Changes in Emotion Regulation across the Life Span

Tabea Meier[1], Jacquelyn E. Stephens[1,2], Claudia M. Haase[1,3]

[1] School of Education and Social Policy, Northwestern University

[2] Medical Social Sciences, Osher Center for Integrative Medicine, Northwestern University Feinberg School of Medicine

[3](by courtesy) Department of Psychology, Northwestern University

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Correspondence concerning this article may be sent to Claudia M. Haase, Northwestern University, School of Education and Social Policy, Annenberg Hall, 2120 Campus Drive, Evanston, IL 60208. E-mail: claudia.haase@northwestern.edu

Changes in Emotion Regulation across the Life Span

As we age, many of us experience loss and decline. We may lose people we love, our health may suffer, abilities that we were once proud of may decline, earlier sources of meaning and identity –such as our work– may become less important, and money may become increasingly tight. In the face of such loss and decline, it would seem plausible that our mental health would follow a similar downward trajectory as we age. However, for many individuals, this does not seem to be the case.

Empirical evidence abounds that well-being and mental health may be preserved or even increase for many people as they get older. One prominent explanation for this phenomenon, sometimes dubbed the well-being or mental health paradox (Kunzmann & Wrosch, 2017; Staudinger, 2000; Thomas et al., 2016), is that individuals grow in their emotion regulation capacities as they age. This chapter will discuss changes in emotion regulation across the life span as well as how emotion regulation relates to mental health.

We will start with a brief overview of theoretical frameworks, key concepts, and measurement approaches of emotion regulation across the adult life span; review empirical studies of how emotion regulation changes across the adult life span; discuss the link between emotion regulation and mental health; present an example study; and conclude by discussing directions for future research.

Emotion Regulation Across the Life Span: Concepts and Theories

People are living longer lives around the globe, recent declines in life expectancies notwithstanding (Schwandt et al., 2022). According to some estimates, half of the babies born in the 2000s are expected to see their 100th birthday (Christensen et al., 2009) and, in the year 2050, 22% of the world's population is expected to be 60 years and older (Beard et al., 2011). Many have

celebrated these increases in longevity, but others have been worried about this "graying" of populations. Population aging has sometimes worried laypeople who may view late life as dominated by loss (Heckhausen et al., 1989) and who may hold stereotypes of late life as miserable (Levy, 2003). It has also worried policy makers who may view older adults as draining society's resources (Carstensen, 2009). However, not all is lost as we age. Theoretical frameworks point to emotion regulation as a central area of maintenance or even growth in late life.

Concepts. Emotion regulation can be defined as "the processes by which individuals influence which emotions they have, when they have them, and how they experience and express these emotions" (Gross, 1998b, p. 275; see also chapter 2, this volume). As famously proposed by Gross in his process model of emotion regulation (see chapter 2, this volume), individuals may employ different *emotion regulation strategies* to regulate their emotions. They may approach or avoid certain situations (*situation selection*), change the situations they are in (*situation modification*), modulate their attention (*attentional deployment*), change their thoughts (*cognitive change*), and modulate their emotional responses (*response modulation*). Within each emotion regulation process, there are several different strategies that individuals may use. For example, to bring about cognitive change, individuals can use detached reappraisal and change their thoughts about a situation to be more unemotional and objective in order to decrease negative (or overall) emotion (e.g., Gross, 1998b; Shiota & Levenson, 2009). Or they can use positive reappraisal and change their thoughts about a situation to be more positive in order to decrease negative emotion (e.g., Shiota & Levenson, 2009). Or they can, and this strategy has received increasing attention in recent years, use emotional acceptance and embrace their emotional responses without judgement (Ford et al., 2018). We highlight these specific strategies here because detached reappraisal, positive reappraisal, and emotional acceptance have received

considerable attention in the emotional aging literature – alongside with expressive suppression, an emotion regulation strategy through which individuals minimize behavioral expression of an emotion (Gross & John, 2003).

Beyond emotion regulation strategies, *emotion regulation goals* shape how a person *wants* to feel and are the motivational drivers of emotion regulation. People can seek to experience a multitude of emotional states of varying levels of valence and intensity, which may be functional or not, depending on the situation. One might intuitively assume that people always want to feel good and avoid feeling bad (*pro-hedonic motivations*). However, there is striking variability in the emotional states people want to experience (see e.g., Gross et al., 2006; Tamir et al., 2020). Some situations may actually require people to feel sad or angry and to thus follow *contra-hedonic motivations*. Contra-hedonic motivations (i.e., seeking to feel negative emotions and avoid or reduce positive emotions) are thought to serve utilitarian functions, and may be present when it is socially appropriate to feel bad (e.g., being sad when a team member receives bad news), or when it helps people to achieve a goal (e.g., being angry when filing a complaint; (see e.g., Tamir et al., 2020).

Theories. Life span developmental theories propose important age-related changes in both emotion regulation goals and strategies. Socioemotional selectivity theory (SST; Carstensen et al., 1999, 2003), a pioneering theory of life span development, proposes that one of the profound changes that individuals experience with advancing age is a shift in time horizons. From perceiving the future as open-ended in young adulthood, individuals are thought to become increasingly aware that their time on this earth is limited and precious as they age. This shift in time perspective is thought to come with profound consequences for emotion regulation. As they age, individuals are thought to prioritize socioemotional goals (e.g., close, meaningful relationships) and regulate their

emotions such that they maximize positive and minimize negative emotions. Strengths and vulnerability integration theory (SAVI; Charles, 2010) is a related theory which similarly posits that aging brings about many strengths in regulating emotions, especially when it comes to avoiding or limiting exposure to negative stimuli. At the same time, SAVI posits that aging also confers vulnerabilities, notably when older adults cannot avoid emotional distress or need to regulate high-arousal emotions.

Theories of motivation and developmental regulation also make predictions that have implications for understanding emotion regulation across the life span (for an overview see Haase et al., 2013). Several theoretical frameworks, including the motivational theory of life-span development (Heckhausen & Schulz, 1995), the model of selection, optimization, and compensation (Baltes & Baltes, 1990) and the dual-process model of assimilation and accommodation (Brandtstädter & Renner, 1990), despite important differences, emphasize the importance of being able to disengage from life domains that are no longer fulfilling, and from developmental goals that have become unattainable in later life (Brandtstädter & Rothermund, 2002; Freund & Baltes, 2002). This theme of disengagement becomes important, for example, when discussing how older adults regulate emotions within close relationships. At the same time, the motivational theory of life span development posits that goal disengagement goes hand in hand with goal reengagement, as individuals not only let go of unattainable goals but also engage in new, meaningful, more attainable goals (Heckhausen et al., 2019; Wrosch & Scheier, 2020)

Despite their differences, these theories converge in proposing a picture where individuals maintain and even grow in emotion regulation capacity as they age. Together, the above outlined theories serve as a basis to understand changes in emotion regulation across the

adult life span (for an overview on emotion regulation in childhood and adolescence, see Riediger & Bellingtier, 2022 and chapters 6, 8, and 10, this volume).

Emotion Regulation Across the Life Span: Empirical Evidence

Research on emotion regulation across the adult life span is blooming and we will highlight select empirical studies here. To start with, three methodological cautionary notes are in order. First, different studies have used different operationalizations and measures of emotion regulation (Levenson et al., 2013). Studies of self-reported emotion regulation have often used questionnaires, such as the Emotion Regulation Questionnaire (ERQ), which captures individuals' beliefs about their habitual use of reappraisal and expressive suppression (Gross & John, 2003). Studies of emotion regulation *performance* on the other hand have often used multi-modal approaches to study how individuals modify various aspects of the emotional response system, such as attention (Reed et al., 2014), subjective emotional experiences, emotional behavior, or physiological arousal (Bloch et al., 2014) in emotion-eliciting situations. Both approaches have revealed important insights; yet, it is important to note that individuals' beliefs about their emotion regulation abilities or use do not always map one-on-one on how individuals actually regulate emotions (e.g., Rompilla et al., under review).

Second, the emotional aging literature has often adopted an individualistic focus. As Campos and colleagues (2011) noted, only 12% of emotion regulation studies at the time of their review studied emotion regulation in a social context, and this was an optimistic estimate involving both real as well as imagined others. We will return to the importance of emotional co-regulation in the conclusion, but for now it is important to note that how individuals regulate their own emotions by themselves may well differ from how they regulate emotions in social

contexts – a difference that becomes important because of age-related changes in exactly this domain.

Third, longitudinal studies require a tremendous investment of time and resources on part of the researchers as well as, of course, the people who participate in these studies. Existing studies of emotion regulation across the adult life span have thus often used cross-sectional designs, with all attendant limitations.

Emotion Regulation Goals Across Adulthood

Most empirical studies to date have examined emotion regulation *strategies* across the life span, but first cross-sectional studies that examined emotion regulation *goals* from a life span perspective highlight this as a promising avenue. For example, in one of the pioneer studies in this area, Riediger and colleagues (2009) showed that age differences in how individuals want to influence their emotions in daily life correspond with age benefits in their daily emotional well-being, suggesting that the more positive emotional states often observed in older adulthood may, at least to some degree, be intentionally sought out. More specifically, older adults in this study reported greater desires to maintain (but not enhance) positive affect or to dampen negative affect, and they also reported higher daily emotional well-being (Riediger et al., 2009), in line with other research (see Riediger & Rauers, 2014 for a review). These findings support theoretical frameworks that suggest an elevated focus on positive emotions (SST; Carstensen et al., 1999) as well as a desire to avoid intense or high-arousing emotions (e.g., seeking calmness rather than excitement; Charles, 2010; Hamm et al., 2021) in older adulthood.

In a similar vein, Scheibe et al., (2013) focused on *positive* emotional states to examine differences between younger and older adults (18 to 93 years). Although the regulation of negative emotions has typically received far more scientific attention, the experience of positive

emotions is of vital importance for mental health and healthy aging (see e.g., Hittner et al., 2020; Pressman et al., 2019; Wells et al., 2022). In terms of ideal affect, older adults showed an increased preference for low-arousal (i.e., calm, peaceful, relaxed) over high-arousal (i.e., excited, proud) positive emotional states, whereas younger adults preferred both types of positive emotional states equally (Scheibe et al., 2013). Interestingly, older adults were better than younger adults at reaching their ideal levels of positive emotions (indicated by smaller discrepancies between their ideal and actual positive emotional experience) in daily life (Scheibe et al., 2013). This seems especially noteworthy since meeting one's ideal level of low-arousal positive emotional experience was linked to better physical health in this study (above and beyond actual positive emotional experiences). Older adults thus do not only seem to be particularly good at meeting their ideal states of positive affect, but they also seem to value the type of positive affect (i.e., low-arousal positive states) the most that might be most beneficial for their health. In sum, evidence from cross-sectional research suggests that older adults are indeed motivated to feel good and to seek the kind of emotional experiences that might be most beneficial for their health and well-being.

Emotion Regulation Strategies Across Adulthood

Beyond an age-related shift in the *motivation* to feel good, scholars have theorized that, with increasing age, individuals become more competent at regulating their emotions (e.g., Carstensen et al., 1999; Charles, 2010; Urry & Gross, 2010, but see Isaacowitz, 2022). While this assumption is common and was supported by early studies (e.g., John & Gross, 2004), the empirical evidence on changes in emotion regulation strategies is surprisingly mixed (Allen & Windsor, 2019; Isaacowitz, 2022). In their recent systematic review comparing younger and older adults' use of strategies derived from the process model of emotion regulation (Gross,

1998; see also chapter 2, this volume), Allen and Windsor (2019) concluded that there are indeed age differences in the preferred use of situation selection and attentional deployment. When it comes to situation selection, older adults indeed appear to be more inclined to avoid unpleasant situations and seek out more enjoyable ones (Blanchard-Fields et al., 2004), and to want to spend time with close relationship partners rather than strangers (Fung & Carstensen, 2004). Similarly, when it comes to attentional deployment, research growing out of SST proposed that older adults increasingly focus their attention (and memory) on positive over negative information, an idea dubbed the positivity effect (Mather & Carstensen, 2003). Supporting this effect, a meta-analysis of 100 empirical studies and over 7,000 participants (Reed et al., 2014) showed a significant information processing bias toward positive versus negative information in older adults and the opposite pattern in younger adults. However, evidence on age-related changes in *other* emotion regulation strategies, including cognitive change and expressive suppression strategies, is quite mixed (Allen & Windsor, 2019).

Cognitive change strategies. Some indications suggest that different cognitive change strategies may follow different trajectories across the adult life span. In light of evidence of cognitive decline in aging (Salthouse, 2009), some scholars have postulated that people select and optimize the use of emotion regulation strategies according to their available resources (Urry & Gross, 2010). The SOC-ER (i.e., selection, optimization, and compensation with emotion regulation) model (Urry & Gross, 2010) suggests that cognitive decline may be compensated for by using emotion regulation strategies that draw less heavily on cognitive resources. Thus, one might expect age-related decline in the use of cognitively demanding strategies, such as detached reappraisal (i.e., changing one's thoughts about a situation to be more unemotional and objective), but growth in those strategies that rely less on cognitive and more on experience-

based resources, such as emotional acceptance (i.e., trying to adopt a non-judgmental attitude and accept one's emotions). This assumption has found some support in (cross-sectional) studies (e.g., Röbbig et al., 2021; Shiota & Levenson, 2009). For example, the ability to implement detached reappraisal seems to be lower in older vs. younger adulthood (Shiota & Levenson, 2009) and older adults also seem to use more emotional acceptance than younger adults (e.g., Schirda et al., 2016). At the same time, contextual variation in these age differences is likely (see Allen & Windsor, 2019) and cross-sectional studies have also shown greater ability to implement positive reappraisal (i.e., changing one's thoughts about a situation to be more positive) in older vs. younger adulthood (Shiota & Levenson, 2009), which arguably also is a cognitively demanding strategy.

Suppression. Expressive suppression refers to attempts to hide, inhibit, or reduce emotion-expressive behaviors (e.g., putting on the proverbial poker face). Earlier work had suggested that older adults use expressive suppression less compared to younger adults (John & Gross, 2004), but empirical evidence on age differences in the use of expressive suppression remains inconclusive (Allen & Windsor, 2019). While studies examining American samples tended to find lower expressive suppression (John & Gross, 2004) or no age difference in the use of expressive suppression (e.g., Gerolimatos & Edelstein, 2012; Hess et al., 2010), studies examining European samples (e.g., British and Swiss) observed greater use of expressive suppression by older compared to younger adults (Brummer et al., 2014; Hofer et al., 2015). In similar ways as the consequences of emotional suppression seem to be influenced by cultural context (Han et al., 2022), cultural context might thus also play a role for age differences in expressive suppression. Interestingly, Brummer et al. (2014) also observed a potential decoupling between the typically detrimental effects of expressive suppression on well-being

(e.g., John & Gross, 2004), indicated by an absence of association between habitual use of expressive suppression and psychological distress for older (but not younger) adults in their study of adults from the UK. While this implies that expressive suppression may possibly be less detrimental when applied to the types of stressors typically encountered in older adulthood (less controllable stressors, such as physical impairments; Brummer et al., 2014), the specific ways in which aging and cultural context may shape the use and consequences of expressive suppression warrants further research.

Regulation of Specific Emotions: The Case of Anger and Sadness

Not all emotions are created equal. Thus, when studying changes of emotion regulation across the life span, it is also important to understand the intensity (Charles, 2010) as well as the specific kinds of emotions that are being regulated (Kunzmann et al., 2014).

Functionalist accounts of emotions view all emotions as inherently adaptive as they help people cope with changing demands in our environment (Levenson, 1994). For example, being angry after being treated unfairly helps us organize our behavior and react accordingly (e.g., confronting the person). The discrete emotions model of aging (Kunzmann et al., 2014) goes further and assumes that anger and sadness, two distinct negative emotions, change their adaptive value across the life span because they serve distinct functions: While anger may facilitate the attainment of goals (e.g., through assertiveness and persistence), sadness may facilitate the adjustment to loss experiences, the latter of which typically becomes more salient in older adulthood (Kunzmann et al., 2014). Empirical studies support the idea that anger is more adaptive in middle adulthood and sadness more in older adulthood (Haase et al., 2012). Longitudinal evidence moreover supports the distinct roles of anger and sadness in aging by showing that individuals experience more sadness as they get older, while their experience of

anger seems to remain stable at a relatively low level (Wrosch et al., 2018). Cross-sectional studies have similarly shown greater sadness reactivity in late life, compared to earlier life stages (e.g., Seider et al., 2011; Wu et al., 2021).

While more research is needed, existing work indeed suggests that age differences in emotion regulation may depend on the intensity (i.e., high or low) of the emotion to be regulated (see Allen & Windsor, 2019). As an example, although empirical evidence suggests no age differences in the use of distraction for emotion regulation in general (see Allen & Windsor, 2019), there are some hints that older adults may use distraction in particular to disengage from high-intensity emotional stimuli. For example, older adults showed an increased preference for using distraction over reappraisal in high-intensity *negative* (Scheibe et al., 2015), but not high-intensity *positive* emotional contexts (Martins et al., 2016; although this might not generalize onto everyday life contexts, see Blanke et al., 2022). Such a preference for distraction to regulate intense negative emotion is in line with age-related shifts towards avoiding emotional arousal (see Charles, 2010), and engaging more with positive emotional content in order to meet pro-hedonic needs (Carstensen et al., 1999; Riediger et al., 2009). A preference for using distraction to regulate high-intensity negative affect was moreover linked to higher emotional well-being for older (but not younger) adults (Scheibe et al., 2015), thus speaking to the adaptiveness of distraction in older age.

Other studies have focused on anger regulation to examine how the regulation of specific emotions may differ across the life span. As an example, one study suggests that older adults do not only experience anger less frequently and less intensively than younger adults, they also express anger less outwardly (e.g., making nasty comments or arguing with someone) and are overall better at regulating their anger (Phillips et al., 2006). These age differences in anger

regulation also partially explained age benefits in emotional well-being (Phillips et al., 2006), thus highlighting improved anger regulation as one potential path towards well-being and mental health in late life. Beyond possibly improved anger regulation, older adults also seem to show particular benefits in regulating sadness or anxiety. For example, older adults seem to exhibit more coherent responses (i.e., facial expressions that are in line with changes in their physiological arousal) when regulating sadness (Wu et al., 2021), and this greater emotional coherence was in turn linked to more positive emotional well-being (Wu et al., 2021). Older adults also seem to use fewer purportedly maladaptive strategies (i.e., strategies presumed to promote lower mental health over the long-term; Aldao et al., 2010), such as expressive suppression or worrying/ruminating and more acceptance in situations evoking sadness or anxiety (Schirda et al., 2016). Older adults moreover used fewer maladaptive strategies in situations of moderate-to-high intensity, and more acceptance in situations of moderate intensity (Schirda et al., 2016), which further supports the assumption of both intensity and specific emotion type as contextual moderators of age-related changes in emotion regulation. Age advantages like these seem to even persist in contexts that pose objectively higher threats to older adults, such as the Covid-19 pandemic (Dworakowski et al., 2021; Young et al., 2021).

These studies encourage further probing of age differences in the regulation of specific emotions (e.g., anger, sadness) across the adult life span and suggest directions for future research. Future studies could, for example, also look into age differences in behavioral and physiological indicators of emotion regulation success. A recent study on sadness regulation, for example, showed that older adults who used emotional acceptance were not successful at altering their physiological arousal while watching a sad film clip, although they reported feeling most successful when using acceptance (Rompilla et al., 2021). This highlights some important

discrepancies that can emerge when studying different streams of emotional responses (e.g., physiology versus subjective emotional experiences), which underscores the complexity seen in how emotion regulation changes across the life span.

Altogether, the current empirical picture of how emotion regulation changes across the adult life span is far from clear (Allen & Windsor, 2019; Isaacowitz, 2022). Instead of changes in the use of specific emotion regulation strategies, it is possible that greater emotion regulation flexibility (i.e., ability to flexibly tailor regulatory efforts to situational demands) might account for greater well-being in later life. Emotion regulation flexibility has documented links with emotional well-being (Springstein et al., under review), but we should note that some studies find older adults use emotion regulation strategies more consistently in their daily life (therefore suggesting lower flexibility in older age, see Benson et al., 2019; Eldesouky & English, 2018). Another possibility is that older adults have an advantage over younger adults when it comes to emotion regulation in interpersonal contexts (e.g., Margolin et al., 2022). We return to this point below.

What about the "oldest-old"? Generalizability of age-related changes in emotion regulation

Amidst the multi-directionality of age differences in emotion regulation, another open question is the extent to which these changes generalize to the so-called "very old" population – individuals in their 80ies and older. Very old age (also referred to as the "Fourth Age") is a period in which cognitive decline and physical health impairments are getting more common (Baltes & Smith, 2003), and emotional well-being typically starts to decline ("terminal decline"; see e.g., Hülür et al., 2016). This raises the question of whether certain emotion regulatory gains may be preserved into this late life stage, or whether emotion regulation abilities also undergo decline. A recent laboratory-based study shows that "very old" (83-89 years) individuals are less

successful at regulating their emotions (using detached reappraisal, positive reappraisal, or behavioral suppression) during a sad film clip compared to "old" (65-69 years) individuals (Kunzmann et al., 2022). Most remarkably, however, this age-related deficit was only evident for subjective emotional experiences (i.e., changes in self-reported emotions), but not for physiological (i.e., cardiovascular arousal) and behavioral indicators (i.e., facial expression) of emotion regulation (Kunzmann et al., 2022). This study provides first evidence of a possible maintenance of emotion regulation abilities into very old age. It further suggests that age differences may depend less on the strategies, but more on the emotional response system (e.g., subjective emotional experience, behavioral expression, physiological arousal) examined. This is just one of several studies (e.g., Rompilla et al., 2021; Wu et al., 2021) that demonstrate the need for performance-based (e.g., through laboratory-based paradigms) and multi-method (i.e., studying multiple emotional response systems) study designs. While a vast majority of studies have relied on self-reports to examine emotion regulation strategies across the life span (Allen & Windsor, 2019), global judgments about how people typically regulate their emotions (i.e., habitual emotion regulation use) map poorly onto the actual strategies they use in their daily life (Koval et al., 2020). Self-reported emotion regulation use and success may further be influenced by age-related beliefs about emotion regulation strategies (e.g., Livingstone et al., 2020) and age stereotypes (e.g., centering on age-related decline in competence and cognitive abilities; e.g., Cuddy et al., 2005), which may then also impact age differences in emotion regulation if solely assessed through self-reports.

Emotion Regulation and Mental Health Across the Life Span

We now go on to highlight some important ways in which emotion regulation links to mental health to further our understanding of why older adults may experience intact or greater

emotional well-being, despite important losses (Kunzmann & Wrosch, 2017; Staudinger, 2000; Thomas et al., 2016). Emotion (dys-)regulation is at the heart of many mental health symptoms (Gross & Muñoz, 1995; Kring & Elis, 2013), including depression and anxiety (Beauchaine & Cicchetti, 2019; Berking & Wupperman, 2012; Larsen, 2000) in both clinical and non-clinical samples (Kraiss et al., 2020; Tull & Gratz, 2008). Not surprisingly then, emotion regulation is also a key focus of certain types of psychotherapy and treatment (Daros et al., 2021; Southward et al., 2021), such as dialectical behavioral therapy (Linehan, 1993); see also chapter 12, this volume), acceptance and mindfulness-based therapy (Roemer et al., 2008), and emotion-focused therapy (Greenberg, 2004; ; see also chapter 15, this volume). Here, we will review select studies on emotion regulation and mental health, discuss these associations in light of aging, and suggest future research directions.

Mental health can be conceptualized in many ways, for example as "being able a) to work creatively and productively, b) to relate to others in a way that is mutually satisfying, and c) to feel comfortable when alone, usually by developing a rich and fulfilling inner life." (Gross & Muñoz, 1995). A challenge in the review of this burgeoning field of research is that mental health, much like well-being, has many different facets, which are conceptually and empirically distinct (Kotov et al., 2021; Ryff, 1989). Moreover, mental health research often has a particular focus on disorders or symptoms (although their absence is not sufficient for flourishing mental health; Galderisi et al., 2015). In light of this heterogeneity, in this section, we zoom in on symptoms of depression and anxiety specifically as mental health conditions that are highly prevalent in the population and included in many research studies.

Emotion regulation goals and mental health. The persistent pursuit of maladaptive emotion regulation goals (i.e., goals with poor situation-fit) might be linked with lower well-

being and more mental health problems over the long run (Mauss et al., 2012; Millgram et al., 2020). From a life-span developmental perspective (and based on age differences in emotion regulation goals reviewed above), emotion regulation goals thus seem like a promising piece to explain intact or enhanced emotional well-being in late life.

There is emerging evidence that emotional goals indeed are associated with mental health, and researchers have increasingly emphasized how individuals *want* to feel as a key aspect of not only their emotion regulation abilities but also of their mental health (Millgram et al., 2020). Yet, links between emotion regulation goals and mental health have thus far only been studied cross-sectionally and it remains to be seen whether emotion regulation goals contribute to mental health or whether mental health shapes emotion regulation goals. Consistent with the latter view, Millgram and colleagues (2020), for example, propose that different mental health syndromes present with different emotion regulation goals. Individuals with greater symptoms of depression may be more likely to choose to upregulate negative emotions (i.e., view sad images and listen to sad music) possibly because negative emotions are more familiar, which may further amplify their negative emotions (Millgram et al., 2015). More research is needed to probe whether and how specific emotion goals are related to specific mental health symptoms and the directional relationship between them. Including emotion regulation goals in research on aging (see e.g., Riediger et al., 2009) will shed light on specific ways through which emotion regulation and mental health become linked over the life span.

Emotion regulation strategies and mental health. Numerous studies to date have examined links between emotion regulation and mental health with a focus on reappraisal (often thought to be beneficial) and expressive suppression (often thought to be maladaptive; John & Gross, 2004) and typically use questionnaires on habitual emotion regulation use (Gross & John,

2003). In a meta-analysis of 114 studies, Aldao and colleagues (2010)[1] found significant but small negative associations between reappraisal and depression as well as anxiety and medium-sized positive associations between suppression and depression and anxiety. Another meta-analysis by Hu and colleagues (2014) built off this work, similarly finding significant negative associations between cognitive reappraisal and mental health symptoms (e.g., depression and anxiety) and significant positive associations between expressive suppression and mental health symptoms (e.g., depression and anxiety). Researchers in this area have often examined how emotion regulation predicts mental health symptoms, but recently, some have begun to examine the reverse (i.e., how mental health symptoms predict emotion regulation). Even then, they are not often examined bidirectionally, particularly in the same study or model, with a notable exception. In an age diverse sample with individuals ranging from 18 to 91 years and using cross-lagged panel modeling, Dawel and colleagues (2021), found that greater use of suppression prospectively predicted higher levels of mental health symptoms (e.g., depression and anxiety) and higher levels of mental health symptoms prospectively predicted greater use of suppression. Such a bidirectional association raises important questions for the conceptualization of emotion regulation, which could thus represent both a cause (or risk factor) and a symptom of low mental health across the life span. Interestingly, there were no significant associations between cognitive reappraisal and mental health symptoms in either direction (Dawel et al., 2021), a notable departure from prior work.

Contextual moderators. More recent research has started to consider contextual moderators in the link between emotion regulation and mental health associations, such as socioeconomic status (Hittner et al., 2019), and life stage (Brummer et al., 2014), reflecting the

[1] This meta-analysis included other emotion regulation strategies, including acceptance, problem solving, and rumination, which accounts for the larger number of studies than Hu et al. (2014).

idea that perhaps specific emotion regulation strategies are not adaptive in and of themselves, but rather are adaptive in specific contexts. Although studies that examined age differences in the associations between emotion regulation and mental health are rare, evidence of a potential decoupling of emotional suppression and detrimental effects for well-being in older age (Brummer et al., 2014) hints at how not only strategy use and selection may shape mental health, but also how life stage may interact with a given strategy to predict adaptiveness. In other words, when and for whom are certain emotion regulation strategies beneficial for mental health?

From this summary of the literature, we can conclude that there is a robust link between emotion regulation and mental health symptoms. Specifically, the use of expressive suppression is linked to greater depression and anxiety symptoms, though associations between cognitive reappraisal and depression and anxiety symptoms remain somewhat varied. Existing psychopathology can also influence emotion regulation strategy choice through emotion regulation goals, in which individuals select strategies that will serve to maintain or increase their negative emotions. Future research could further examine how the ability (and choice) to regulate *specific* emotions (e.g., anger, sadness) is associated with mental health symptoms, and consider how a) strategy type and disorder specificity influence these associations; b) life span differences play a role in the association between emotion regulation and mental health; and c) longitudinal changes map onto the trajectory and development of mental health symptoms in light of emotion regulation abilities. These studies will deepen our understanding of mechanisms of change and bidirectionality of the relationship between emotion regulation and mental health across the life span.

Emotion Co-Regulation and Health: A Study of Long-Term Married Couples

Intimate relationships are hotbeds of emotions and can be a litmus test for emotion regulation across the life span. Yet, longitudinal studies examining emotion regulation and mental health in couples are rare, reminiscent of other findings showing the dominance of single-subjects design in emotion regulation research (Campos et al., 2011). Moreover, consistent with other research, most studies of emotion regulation at the couple level have focused on the regulation of negative, rather than positive, emotions.

Building on Fredrickson's (2016) positivity resonance theory, Wells and colleagues (2022) recently set out to examine the co-regulation of positive emotions within couples (*positivity resonance*) and changes in mental and physical health as well as longevity over time. Positivity resonance describes moments of interpersonal connection that emerge when two or more individuals simultaneously experience positive emotions that are elevated by the presence of key behavioral and physiological features. Findings show that couples' co-regulation of emotions (a) occurs across different aspects of the emotional response system (e.g., subjective emotional experiences, behavior, physiology), (b) is more than the sum of each individual's emotional parts, (c) and predicts long-term health and longevity over decades.

This study draws from a longitudinal project examining long-term married middle-aged and older couples; for a review see Levenson et al., 2013) that has yielded insights into negative emotions and physical health (Haase et al., 2016), emotion regulation and marital satisfaction (Bloch et al., 2014), and physiological linkage (Chen et al., 2021) during marital conflict, to name only a few studies that have used this data set. While the project has offered unparalleled longitudinal data on emotions in couples, it is important to keep in mind its socioeconomic,

gendered, and racialized historical context as spouses were recruited over 30 years ago to be representative of the Bay Area and thus the majority was White and in heterosexual marriages.

Wells and colleagues (2022) developed a measure to capture positivity resonance between partners during 15-minute conflict conversations across different emotional response systems (experience, behavior, physiology). At the experiential level (i.e., subjective emotional experiences), positivity resonance was measured by co-experienced positive affect between spouses (using affect rating dials, Ruef & Levenson, 2007). At the behavioral level, positivity resonance was measured using three dyad-level coding systems that included behavioral indicators of positivity resonance, synchronous nonverbal affiliation cues, and co-expressed positive affect. Finally, at the physiological level, positivity resonance was measured via linkage in spouses' heart rates (or, more specifically, interbeat intervals) during moments of co-expressed positive affect using procedures developed by Chen et al., (2021). A first insight from this study was that positivity resonance *did* indeed occur as couples talked about an area of disagreement, dispelling myths that conflict conversations are only filled with negative emotions and consistent with a long line of work that afford positive emotions a central role in the midst of stress, adversity, and conflict.

A second key insight from this study was that the phenomenon of positivity resonance emerged across all these different response systems in couples. That is, relationships in which spouses were more likely to both indicate that they *felt* positive in a given moment were also more likely to be relationships where spouses *showed* actions, words, or voice intonation that conveyed mutual warmth, mutual concern, mutual affection or a shared tempo, for example, and where spouses' heart rates were more likely to synchronize during positive moments. This convergence across experiential, behavioral, and physiological response systems in positivity

resonance (reflected in excellent fit of a 1-factor model with positivity resonance as a latent factor) is notable and reminiscent of other work on response coherence at the individual level across experience, behavior, and physiology during emotion regulation (e.g., Wu et al., 2021).

The study was also noteworthy in revealing links between latent positivity resonance measured at baseline and changes in spouses' mental and physical health over more than a decade. Consistent with views that emphasize the interconnectedness of the mind and body, mental and physical health were measured using a sum score of mental and physical symptoms (based on the Cornell Medical Index) at baseline and then at two additional timepoints over a total period of about 13 years. Findings showed that spouses who showed greater positivity resonance at the couple level at the start of the study were more likely to show favorable health trajectories as they got older.

Intriguingly, this effect was not only present for self-reported health symptoms but also emerged for spouses' longevity across 30 years. Longevity data was obtained for spouses in the study through the extensive collection of reports from relatives, as well as searches across the United States Social Security Death Index, online obituary listings, and other online search engines. Findings showed that if a couple had shown greater positivity resonance at the start of the study, spouses were more likely to live longer. Finally, and highlighting the dyadic nature of positivity resonance (and, more broadly, emotional co-regulation within a couple), all these findings remained stable when accounting for individuals' experienced positive affect, alongside a host of other covariates, including sociodemographic characteristics, health behaviors, and marital satisfaction.

Research on positivity resonance is just beginning and important questions are awaiting investigation. Longitudinal studies on age-related changes in positivity resonance will be vital

for probing the idea of increased emotion regulation competence (specifically in close relationships) in age. Moreover, while the study by Wells and colleagues (2022) sheds light on health and longevity consequences of positivity resonance, we know little about how partners can create positivity resonance. The evidence on emotion regulation goals and strategies reviewed earlier in the present chapter suggest a number of exciting possibilities. Perhaps emotion regulation goals to increase positive emotions not just for oneself but also for one's partner predict heightened positivity resonance? Perhaps, accepting one's own and one's partner's emotions might be an emotion regulation strategy that increases positivity resonance?

Directions For Future Research

In this chapter, we reviewed age differences in emotion regulation goals and strategies, as well as links between emotion regulation goals and strategies with mental health, which suggest exciting directions for future research. Future work may include (1) more performance-based (e.g., observational, laboratory-based studies) and longitudinal studies of emotion regulation (which will allow for testing changes over time and bidirectional links with mental health); (2) more studies of specific emotion regulation strategies that may be particularly relevant for mental health later in life (e.g., emotional acceptance); (3) more inclusive studies beyond so-called WEIRD (Western, educated, industrialized, rich and democratic) samples, greater attention to contextual factors (e.g., socioeconomic status, mental health conditions), and tests for generalizability beyond WEIRD samples; (4) deeper understanding of mediators (e.g., selevated levels of stress, lower relationship quality) linking emotion regulation and mental health; and (5) translational research bridging affective science and clinical science and practice (Dukes et al., 2021; Gross & Jazaieri, 2014; Gross & Muñoz, 1995; Southward et al., 2021). All of these are important directions.

One direction for future research that we believe is particularly important, especially with regards to aging, is greater attention to emotion regulation in interpersonal contexts. Research on emotion regulation has often adopted an individualistic focus (e.g., Campos et al., 2011; Levenson et al., 2013; Stephens et al., 2022) and the emotional aging literature is no exception. Yet, as people age, motivational shifts make them prioritize meaningful positive experiences within their close relationships (e.g., with their spouse) even more (Carstensen et al., 1999). One way to maximize quality time within relationships is to avoid (irrelevant) conflict situations. Individuals are said to become increasingly vulnerable towards interpersonal tensions as they age (Birditt et al., 2020) and there is indeed some evidence suggesting that they also become more conflict-avoidant (Charles et al., 2009; Holley et al., 2013; Luong & Charles, 2014). For example, longitudinal evidence on spousal conflict interactions showed that, over a time span of 13-years, older couples showed more avoidance behaviors during conflict interactions (while other behavioral patterns commonly tied to dysfunctional conflict interaction did not increase; Holley et al., 2013). Pragmatically "agreeing to disagree" in the right moments might thus help to maximize and savor positive experiences within romantic relationships, and older couples might be more likely to do this. This is also in line with a host of research that alludes to improved conflict regulation and relationship in couples with increasing age (see for an overview: Stephens et al., 2022).

Importantly, emotional co-regulation is not limited to successfully solving conflict together. As described earlier in this chapter, partners may also share and upregulate positive emotions (e.g., positivity resonance; Wells et al., 2022), or they may support each other through loss experiences (Margolin et al., 2022). When they are sad or upset, romantic partners may regulate each other's emotions by bringing in a new perspective on the situation (co-reappraisal,

Horn & Maercker, 2016), by using positive humor (e.g., Horn et al., 2019; Samson & Gross, 2012), or by exchanging physical affection (e.g., hugging, Debrot et al., 2013). As people get older, close relationships become even more important (e.g., Haase & Shiota, 2019) and they may thus increasingly benefit from co-regulation with their romantic partner or other close ones. In general, it will be fruitful for future research to adopt a dyadic perspective and examine the interplay between individual and co-regulation of emotions. This will allow us to learn more about how individuals can best benefit from their close others in terms of regulating their emotions and maintaining their mental health, as they get older.

Conclusion

Increases in emotion regulation competencies have been proposed to account for intact or greater emotional well-being in late life. While this is a prominent view in the emotional aging literature (e.g., Charles & Carstensen, 2010; Feldman, 2017; Rosati et al., 2020), it is not shared by everyone (e.g., Cacioppo et al., 2011; Isaacowitz, 2022). Isaacowitz (2022), for example, concludes that "we don't know yet" [whether older adults are better at emotion regulation; p. 11] and reviews a number of plausible alternative mechanisms underlying older adults' elevated emotional well-being, including age differences in daily stressors, physiological reactivity and neural changes. We hope that the current review has highlighted the nuance and complexity in the literature on emotion regulation across the life span. We believe that taking a *contextual* view at emotion regulation across the life span in macro- as well as micro-contexts (e.g., interpersonal relationships) will be critical for the next generation of studies to shed light on when older adults fare better when it comes to emotion regulation than younger adults, and when they do not.

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