them to focus on present-oriented hedonic goals, and thus through goal-induced positivity effects in attention and memory, they report feeling better [10]. Demonstrating this link empirically in correlational designs, however, is challenging. One problem is the nature of the measure: The most commonly-used self-report measure of future time perspective in aging is the FTP Scale [11], with items such as "I have the sense time is running out." Contrary to SST's predictions, more limited future time perspectives have been found to correlate with more *negative* affect [12,13]. Interestingly, in these datasets the typical age pattern of reduced negative affect is also found, questioning time perspective as a key causal mechanism.

Emotion Regulation

Several theories suggest that emotion regulation—the ways that people influence their emotions—is likely to change with age. SST proposes that older adults' more limited time perspective motivates emotion regulation in the service of well-being goals [9]. Other theories [14,15] emphasize how age-related strengths and limitations shape the use and effectiveness of emotion regulation strategies. One such strength is the ability to choose and shape the situations one enters.

Motivation

Lab-based and diary research on what younger and older adults *want* to feel continues to support greater emphasis on increasing positive and reducing negative emotions in older age (e.g., greater association of happiness with pleasantness, as well as less up-regulation of negative and dampening of positive emotions) [16]. Resource-based theories have drawn attention to the role of arousal, which may be harder to regulate in older age. Though younger adults reported valuing low- and high-arousal positive states equally, older adults

preferred low-over high-arousal positive affect; reported experiences were in line with these preferences [17].

Older adults also show greater evidence of spontaneous emotion regulation. When instructed to minimize negative emotions, both younger and older adults avoided engaging with negative material; older adults also showed this tendency when instructed to choose what was interesting to them [18]. When facing a tedious task, younger adults' mood quickly declined, whereas older adults maintained positive pre-task feelings longer [19]. Older adults also showed less reactivity to and better recovery from a negative social interaction with a confederate, compared to younger adults, suggesting possible emotion regulatory efforts [20]. Brain imaging research suggests greater spontaneous emotion regulation in older adults. In one study, though both younger and older adults showed amygdala activity (indicating emotional reactivity) in response to high-arousal negative images, spontaneous activity in the ventral ACC and vmPFC in older adults (indicating possible emotion regulation effort) was linked to reduced intensity ratings for low-arousal negative images [21].

Effectiveness

Some studies have shown increased, and some have shown decreased, effectiveness of emotion regulation in older age. These mixed results likely reflect both shifting resources [14] and changes in the occurrence of life events and circumstances [22] with age. Older adults show different patterns of brain activity during emotion regulation that suggest greater cognitive difficulty for older adults during emotion regulation [23,24].

Yet older adults may benefit from increased motivation to regulate and knowledge of what is effective. In daily experience research, older workers used more adaptive and less maladaptive coping strategies than younger workers [25]. Older workers also used more active problem-focused coping, and less avoidance coping when job control was low, which predicted better work outcomes [26].

Emotion regulation effectiveness also depends on life circumstances. Older age has been linked with less stressor diversity, which predicts greater affective well-being [27]. In contrast, the ability to respond to stressors may be weakened in older age when negative events affect more than one life domain [28].

Choice

To compensate for age-related losses, when some regulation strategies become less effective with age, older adults may turn to strategies that are more likely to work for them [14,15]. For example, older adults favor distraction over reappraisal more than younger adults; greater use of distraction has in turn been linked to more positive state affect for them, whereas preference was unrelated to affect for younger adults [29].

Situation selection—choosing which situations to avoid or enter—is also an important strategy in older adulthood. It is effective for both younger and older adults in promoting positive state affect [18,30]. Because situation selection relies on experience and knowledge rather than on cognitive and physical resources, it may be especially useful in older age. One

study found that a group of oldest-old participants felt better than other age groups when they successfully avoided negative social interactions, but worse when they did not avoid them [31]. Expanding on theoretical predictions of positivity preference, recent research suggests that when given the choice, older adults appear to prefer to engage with low-arousal [30,32], non-negative [18,31], and meaningful [33] material, compared to younger adults.

In sum, the use and effectiveness of emotion regulation appears to change with age, but not in a linear way. Older adults have the benefits of experience and motivation to promote emotional well-being. Though they may face difficulties when implementing cognitive complex strategies in response to complex or highly-arousing negative situations, selectively shaping their environment may allow older adults to achieve their emotional goals.

Emotion Perception

Past studies conclude that emotion perception accuracy—defined as the ability to correctly identify and label others' emotional expressions—declines with age. Because this conclusion is based on traditional laboratory tasks that are thought to exacerbate age differences, recent research has examined aspects of the *stimuli* used in traditional tasks that may inhibit or promote older adults' emotion perception performance. Other—albeit, fewer—studies have examined characteristics in the *perceiver* that may explain age differences in emotion perception. Together, these lines of research highlight the circumstances that contribute to age differences and similarities in emotion perception.

Stimuli Characteristics

Despite claims that older adults' emotion perception inaccuracies are due to the use of static and decontextualized stimuli, there is little evidence that age differences are eliminated when stimuli are more dynamic and contextualized. For example, older adults are less accurate than younger adults in recognizing emotions from vocalizations, body movements, and dynamic or multimodal expressions [34, 35,36,37,38]. Consistent with past research, these effects appear to be stronger for negative expressions than positive expressions [39]. There is also little evidence that physical context (e.g., the background scene) eliminates age differences in emotion perception. Older adults pay more attention to the physical context than young adults [40,41], and attending to congruent contextual information (e.g., a disgusting bathroom scene depicted behind a disgusted face) improves older adults' emotion perception accuracy [40]. However, the inclusion of context does not fully account for observed age differences in emotion perception accuracy, as younger adults outperform older adults even when congruent contextual information is presented [41].

Recent work has examined age differences in the perception of emotion from social interactions and relieved experiences; these approaches elicit emotional expressions that are more genuine, spontaneous, and representative of real life. Even with these approaches, however, older adults typically perform worse than younger adults [37,38,39]. An exception to this pattern is the global perception of affect, which appears to be maintained with age [42]. Moreover, older adults are more accurate in perceiving emotions expressed by familiar others rather than strangers [37], perhaps because older adults utilize experiential knowledge when perceiving familiar others' emotions [43].

There is little evidence for an own-age advantage in emotion perception [42]. Indeed, the expressions posed by older targets appear to be equally difficult to recognize across age groups [44]. Instead, age differences are pronounced for expressions posed by younger targets [35]. Recent examinations of face gaze additionally suggest that direct-gazing faces negatively impact older adults' emotion perception when faces are young [44], as is often the case in traditional emotion perception tasks. Thus, studies that rely on direct-gazing young adult facial stimuli are likely to exacerbate age differences in emotion perception.

Perceiver Characteristics

Older adults may inaccurately recognize emotional expressions, in part, because they perceive a greater diversity of emotions than younger adults [45, 46]. This diversity is not well represented by traditional laboratory tasks that include expressions depicting a single target emotion. Real-life emotions are communicated using multiple, mixed, and fragmented expressions [47], and older adults likely accumulate the most experience with these types of expressions. Laboratory tasks that allow for the identification of multiple emotions from mixed or fragmented expressions may provide more accurate assessments of older adults' emotion perception skills.

Older adults may also be unmotivated by traditional laboratory tasks that lack importance or relevance. When older adults are motivated to perform better—such as when they are asked to explain their perception choices or when they are asked to report the relevance of specific stimuli—they perform as well, if not better, than younger adults [37, 38]. These findings suggest that older adults can recruit and engage their emotion perception skills, but they do so selectively when a task is perceived as personally-important or relevant.

Some studies have begun to predict variability within older adults, and examinations of gender differences find that older men are less accurate at perceiving emotional facial expressions than older women [48]. This performance difference may be due to differences in attentional scanning patterns, with women attending more to the eye region and men attending more to the mouth region [49]. Similarly, some studies have found a general positive association between cognitive ability and older adults' emotion perception skill [50, 51]. However, other studies with greater sample sizes (and thus, more power) have shown that this association varies by gender, such that maintained cognitive ability predicts emotion perception skill for older men specifically [52].

In sum, recent studies present strong evidence for negative age trajectories in emotion perception. Conclusions regarding older adults' abilities to identify and label other people's emotions appear to be influenced by aspects of traditional laboratory stimuli as well as characteristics of the perceiver. Importantly, recent work also highlights potential factors that can be leveraged to help older adults optimize their emotion perception skills.

General Summary

Although theories and some evidence suggest a positive picture of affective life in older age, the recent research summarized above suggests a more nuanced view is necessary. There is clearest evidence for negative effects of age on emotion perception; affective experience and

emotion regulation tend to demonstrate positive or no age effects, depending on the task. Thus, conclusions about affect and aging should emphasize this mixed picture, rather than present a simple positive one.

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Highlights

Theories suggest that emotional life becomes more positive with age, but recent empirical findings suggest more nuanced conclusions.

Some studies find more positive affective experience with age, whereas others find no age effects.

Studies of emotion regulation sometimes find better performance in older adults and sometimes worse, depending on the strategy and context.

Most studies find worse emotion perception with age.