
Article:
Niven, K. orcid.org/0000-0002-6675-5532 (2022) Does interpersonal emotion regulation ability change with age? Human Resource Management Review, 32 (3). 100847. ISSN 1053-4822

https://doi.org/10.1016/j.hrmr.2021.100847

DOES INTERPERSONAL EMOTION REGULATION ABILITY CHANGE WITH AGE?

Societal and political changes mean that individuals are working until later in life, leading to interest in whether older workers' effectiveness differs from that of younger workers. An important predictor of work effectiveness is 'interpersonal emotion regulation', that is, the management of others' feelings. However, little is known so far about whether there are age-related changes in interpersonal emotion regulation ability. In this article, I apply theoretical evidence about aging to a model of the composite tasks involved in interpersonal emotion regulation, in order to form predictions about age-related differences in the management of others' feelings. I further review the existing empirical evidence base, to highlight areas where predictions are supported and areas where further research is needed. It is hoped that this article will guide future empirical work in this important area, in order to broaden the evidence base on age and emotion regulation.

Keywords. Aging, emotion regulation, interpersonal emotion regulation, motivation, cognition

The average age of the working population is increasing (Eurostat, 2019). People are living for longer, due to advances in healthcare, and countries are raising the minimum age for state pensions and changing regulations about retirement (Johnson, Machowski, Holdsworth, Kern, & Zapf, 2017; Schalk, van Veldhoven, De Lange, De Witte, Kraus et al., 2010). This raises important questions about whether work performance changes with age. Do people become more competent as their years of experience grow, or do their abilities suffer due to age-related degeneration? A great deal of research has tackled this question by focusing on people's cognitive and physical abilities (e.g., Avolio & Waldman, 1990; Kenny, Yardley, Martineau, & Jay, 2008). However, researchers are increasingly interested in whether there are age-related changes in emotional abilities, in particular emotion regulation.

Emotion regulation refers to deliberate attempts ''to influence which emotions we have, when we have them, and how these emotions are experienced or expressed'' (Gross, 1998, p. 224). Emotion regulation is considered a critical mechanism for effective job performance, because it enables people to induce feelings that are conducive to their performance and to reduce feelings that detract from performance (Newman, Joseph, & McCann, 2010). In 'people work' roles that involve regular contact with customers or clients, emotion regulation is particularly crucial to successful performance. Those employees who are most effective at emotional regulation generate customer satisfaction and loyalty, which are hallmarks of success in such roles, because they authentically display the feelings that customers expect and want to see (Gabriel, Cheshin, Moran, & Van Kleef, 2016). As 'people work' industries are likely to rely more on older workers in coming years, due to jobs in these areas typically being staffed by younger workers who are in shorter supply (Department for Education, 2018), the question of whether emotion regulation changes with age is extremely timely.

To date, a large body of evidence has accumulated concerning age-related changes in emotion regulation, as summarized in a number of recent reviews (e.g., Doerwald, Scheibe,

Zacher, & Van Yperen, 2016; Scheibe & Zacher, 2013; Zapf, Johnson, & Beitler, 2019). However, the research informing the conclusions in these reviews focuses on the regulation of one's own feelings, i.e., *intrapersonal* emotion regulation. This focus stands in contrast to the growing recognition within the fields of psychology and organizational behavior that emotion regulation involves two parallel processes: intrapersonal and *interpersonal* emotion regulation (Gross, 2015; Troth, Lawrence, Jordan, & Ashkanasy, 2018).

Niven (2017) explains that interpersonal emotion regulation is a goal-oriented process targeted at changing *another person's* emotion. Interpersonal emotion regulation is a distinctive process to intrapersonal emotion regulation, albeit that the processes are related; for example, research on the two processes has identified that they recruit different brain regions (Hallam, Webb, Sheeran, Miles, Niven, Wilkinson... & Farrow, 2014). Nevertheless, the emerging research on interpersonal emotion regulation confirms that, like its intrapersonal counterpart, this process is an important predictor of effective work performance. For example, interpersonal emotion regulation is crucial to effective performance in leadership roles because it is a mechanism through which leaders can enhance the quality of their leader-follower relationships (Little, Gooty, & Williams, 2016) and because it enables leaders to elicit emotions in team members that are conducive to productivity and innovation (Madrid, Niven, & Vasquez, 2019). It is also a key driver of performance for 'people work' employees, where elicitation of enthusiasm and reduction of anger in customers promotes customer loyalty and satisfaction (Niven, Totterdell, Holman, & Cameron, 2013).

While existing reviews provide substantial insight into whether and how age is related to intrapersonal emotion regulation, there have been fewer attempts to consider age in relation to interpersonal emotion regulation. Doerwald et al. (2016) tried to integrate interpersonal emotion regulation into their review but only identified two studies, both of which reported correlations between age and self-rated ability to regulate others' feelings

(Brasseur, Grégoire, Bourdu, & Mikolajczak, 2013; Fantini-Hauwel & Mikolajczak, 2014). The mixed findings in those studies led Doerwald and colleagues (2016) to conclude that "very little is known about age differences in regulating others' emotions" (p. 169).

The aim of the present article is to provide novel insights into whether and how age is related to interpersonal emotion regulation. I begin with a brief introduction to interpersonal emotion regulation, before reviewing the key factors that prior research has suggested account for age differences in related processes. I then turn my focus to understanding how these factors apply specifically to interpersonal emotion regulation, by identifying the tasks involved in interpersonal emotion regulation. For each constituent task, I analyse the underlying factors that drive successful performance, then form predictions about how age relates to performance of the task based on the established theoretical evidence, which I assess in light of relevant empirical studies. The article contributes as the first to comprehensively tackle the important question of whether and how age relates to the regulation of others' emotions. It further contributes by proposing a set of predictions about how the ability to engage in the tasks involved in interpersonal emotion regulation changes as workers age, by assessing the quality of existing evidence in relation to those predictions, and by highlighting areas of knowledge where further empirical research is needed.

Interpersonal Emotion Regulation at Work

The last ten or so years have seen growing research interest in interpersonal emotion regulation in the workplace. Theoretical frameworks have situated interpersonal emotion regulation within one of three broader domains. First, and most prominently, interpersonal emotion regulation has been framed within the context of emotion regulation (Gross, 2015; Niven, 2017). In particular, Zaki and Williams (2013) developed a theory explaining how interpersonal emotion regulation fits within the set of social emotion regulation processes. They argue that interpersonal emotion regulation shares commonalities with intrapersonal

emotion regulation that involves other people (e.g., venting about problems to a colleague); for example, both processes can affect a change in one's own and others' feelings. However, interpersonal emotion regulation is unique because with social forms of intrapersonal emotion regulation the goal is intrinsic, to change *one's own* feelings (e.g., the goal of venting is to make oneself feel better, not to make those vented to feel worse). In contrast, for interpersonal emotion regulation the goal is to initiate a change in *someone else's* feelings.

Second, interpersonal emotion regulation has been included in theories of emotional intelligence. Emotional intelligence is defined as "the ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions" (Salovey & Mayer, 1990, p.189). Models propose several composite abilities that form overall 'emotional intelligence', and typically include the ability to manage others' feelings as one of these abilities (e.g., Salovey & Mayer, 1990). However, researchers often study emotional intelligence as a whole (e.g., Sliter, Chen, Withrow, & Sliter, 2013), or group abilities to manage feelings of oneself and others into a singular construct (e.g., Cabello, Sorrel, Fernández-Pinto, Extremera, & Fernández-Berrocal, 2016).

Third, interpersonal emotion regulation has been integrated with empathy in recent theory by Zaki (2020). Empathy is the broad set of abilities relating to understanding and experiencing the feelings of other people (Davis, 1983), and in support of Zaki's claims of conceptual overlap, neuroscientific studies have reported activation of some of the brain areas implicated in both affective (e.g., empathic concern) and cognitive (e.g., perspective taking) aspects of empathy when people try to manage the feelings of others (Hallam et al., 2014). However, the processes are distinct, because empathy is not specifically directed towards the goal of *influencing* others' feelings (Reeck, Ames, & Ochsner, 2016).

Due to the distinctive nature of interpersonal emotion regulation, which likely combines aspects of the above processes, such that each is necessary but not sufficient for

interpersonal emotion regulation, a specific literature on the topic has developed. A key aim of this literature has been to understand how people meet the goal of changing others' feelings, and researchers have identified hundreds of strategies that people use to this end (Niven, Totterdell, & Holman, 2009). The most widely used framework to differentiate between these strategies is Gross's (1998) process model of intrapersonal emotion regulation, which has been applied in recent years to the regulation of others' emotions (e.g., Gross, 2015). This framework identifies five strategy types, namely, situation selection, situation modification, attentional deployment, cognitive change, and response modulation (Table 1). The first four of these strategies involve tackling the causes of emotion to alter a target's actual affective experience, by selecting or changing a situation that would cause emotion, by diverting attention towards/away from the cause of emotion, or by modifying the way the target assigns meaning to the cause of the emotion, respectively. In contrast, the final strategy involves changing the target's outward signs of emotion only.

While the term 'strategies' implies that interpersonal emotion regulation is a deliberate process in which there is a conscious intention to change the feelings of another person, interpersonal emotion regulation can actually occur at two levels of processing (Niven et al., 2009). At the controlled level, interpersonal emotion regulation is considered strategic, because it involves conscious intent, awareness, and monitoring. However, at the more automatic level, it is engaged with less conscious awareness, in a relatively reflexive manner.

The Key Theoretical Mechanisms of Age Effects

Given the dearth of research on age-related changes in interpersonal emotion regulation (Doerwald et al., 2016), we can look to research on intrapersonal emotion regulation, emotional intelligence, and empathy as a starting point in seeking to understand why age might be relevant for this related process. Indeed, past research has highlighted three key

factors that are fundamental mechanisms of age-related effects in such domains: fluid intelligence, crystallized intelligence, and motivation.

Fluid intelligence. Fluid intelligence underlies the ability to solve novel problems and is the first of two forms of intelligence proposed in Cattell's (1943) dual-component theory. Aspects of cognition that are considered crucial to fluid intelligence include working memory, the limited capacity cognitive system for temporary storage and manipulation of information (Baddeley, 1992), and executive function, the class of higher-order cognitive processes involved in coordination, monitoring, and control of attention and responses (Banich, 2009). As engaging in processes like emotion regulation at the controlled level of processing in particular has been strongly associated with fluid functions, such as working memory and executive function (e.g., Schmeichel, Volokhov, & Demaree, 2008), it seems likely that fluid intelligence might contribute to success at interpersonal emotion regulation.

The presence of age-related deficits in fluid intelligence is well established (Baltes, Lindenberger, & Staudinger, 2006). Declines in fluid intelligence appear to stem from physiological changes. For instance, as people age, they experience a generalized slowing in their processing (Salthouse, 1996), which interferes with the ability to execute tasks within given timeframes and makes it harder to retain information needed for task completion. Declines in sensory (particularly visual; e.g., Clay, Edwards, Ross, Okonkwo, Wadley, Roth, & Ball, 2009) and frontal lobe functioning (e.g., Bugg, Zook, DeLosh, Davalos, & Davis, 2006) have also been implicated in age-related degeneration of fluid intelligence. These changes suggest that older adults are likely to suffer poorer performance in interpersonal emotion regulation tasks that rely on fluid intelligence, compared to younger adults.

Nevertheless, the extent to which age-related declines in fluid intelligence manifest among older *workers*, who typically fall into the description of 'middle aged' rather than elderly, is unclear. While fluid intelligence begins to decline as early as the age of 20 years

(Baltes & Lindenberger, 1997), understanding the rate of decline is important in establishing how impaired the fluid intelligence of older workers might be. Longitudinal studies typically report very slow declines over time (e.g., Yuan, Voelkle, & Raz, 2018, found very modest declines and no acceleration with age over a 7-year period). Moreover, some studies actually report improvements in fluid intelligence over time, likely owing to a practice effect wherein participants benefit from prior experience in the given test of fluid intelligence (e.g., Kievit, Fuhrmann, Borgeest, Simpson-Kent, & Henson, 2018). Such findings suggest that declines in fluid intelligence may not be substantial among older workers. They further suggest that repeated exposure to fluid intelligence tasks may serve a protective function against declines (as also demonstrated in training research, e.g., Plemons, Willis, & Baltes, 1978), that older people who remain in the workforce may benefit from.

Crystallized intelligence. Crystallized intelligence concerns knowledge and is a reflection of the accumulated experience and expertise that a person has crystallized over time, through repeated engagement of fluid processes (Cattell, 1943). In the domain of emotion, crystallized intelligence reflects enhanced experience and expertise in dealing with emotions and in developing understanding about effective ways to manage feelings (Charles, 2010). This experience and expertise is often applied in a reflexive manner, as knowledge that is crystallized becomes implicit and can be activated habitually (Joyce, 2017). Thus, crystallized intelligence may be an important factor that relates to success at interpersonal emotion regulation, particularly at the automatic level of processing.

Given that crystallized intelligence depends on experience and expertise, people who have lived for longer typically outperform those who have lived for less time in tasks that rely on crystallized intelligence. The positive relationship between age and crystallized intelligence has been demonstrated empirically many times (e.g., Horn & Cattell, 1967). In the domain of emotion, for example, research by Labouvie-Vief, DeVoe, and Bulka (1989)

has demonstrated that people's understanding of emotions increases in complexity with age. There is some debate about whether age-related crystallized intelligence gains translate into performance gains in everyday tasks. While performance in purely crystallized tasks (e.g., tests of the size of one's vocabulary) does not appear to decline even among those in later life (Wang & Kaufman, 1993), for most everyday tasks, application of crystallized intelligence requires fluid systems, such as working memory (Rabbitt, 2016). However, the trivial nature of fluid declines in middle age suggests that for most older workers such issues are unlikely to present. Thus, on balance, older workers may be expected to outperform younger workers in interpersonal emotion regulation tasks that require crystallized intelligence.

Gains in crystallized intelligence with age are particularly salient because these can potentially offset any losses in fluid intelligence that do begin to emerge among older workers. For example, in her dynamic integration theory, Labouvie-Vief (2003) explains that as the increasingly complex emotional schema that people develop through their adult life crystallize, this prompts a shift towards more automated regulation of emotion that draws less on fluid processing abilities. In a similar vein, the selection-optimization-compensation theory of emotion regulation (SOC-ER; Urry & Gross, 2010) contends that regulators can compensate for losses in fluid intelligence through applying crystallized intelligence in their selection and optimization of emotion regulation strategies that rely less on fluid intelligence.

Motivation. Motivation concerns the reason for doing and the energy invested in action (Deci & Ryan, 2000). Motivation is fundamental to all goal-directed processes, including emotion regulation and empathy. While such processes involve a proximate goal (e.g., to change emotion), they are typically engaged in pursuit of underlying motives (Tamir, 2009). The nature of the underlying motive is therefore likely to shape how effectively the process is engaged, for instance by driving how much effort is invested into it (Tamir, 2016).

Carstensen's (2006) socioemotional selectivity theory (SST) holds that the motives that underlie people's behavior can be classed into one of two broad categories. In the knowledge motivation category, the focus is on acquisition of knowledge and career-related goals. In the emotional meaning category, the focus is on finding meaning, pleasure, emotional intimacy, and establishing feelings of social embeddedness. These two classes of motives map onto the motives proposed to underlie workplace interpersonal emotion regulation in theoretical work by Niven (2016). In particular, motives like emotional labor (fulfilling requirements or informal expectations of one's job role), impression management (favorably shaping others' perceptions of oneself), and instrumentality (enhancing one's own performance), fit well within the knowledge category. In contrast, the motives of compassion (promoting others' well-being), hedonism (promoting one's own well-being), and coaching (bringing out the best in others), are more relevant to emotional meaning.

The main thesis of SST is that people's motivations change as they age due to shifts in perceptions of time. As perceptions of remaining time in life reduce, which is usually congruent with advances in chronological age, people find value in getting the most out of the time they have remaining, and so become more motivated towards emotionally meaning (Carstensen, Fung, & Charles, 2003). In contrast, the more future time is perceived, the greater the motivation towards expanding one's horizons through knowledge. The change in motivations posited by Carstensen and colleagues represents a shift in the prioritization of basic psychological needs (Deci & Ryan, 2000). For people who perceive more future time (usually younger in chronological age), their motivations can be considered more in line with fulfilment of the need for competence, which concerns the need to feel effective and to enhance skills and capacities. For people who perceive less future time (usually older), their motivations are oriented towards the need for relatedness, which is the need to feel connected to others and to have a sense of belonging.

Carstensen et al. (2003) argue that the increased motivation towards emotional meaning with age results in better regulation of emotions. Theories of emotion regulation concur, explaining that motives falling within the emotional meaning category are typically more beneficial for emotion regulation performance than motives focusing on knowledge, because they drive greater and more sincere investment of energy into regulation (Niven, 2016). Even though individuals whose motives are more knowledge-focused still engage in emotion regulation, the focus on goals relating to their own advancement or competence means that less energy will be invested and that any efforts made will be less authentic in nature (Gabriel, Koopman, Rosen, Arnold, & Hochwarter, 2019). Thus, for interpersonal emotion regulation tasks that depend on motivation, performance may improve with age.

Moderators of age differences. Researchers have also considered that age effects may not be straightforward, reflecting on the possibility of moderators interacting with the key mechanisms described above to shape the relationship of age with performance in tasks related to interpersonal emotion regulation. A key moderating factor, which acts on the cognitive mechanisms of age differences, is the level of cognitive demand inherent in a given situation. Labouvie-Vief (2003) explains that in ordinary circumstances, a lot of emotion regulation is habitual, drawing automatically from crystallized skills and heuristics that have been developed and honed with experience. However, in more cognitively demanding circumstances, people need to revert to more controlled regulation that requires fluid processing. Thus, the extent to which older workers can capitalize on age-related gains in crystallized intelligence may depend on how cognitively demanding the situation is.

High cognitive demands are particularly salient in novel situations, where past experiences may be less informative about the best way to manage emotion and the heuristics a person has developed may be less applicable (Labouvie-Vief, 2003). They can also be experienced in complex, ambiguous situations, such as dealing with a client with a varied list

of demands, or serving multiple customers in tandem, where fluid processing (e.g., working memory) is needed to interpret and manage competing demands in a more controlled manner. Increased cognitive demands are also inherent in situations where the regulator is personally experiencing negative emotion (e.g., due to a customer being aggressive). In that situation, in order to effectively manage someone else's feelings, the individual also has to manage their own feelings (e.g., to reduce the customer's anger, a service worker has to manage the anger evoked in them by the customer in order to present a calm exterior), creating competing demands. This is likely to be particularly true for older adults, because losses in hormonal systems associated with aging mean that older adults typically react more intensely than younger adults to extremely negative stimuli (Charles, 2010). In all such situations of high cognitive demand, the increased reliance on fluid intelligence may mean that any age-related gains in crystallized intelligence contribute relatively less to effective performance.

A further moderator, which acts on the motivation mechanism of age differences, is the relevance of the situation. Carstensen's (2006) SST suggests that older adults will show enhanced motivation towards processes like empathy and emotion regulation because they will be more oriented towards emotionally meaningful goals. However, this proposition is likely to hold primarily in situations of personal salience, such as when interacting with people one cares about (e.g., in longstanding co-worker or client relationships) or in a context that is personally relevant (e.g., when one identifies strongly with one's organization and therefore takes on the priorities they endorse). When the individual does not see as much salience in the situation (e.g., during short-term, one-off interactions), this creates an incongruence with the goal of emotional meaning, and there will be no greater motivation to put effort into the situation. In such situations, aspects of the environment (e.g., rules and norms about managing customers' feelings in 'people work' industries) may provide stronger forces over interpersonal emotion regulation (Diefendorff & Gosserand, 2003).

How Age relates to Interpersonal Emotion Regulation

The theories above suggest that whether and how age relates to the ability to perform interpersonal emotion regulation will depend on whether effectively managing others' feelings requires fluid or crystallized intelligence or motivation. Identification of the tasks involved in managing others' feelings, and the likely factors underpinning success in those tasks, is therefore a necessary step in order to analyse the potential role played by age.

In the following section, I outline the tasks involved in interpersonal emotion regulation, drawing on the literature on emotion regulation and related processes to discern the core underlying factors that influence success during each of these tasks, in order to form theoretical predictions about the task performance of older and younger workers. I then evaluate empirical evidence in relation to these predictions. I focus where possible on evidence relating to adults of typical working age (approximately under age 65 years), but also consider studies involving participants whose age exceeds this, given that there is an increasing minority who choose to work beyond retirement age (Lain & Vickerstaff, 2014). The key insights from this theoretical and empirical analysis are displayed in Table 2.

In order to identify the tasks involved in interpersonal emotion regulation, I take as my starting point the stage model of interpersonal emotion regulation proposed by Reeck and colleagues (2016). Reeck and colleagues posit that there are four stages involved in interpersonal emotion regulation: identification of the target's emotions; evaluating the need for regulation; strategy selection; and strategy implementation. I then apply Webb, Schweiger Gallo, Miles, Gollwitzer, and Sheeran's (2012) action control perspective on emotion regulation to flesh out the tasks involved in successful interpersonal emotion regulation during each of these stages. The action control perspective draws on the broader literature on control (e.g., Carver & Scheier, 1981), to frame emotion regulation as a goal-oriented process, wherein a regulator engages in a series of tasks in order to bring a current state closer

to a goal state. While Webb and colleagues proposed their framework focusing on intrapersonal emotion regulation, the approach applies well to interpersonal emotion regulation, which is likewise a goal-oriented regulatory process (Niven, 2017).

Stage 1: Identify the target's emotions

At the first stage of the regulation process, Reeck et al. (2016) explain that the regulator identifies how the target is currently feeling. Two core tasks are likely to be involved.

Detection and categorization of emotion. First, the regulator must accurately detect and then categorize the outward signs of emotion in the target, based on, for example, the target's facial expressions, vocal utterances, and bodily gestures and postures (Reeck et al., 2016). According to Calder, Burton, Miller, Young, and Akamatsu (2001), accurate detection and categorization of emotions based on external cues involves a series of complex cognitive operations, including image encoding, extraction of diagnostic information, and classification. Successful performance of this task is therefore likely to rely on aspects of cognition that underlie fluid intelligence, as both working memory and executive function are relevant to this list of cognitive operations.

Calibration of emotion cues. Second, the regulator must contextualize the emotion cues they have detected, by considering available social information relevant to the likely causes of the emotion. The task of calibrating of emotional cues against social contextual information has been termed 'empathic accuracy' (Ickes, Stinson, Bissonnette, & Garcia, 1990), and is considered a cognitive aspect of empathy (Beadle & De la Vega, 2019), as well as part of the process of managing others' feelings. Barrett, Mesquita, and Gendron (2011) demonstrate the salience of this step of the process, highlighting that emotion identification is frequently inaccurate without parsing the social context within which the emotion occurs (e.g., the facial expression of ecstasy can resemble anger in the absence of contextual information). Empathic accuracy is likely to depend on crystallized intelligence, as

experience and expertise will facilitate analysis of emotional situations and figuring out how a person might be feeling (Labouvie-Vief, 2003). Motivation might also be a relevant factor, given that people have been found to perform empathic accuracy much more accurately when they are highly motivated to attend to the situation or stimulus (Ickes & Simpson, 2001).

Evidence about age and the identification of the target's emotions

Applying theories relating to the mechanisms of age effects on emotion regulation produces the prediction that there are unlikely to be age differences in performance at this stage of the regulation process. This is because fluid intelligence (which underlies detection and categorization of emotion cues) decreases with age, whereas crystallized intelligence and motivations towards emotion regulation (which drive calibration of emotion cues) increase with age. Thus, any age-related deficits in the ability to detect and categorize emotion cues should be offset by age-related gains in the ability to contextualize cues.

Empirical evidence is supportive of this prediction. There is evidence in abundance that abilities in the detection and categorization of emotion cues decline with age. A meta-analysis by Ruffman, Henry, Livingstone, and Phillips (2008) reported age-related declines across all modalities of emotion expression (including faces, bodies, and voices) and for all emotions studied (anger, sadness, fear, happiness, surprise), with the exception of disgust. However, age differences in the ability to detect and categorize emotion cues are clearest when comparing younger adults with older adults of advanced years. In studies where a 'middle-aged' age group is included, they tend to perform comparably to younger adults (e.g., Grainger, Henry, Phillips, Vanman, & Allen, 2015, used a middle-aged group aged between 40 and 64 years). As most older workers fall within the middle-aged category, this suggests that they will be unlikely to exhibit substantial deficits compared to their younger counterparts when it comes to detecting and categorizing emotions.

In any case, the empirical literature also suggests that when context is required to parse emotion cues, age differences in emotion identification are no longer apparent. As such, any age-related deficits in detection and categorization of emotion cues appear to be offset by enhanced empathic accuracy. Evidence for this offsetting effect is found in studies of emotion identification that involve dynamic stimuli, such as videos. Whereas static stimuli test the ability to detect and categorize emotion based on expression cues alone, dynamic stimuli are more context rich, and therefore test overall emotion identification ability, including the ability to calibrate expression cues against contextual information. Studies demonstrate that age-related deficits in relation to static stimuli are ameliorated or reversed when participants are provided with dynamic stimuli. For example, Sze, Goodkind, Gyurak, and Levenson (2012) found that while older adults (60-80 years) performed more poorly than younger adults (20-30 years) in emotion identification accuracy of static facial images, with the performance of middle-aged adults (40-50 years) falling between the two groups, older and middle-aged adults outperformed younger adults in a task using video recordings of dyadic interactions. Thus, enhanced ability to process social and contextual cues among older adults appears to at the least offset declines in fluid functioning in relation to emotion identification.

A similar conclusion can be drawn when examining studies that ask participants to detect whether an emotion is genuine versus faked, a task requiring participants to engage in further social processing of the emotional cues they are presented with. Such studies report either no age differences (when using static stimuli; e.g., Slessor, Miles, Bull, & Phillips, 2010) or better performance (when using dynamic stimuli; e.g., Murphy, Lehrfeld, & Isaacowitz, 2010) among older adults. The studies noted above have used older adult samples whose age range exceeds the age of most older workers at the upper end. However, the fact that studies involving a ‘middle-aged’ group typically report linear age effects suggests that the performance of older workers is likely to be at least as good as that of younger workers.

Moderating factors. An important moderator of age effects that emerges from studies of detection and categorization of emotions is the valence of the emotion. Studies have consistently reported that older adults exhibit greater impairment with respect to negative, rather than positive, emotions (Ruffman et al., 2008). While biological explanations have been offered for this pattern of findings, evidence is most strongly in favor of a motivational explanation. As Reed and Carstensen (2012) explain, the different motivational priorities of older and younger adults lead to preferences towards distinctive types of stimuli, with older adults showing a clear preference towards attending to and remembering positive stimuli. These motivational preferences suggest that older adults view positive stimuli as more personally relevant. In line with this explanation, and further underscoring the importance of personal relevance to motivation and success at emotion identification, studies of emotional identification have compared high and low relevance situations (e.g., talking about topics that are either pertinent or not to the focal participant, or interacting with someone that one is closer or less close to). Such studies consistently report that older adults perform similarly to younger adults in the high relevance situation, but more poorly in the low relevance situation (e.g., Richter & Kunzmann, 2011; Wieck & Kunzmann, 2015). This is presumably because in low relevance situations, older adults do not experience greater motivation to attend to the contextual cues that are needed to calibrate the external signs of emotion in others.

A final moderator, which has not been explicitly studied, but which follows from theories relating to cognitive mechanisms of age differences, is the level of cognitive demand in the context in which emotion identification occurs. In low demand conditions (e.g., situations that a worker has encountered repeatedly), interpersonal emotion regulation and its composite tasks are likely to be engaged relatively automatically, in a habitual manner. Thus, the worker may not need to engage controlled processes to decode the emotional cues of the target; mere presence in the situation and superficial social processing (aided by crystallized

intelligence and motivation to attend to social cues) may be sufficient to prime a schema of how the target is likely to feel. It is only when in high demand situations, such as novel circumstances, or situations with multiple or competing demands, that controlled processing may be required. As such, older workers might ordinarily carry a performance advantage in this domain, which reverts under conditions of high cognitive load.

Summary. The theoretical and empirical evidence converge on the conclusion that there are unlikely to be substantial age differences at the emotion identification stage of interpersonal emotion regulation. Under high cognitive load situations, or when the situation is of low personal relevance, older workers may be somewhat less accurate at being able to identify how the target is feeling. However, for the majority of interactions in which interpersonal emotion regulation may be engaged, older workers are unlikely to suffer issues with identifying how a target is feeling and may well have a performance advantage.

Proposition 1. In situations of low cognitive load and/or high personal relevance, older workers will perform more accurately than younger workers at identifying the emotions of targets. Conversely, in situations of high load and/or low relevance, the performance of older workers will be relatively poorer.

Stage 2: Evaluate the need for regulation

At the second stage, the regulator must evaluate the need for them to engage in interpersonal emotion regulation (Reeck et al., 2016). This involves two component tasks.

Setting a goal emotion. In Webb and colleagues' (2012) action control perspective on intrapersonal emotion regulation, they highlight the importance of setting a 'reference value', which is the goal state for the emotion that the regulator wishes to experience. This setting of a reference value is seen as the starting point for regulation in most models of control (e.g., Carver & Scheier, 1981). In the case of interpersonal emotion regulation, the equivalent task is setting a goal state for the emotions of the target. For example, when dealing with an irate

customer, a worker might set a goal to reduce the customer's anger. Or before entering a meeting where bad news needs to be communicated, a leader might set the goal of reducing the anxiety they anticipate among their team members. Whether or not a goal state is appropriate will depend on factors including the target's personality and values, as well as the specific context within which the target is situated (Diefendorff & Gosserand, 2003).

The primary factor influencing success in this task is likely to be the regulator's motivation. It has been well-established that motives influence the emotion goals that are set when regulating one's own feelings (e.g., Tamir, 2009), and more recent studies have demonstrated that the way in which a regulator determines a goal emotion for a target similarly depends on the regulator's underlying motivation (e.g., Netzer, van Kleef, & Tamir, 2015). It follows from SST (Carstensen, 2006) that regulators who prioritize emotional meaning will be more motivated to set appropriate goal states for target emotions than regulators who are focused on knowledge. A similar argument is made in research on interpersonal emotion regulation, positing that motives focused on relational concerns (similar to the emotional meaning category in SST) orient people to take the target's needs and desires into account when setting a goal emotion (Niven, Troth, & Holman, 2019).

Monitoring the divergence between current and goal emotions. The second task is that the regulator needs to appraise whether or not regulation is necessary (Webb et al., 2012). This task requires the regulator to monitor the current and goal emotions in order to appraise whether or not there is a discrepancy that will require regulation to overcome (Tice & Bratslavsky, 2000). Although performance monitoring has been discussed as an executive function task that draws on fluid processing (Banich, 2009), there is increasing consensus that performance monitoring is a more automatic process. Studies that have implicated the anterior cingulate cortex (ACC) as a key neural area activated during performance monitoring suggest that the process largely occurs below conscious awareness; it is only when an 'error'

(i.e., a mismatch between current and goal states) is detected that executive function is alerted to apply more controlled processing (Botvinick, Cohen, & Carter, 2004). In fact, there is even suggestion that motivation may play an important role in performance monitoring. For example, greater neutral activity in the ACC has been observed in tasks where accuracy is emphasized over speed (Bush, Luu, & Posner, 2000), and in studies involving reward and/or punishment for error detection (Simões-Franklin, Hester, Shpaner, Foxe, & Garavan, 2010).

Evidence about age and the evaluation of the need for regulation

Applying theories relating to mechanisms of age differences in emotion regulation results in the prediction that there may be an older worker advantage in how effectively workers evaluate the need for regulation. Older workers are expected to exhibit motivations that are more conducive to setting appropriate emotion goals than the motivations likely to be favored by younger workers, and their enhanced motivation might further facilitate their performance in monitoring the divergence between the target's current and goal emotions.

There is not a great deal of empirical evidence specifically concerning the relationship between age and the two interpersonal emotion regulation tasks involved in this stage of the regulation process. However, somewhat relevant to the setting of emotion goals for others are studies that have reported that older adults are more likely than younger adults to engage in prosocial behavior that prioritizes and attends to others' needs more generally (e.g., Beadle, Sheehan, Dahlben, & Gutchess, 2015). Further relevant evidence comes from the experience sampling study of Riediger, Schmiedek, Wagner, and Lindenberger (2009), in which the authors reported that age was negatively related to contra-hedonic goals for emotion regulation (i.e., wanting to feel less pleasant), and positively-related to pro-hedonic goals. As contra-hedonic emotions are thought to serve instrumental purposes (e.g., Tamir, 2009), this study suggests that younger adults may set goals in manner consistent with knowledge

motives while older adults' goals follow a pattern consistent with emotional meaning motives, at least when it comes to managing their own feelings.

Concerning the relationship between age and monitoring the discrepancy between a target's current and goal emotions, the wider literature suggests a lack of age differences when it comes to accuracy of error detection during performance monitoring (Hämmerer, Müller, & Li, 2014). However, there is a slowing effect. For example, Falkenstein, Hoormann, and Hohnsbein (2001) report that the neural response to errors is somewhat dampened and comes slower with age, even though error correction rates are relatively unaffected. This slowing effect is also observed in studies of emotion detection and categorization that assess response times, which tend to report that older (Keightley, Winocur, Burianova, Hongwanishkul, & Grady, 2006) and middle-aged (Feeney, Gaffney, & O'Mara, 2012) adults are slower than younger adults when responding to emotional stimuli, even in the absence of accuracy differences. The speed of detection and categorization of others' emotions and the speed of error detection in performance monitoring might arguably provide information on how able people are to monitor others' emotions in real time; e.g., the slower one is to react to signs of emotion, the harder it will be to accurately monitor a discrepancy from a goal state. However, studies of response times are conducted in controlled laboratory environments that strip older adults of the relational motivations prevalent in everyday interactions, which might otherwise enhance their performance, so the extent to which such findings are indicative of abilities within the workplace is unclear. Thus, the evidence in this area is not supportive of the expected age-related benefits in performance monitoring, but the indirect nature of the evidence and limitations in study design mean a conclusive statement is not possible.

Moderating factors. Given that age differences in the tasks involved at this stage of the interpersonal emotion regulation process rely mainly on motivation, it may be the case that

the expected age-related differences between older and younger workers disappear in situations of low personal relevance (e.g., when the worker does not care about the target). In such circumstances, older workers may not experience greater relational motivation and may therefore not set more appropriate emotion goals or maintain the same levels of accuracy in monitoring discrepancies between current and goal emotions.

Summary. Evidence related to the evaluation of the need for interpersonal emotion regulation overall suggests a likely performance advantage for older workers. Older workers are likely to set more appropriate goal states for interpersonal emotion regulation that are tailored to the needs and circumstances of the target, and they are unlikely to be impaired in their ability to monitor the discrepancy between the target's current and goal emotions to determine if regulation is required. It should, however, be noted that more direct empirical work in this area is needed in order to draw a firm conclusion.

Proposition 2. There will be a positive relationship between age and the ability to evaluate the need for interpersonal emotion regulation.

Proposition 3. In situations of low personal relevance, the performance advantage of older workers relative to younger workers in their ability to evaluate a need for regulation will be attenuated.

Stage 3: Decide whether and how to regulate

At the third stage of interpersonal emotion regulation, the regulator must select a strategy or strategies to engage in order to regulate the target's emotions.

Deciding to take an active or passive regulatory approach. Webb et al. (2012) suggest that the first task undertaken within this stage is to decide whether to adopt an active regulatory approach (i.e., by selecting and implementing a strategic behavior to influence the target's feelings) or whether to adopt a passive approach (i.e., by leaving the regulatory action to somebody else). In the case of interpersonal emotion regulation, reasons for taking a

passive approach might include assessing that the target is capable of self-regulating their feelings or there is someone else better placed than oneself to perform interpersonal emotion regulation (Reeck et al., 2016).

In order to decide whether to take an active or passive approach, the regulator must appraise their own and others' stable regulation abilities to determine who would usually be in the best position to regulate the target's feelings. The accuracy of this appraisal is likely to be strongly influenced by crystallized intelligence. Those with greater experience and expertise in emotion regulation are likely to be less susceptible to perceptual biases that can warp judgment of ability, including self-enhancement bias, where one overstates ability, and self-diminishment bias, where one understates ability (John & Robins, 1994).

The most appropriate decisions will also take into consideration the momentary regulation capacities of the regulator and others around them who could be in a position to engage in regulation, given that a person's capacity to invest time and effort in emotion regulation will vary greatly across different contexts. For example, during an important and pressurized work meeting in which a worker is playing a focal role, they would have substantially less capacity for emotion regulation than during an informal chat with a colleague. Performance in this aspect of the task is likely to depend on skills relying on fluid intelligence, including perspective taking about the capacity of others, which requires inhibition of one's own perspective and redirection of attention to the imagined perspective of the other (Long, Horton, Rohde, & Sorace, 2018).

Selecting an interpersonal emotion regulation strategy. Assuming that the regulator decides to take an active approach to interpersonal emotion regulation, their next task is to select which strategy to use. The task of selecting an optimal strategy is likely to be largely dependent on crystallized intelligence. People typically select regulatory behaviors based on their mental models of which strategies are more or less effective (Salovey & Mayer,

1990). The more accurate those models, the more appropriate their choice of strategy. Mental models are developed through interaction with the environment, such that the greater the amount and variation of environmental interactions a person has with respect to a given process or phenomenon, the more precise their mental model of that process or phenomenon (Busselle, 2017). For example, the mental models of people higher in crystallized intelligence are likely to be more nuanced, taking into account the likely effectiveness of strategies within different contexts, rather than assuming uniform efficacy, due to their larger variety of experiences (Bonanno & Burton, 2013).

In addition to depending on crystallized intelligence, selection of an optimal strategic approach to interpersonal emotion regulation may also draw on motivation. Reeck et al. (2016) explain that tailoring the choice of strategy to the particular context relies on being able to accurately predict how the specific target, in that particular situation, will respond. Bonanno and Burton (2013) concur, arguing that there are individual differences in sensitivity to context when selecting the use of emotion regulation strategies – and that those regulators who are most sensitive will select the most appropriate regulatory strategies. Individuals who are highly motivated to pay attention to the target and their context should therefore be more effective at selecting an optimal interpersonal emotion regulation strategy.

Evidence about age and the decision of whether and how to regulate

Deciding whether and how to regulate another person's feelings combines tasks relying on crystallized and fluid intelligence (i.e., deciding whether to adopt an active approach or passive approach to regulation), and crystallized intelligence and motivation (i.e., deciding which regulation strategy to select). For the first of these tasks, the combination of crystallized and fluid intelligence factors means that overall there may not be any major age differences expected in the quality of decisions, given that crystallized intelligence increases with age while fluid intelligence decreases. For the second of these tasks, as both crystallized

intelligence and motivations towards emotion regulation typically increase with age, age is expected to be positively related to the quality of decisions. Overall then, application of theories relating to mechanisms of age differences in emotion regulation leads to the prediction of performance advantages for older workers at this stage of regulation.

To date, no empirical studies have examined associations between age and the accuracy of judgements on regulatory abilities or capacities. It is possible that older workers may be less susceptible to judgment biases more generally in relation to their own abilities and capacities at least, given that age is associated with individual difference profiles (e.g., low narcissism; Foster, Campbell, & Twenge, 2003) that are linked with lower self-perception biases (John & Robins, 1994). However, to the best of my knowledge, there are no studies directly examining the impact of age on self-perception biases. With regards to how accurate people are at judging others' abilities and capacities, there is evidence that younger adults outperform older adults when it comes to the broader underlying skill of perspective taking (Beadle & De la Vega, 2019; Long et al., 2018). However, this evidence suggests that age-related declines in perspective taking become apparent relatively late in life, beyond typical working age. For example, Ligneau-Hervé and Mullet (2005) reported that middle-aged adults (aged 40-50 years) were equivalent to younger adults in their perspective taking; a lack of perspective taking was most apparent among older adults (aged 75-90 years), with some extent of depletion evident among the group they labelled 'mature adults' (65-74 years). Thus, the very limited empirical work is broadly consistent with the prediction that there would be no overall age differences between younger and older workers in the overall quality of judgements about who is best placed to regulate a target's emotions.

Concerning how age relates to the ability to choose appropriate interpersonal emotion regulation strategies, there is some empirical work that reports findings consistent with the analysis that older workers may outperform younger workers. For example, researchers of

emotional intelligence have reported that the component of emotion regulation knowledge, which concerns awareness about the most effective strategies to regulate emotions in given situations, increases as a function of age (Mayer, Salovey, Caruso, & Sitarenios, 2001). Blanchard-Fields's (2007) review further asserts that older adults are more likely to adapt emotion regulation strategies to the situation at hand, whereas younger adults are more likely to prefer using a particular strategy across all contexts, which is suggestive of the possibility that older adults have more nuanced mental models about strategy effectiveness.

In terms of actually selecting more appropriate strategies to use, there is evidence that some strategies are, on average, more effective than others (situation modification and cognitive change are typically more effective than attentional deployment and modulation of the emotional response; Little, Kluemper, Nelson, & Ward, 2013). If older adults show preferences towards using effective strategies, this would indicate support for the expected positive age effects on strategy selection. However, the small amount of research on age and preferences for interpersonal emotion regulation strategies does not provide a clear picture about whether older adults prefer to use these strategies. Two studies, reported in Murry's (2018) doctoral thesis, reported a lack of age differences in strategy use in a controlled laboratory context. A third study, focusing on the strategies that participants thought they would use in a hypothetical scenario, reported a negative relationship between age and situation modification with no other age effects (Jarman & Windsor, in press).

As the only available studies on age and interpersonal emotion regulation strategy preferences involve older adults of advanced years and examine preferences in artificial contexts unlikely to stimulate emotional meaning motives, it is unclear whether their findings apply to older workers in their everyday use of regulation. Nevertheless, the body of research on intrapersonal emotion regulation is replete with examples of field studies highlighting that age is positively related to the use of cognitive change strategies (e.g., reappraising the cause

of emotion) at work, whereas it is either unrelated, or negatively related, to the use of response modulation strategies (e.g., suppressing the outward signs of emotion; Cheung & Tang, 2010; Dahling & Perez, 2010). These established trends may be suggestive of similar trends for interpersonal emotion regulation, given that knowledge of how best to manage one's own feelings is an important source of information when selecting strategies for managing others' feelings (Reeck et al., 2016).

In addition, while there is no research, to my knowledge, on how age relates to people's ability to predict how targets will respond to different strategies in order to tailor their selection, research on affective forecasting reveals age is associated with people's ability to predict how they themselves will respond to future events. The accuracy of people's affective forecasts has been found to be enhanced with age (e.g., Scheibe, Mata, & Carstensen, 2011). If older adults are better at predicting how they themselves will feel in different circumstances, it is possible that this enhanced ability might extend to the prediction of how others will feel when considering the use of different strategies.

Moderating factors. Although no age differences are expected in the overall quality of judgements about whether or not to take an active role in the regulation process, it is likely that the quality of such decisions will vary depending on the situation. For instance, in low cognitive demand contexts (e.g., where momentary regulatory capacity is relatively stable and predictable), decision-making about who is best placed to engage in regulation may be made more automatically, with less reliance on fluid intelligence. Conversely, in situations of higher cognitive load, the greater influence of fluid intelligence might lead to younger workers making better decisions than older workers.

The quality of decisions about which strategy to select for interpersonal emotion regulation might also be subject to moderating factors. For instance, in very novel contexts, rather than relying only on crystallized mental models that can be applied automatically, the

regulator may need to mentally compare and contrast many different strategies available to them in a more controlled manner, in order to predict which the target will respond most optimally to. In such situations, the regulator will face a greater cognitive load as they will need to temporarily store their predictions about how the target might respond to a range of strategies, which requires the use of working memory, an aspect of fluid intelligence. As fluid intelligence declines with age, older workers may therefore perform at a more similar level to younger workers when it comes to strategy selection in very novel contexts. In a similar vein, when engaged in a situation of low personal relevance, older workers may be no more motivated to tailor their selection of strategies to the context than younger workers, which could likewise reduce any performance advantage for older workers on this task.

Summary. The evidence overall suggests that there are likely to be age-related performance advantages at the stage of deciding whether and how to regulate someone else's feelings. The theoretical evidence suggests that older and younger workers are likely to make equally good decisions about whether or not to take an active or passive regulation approach, albeit to date there is no direct empirical evidence to support this assessment. However, once this decision has been taken and a decision is required about which specific strategies to select, older workers are likely to select more appropriate strategies in most circumstances.

Proposition 4. There will be a positive relationship between age and the ability to decide whether and how to regulate another person's feelings.

Proposition 5. In situations of high cognitive load and/or low personal relevance, the performance advantage of older workers relative to younger workers in their ability to decide whether and how to regulate another person's feelings will be attenuated.

Stage 4: Implement a regulation strategy

The final stage of regulation proposed by Reeck and colleagues (2016) is where the regulator actually implements their chosen strategy. Applying the action control perspective on emotion regulation (Webb et al., 2012) suggests three constituent tasks at this stage.

Identifying an opportunity for regulation. The first task is to identify a suitable opportunity for regulation. As Webb et al. (2012) suggest, "there may be a 'critical moment' where regulation efforts are likely to be most effective" (p. 153). Those regulators with higher crystallized intelligence are likely to be more adept at this task, because they will have more experience of implementing interpersonal emotion regulation and therefore have developed more expertise in judging the optimal time to regulate. Because analysis of the ongoing social situation will be crucial to the successful performance of this task, regulators with higher motivation to attend to the target and their social context should likewise be more able to identify and therefore seize regulation opportunities during critical moments.

Applying the strategy. The second task is to actually use the strategy. According to the strength model (Baumeister, Vohs, & Tice, 2007), tasks that involve controlled regulation draw on a limited pool of resources, and effective pursuit of such tasks relies on availability of those resources. Interpersonal emotion regulation has been shown to belong to the family of regulatory tasks that draws from this resource pool (Martínez-Íñigo, Poerio, & Totterdell, 2013). One way to ensure resource availability is through possession of a larger pool. Given that implementation of controlled regulation involves overriding an automatic or habitual response with a more effortful response, and so relies on executive function, it is thought that people who have greater executive function possess a larger resource pool (Baumeister et al., 2007). Thus, fluid intelligence (of which executive function is a component) is likely to predict the ability to apply a given interpersonal emotion regulation strategy effectively.

Alternatively, if regulators can engage in interpersonal emotion regulation automatically, then the process should be resource efficient, meaning that one's limited pool

of resources ought to remain intact during regulation. Resources can also be preserved through the selection of resource-efficient interpersonal emotion regulation strategies. There is evidence that some intrapersonal emotion regulation strategies consume fewer resources than others (e.g., Richards & Gross, 2000) and, likewise, evidence is beginning to emerge concerning interpersonal emotion regulation (Martínez-Íñigo et al., 2013). As noted already, those regulators who have higher crystallized intelligence are best placed, with greater experience and expertise, to make effective decisions on which strategies to use. Similarly, those with higher crystallized intelligence might be able to draw on their experience to implement strategies more efficiently. Thus, crystallized intelligence might also contribute to effective implementation of interpersonal emotion regulation.

Apply new strategy if needed. The third task involves making an assessment about whether an initial attempt to regulate the target's feelings has been successful, and, if not, switching to a different regulation strategy (Webb et al., 2012). Making such a judgment will rely on responsiveness to feedback, in the form of the emotion cues displayed by the target. As already noted, detection and categorization of such cues relies on fluid intelligence, while accurate calibration of those cues within a social context depends on crystallized intelligence as well as the motivation to attend to the social context. Bonanno and Burton's (2013) theoretical work on emotion regulatory flexibility also highlights the relevance of being able to draw from a large repertoire of strategies for effective performance at this task, as this will support adaptive changes in strategy use as the situation demands. Crystallized intelligence is likely to be highly relevant here, as the more experience and expertise that is accumulated, the greater the amount and variety of strategies one ought to have available.

Evidence about age and the implementation of a regulation strategy

Applying theories relating to mechanisms of age differences to the complex combination of influences on success during the tasks involved in implementing interpersonal

emotion regulation suggests that there might be an older worker advantage. This prediction is mainly driven by expected performance advantages in identifying regulation opportunities and applying new strategies, both of which are tasks whose success is influenced by factors (i.e., crystallized intelligence and motivation to attend to social cues) that increase with age.

To date, there are no empirical studies, to the best of my knowledge, examining whether age relates to identifying regulation opportunities. This means that a firm conclusion cannot be made about whether, as might be anticipated, older workers' greater motivation to attend to the emotions of others, and their enhanced experience and expertise in analyzing emotional situations, will lead to heightened ability to identify opportunities for regulation.

Concerning the relationship between age and the ability to apply interpersonal emotion regulation, Urry and Gross's (2010) SOC-ER theory explains that older adults may compensate for fluid intelligence declines through selection of less cognitively demanding regulation strategies (e.g., well-practiced strategies that rely less on cognitive control processes) and/or optimization of those strategies through implementation in a more resource-efficient (i.e., automatic) manner. There is indirect evidence for the idea that older workers select more resource efficient strategies. In particular, research on intrapersonal emotion regulation shows that older workers are more likely to use reappraisal (a cognitive change strategy) and less likely to use the strategy of suppression (a response modulation strategy) in comparison to younger workers (Dahling & Perez, 2010), and that reappraisal requires fewer resources than suppression (Wang & Yang, 2014). Thus, older workers prefer to manage their own feelings at least using resource-efficient strategies. In support of optimization through regulation in a resource-efficient manner, Scheibe and Blanchard-Fields (2009) reported evidence of older workers being able to regulate their emotions without subsequent impairment to their cognitive performance, due to their experience and practice, unlike younger adults who suffered cognitive performance deficits. Although these findings

are consistent with the predictions of SOC-ER, further research is needed to clarify whether these compensatory effects are also evident for interpersonal emotion regulation.

Regarding the final regulatory task, as already discussed, the empirical evidence points to an overall lack of age differences in emotion identification ability, meaning that there are unlikely to be age differences in the quality of decisions made about whether there is a need to apply a new strategy. If a need for a new strategy is detected, it seems plausible that, with their greater amount of experience accumulated over years of life, older workers would have a larger repertoire of strategies that they could dip into (English & Carstensen, 2013). There is also evidence that older adults adapt the strategies they use more often to the problem at hand, at least with respect to regulation of their own affect (Blanchard-Fields, 2007), which could imply that older workers have a larger repertoire of strategies to select from. Yet other research has found that older adults do not report using a greater breadth of intrapersonal emotion regulation strategies than younger adults in practice (e.g., Eldesouky & English, 2018). Thus, the empirical evidence on the relationship of age with strategy repertoire is limited to a focus on intrapersonal emotion regulation, and inconsistent in its findings.

Moderating factors. While the theoretical evidence at least suggests the likelihood of age-related benefits on identification of regulation opportunities, there may be circumstances in which these benefits do not transpire. These might include situations where the regulator is under high cognitive load, when regulation reverts to controlled processing relying on fluid intelligence. An example of such a situation is one in which workers are forced to apply a poorly rehearsed strategy (e.g., during adjustment to a new service job in which there are strict rules about how to interact with customers). In this context, older workers might implement strategies less effectively due to the lack of opportunity to compensate for fluid intelligence deficits through resource-efficient strategy selection and optimization. Similarly, in situations of low personal relevance, older workers may be no more motivated to attend to

the ongoing context than younger workers, which could attenuate expected performance advantages in identifying a suitable regulation opportunity.

Summary. The evidence considered suggests that there may be age-related advantages in implementing interpersonal emotion regulation. Older workers may be more able than younger workers to identify appropriate opportunities for regulation and should select and optimize resource-efficient strategies. In the event that an initial regulation attempt is unsuccessful, older workers should be at least as able as younger workers to identify this, and should have sufficiently large repertoires of strategies (perhaps larger than younger workers) from which to select a different strategy. Nonetheless, more direct research on implementation of interpersonal emotion regulation is needed to confirm these predictions.

Proposition 6. There will be a positive relationship between age and the ability to implement interpersonal emotion regulation.

Proposition 7. In situations of high cognitive load and/or low personal relevance, the performance advantage of older workers relative to younger workers in their ability to implement interpersonal emotion regulation will be attenuated.

Discussion

It has been suggested that as workers age their emotional competencies, including the ability to regulate their own feelings, increase (Doerwald et al., 2016; Scheibe & Zacher, 2013). The aim of this article was to provide insight into whether age is also related to workers' ability to regulate the emotions of others. I applied theories about the underlying mechanisms of age differences in related processes to an analysis of the tasks involved in interpersonal emotion regulation, in order to form predictions about whether and how age differences in interpersonal emotion regulation might manifest. I then reviewed empirical studies of the tasks involved in interpersonal emotion regulation against these predictions.

The theoretical predictions and the available empirical work pointed towards the likelihood of age-related performance gains in three of the four stages involved in regulating others' emotions and a lack of performance deficits for older workers across all four stages. At the first stage, my analysis suggested that older workers should be at least as able as younger workers to identify how someone else is feeling. At the second stage, older workers should have an advantage in evaluating whether or not there is a need to regulate someone's feelings, as they will set more appropriate regulatory goals. At the third stage, older workers may be more able to select an effective interpersonal emotion regulation strategy, due to more sophisticated mental models of strategy effectiveness. At the final stage, older workers may also implement interpersonal emotion regulation more effectively, as they should be better able to spot suitable opportunities to implement strategies and may have a greater repertoire of strategies to draw from if initial regulation efforts are unsuccessful.

Although the available evidence points to likely overall performance advantages for older workers with regards to interpersonal emotion regulation, it is unclear whether individuals who continue working beyond the typical retirement age will experience these benefits. For example, if individuals who work beyond typical retirement age suffer substantial disruption to their fluid cognition, their greater crystallized intelligence and motivation relative to younger workers may not be sufficient to offset the performance losses this disruption induces. Some evidence for this lack of offset can be seen in the empirical research on emotion identification, where studies have shown that while middle-aged adults are able to maintain the same performance levels as younger adults, the performance of older adults tends to be compromised (e.g., Grainger et al., 2015). Nevertheless, it is possible that the performance of some older workers who work beyond typical retirement age might be spared and might exceed that of younger workers. There are likely to be variations in the degree to which fluid cognitions are preserved, e.g., based on the extent of neural atrophy.

Life circumstances may also play an important role, with those who engage in more mentally stimulating activities expected to experience lower impairments (Plemons et al., 1978). At least some older workers who work beyond retirement age may therefore continue to enjoy performance advantages in interpersonal emotion regulation over younger workers, perhaps by virtue of engaging with the stimulation of work.

Another factor that may play an important role in limiting age-related performance benefits in interpersonal emotion regulation concerns the extent of meaningfulness in a given situation. When workers are in situations of lower personal salience, the older worker performance advantage might fail to materialize due to older workers experiencing no greater motivation towards interpersonal emotion regulation. In a similar vein, the level of cognitive demand inherent within a given situation may form a boundary condition to the otherwise expected older worker performance advantage. Situations that place a higher cognitive demand on a worker include those in which they are dealing with more novel circumstances, multiple or complex demands. In such circumstances, rather than implementing the tasks involved in interpersonal emotion regulation relatively habitually, drawing on their crystallized skills, workers may need to engage in controlled regulation that relies more on fluid intelligence, which declines with age. Even so, if an older worker has always worked in a high cognitive demand job, the mental stimulation of the job might have preserved their fluid cognition (Plemons et al., 1978) and the demands they face daily will not represent a change from their norm, meaning that such situations may not necessarily compromise the expected advantages in interpersonal emotion regulation performance.

While the application of established theories to the analysis of tasks involved in interpersonal emotion regulation allowed for predictions on how age relates to workers' interpersonal emotion regulation ability, the empirical evidence testing these predictions was far from comprehensive. With the notable exception of the first stage of regulation, pertaining

to emotion identification, there were very few empirical studies directly assessing age in relation to the specific tasks involved in interpersonal emotion regulation. The lack of direct evidence testing many of the theoretically driven predictions in this analysis means that any conclusions about age and interpersonal emotion regulation ability must be made tentatively.

The fact that many of the empirical studies reviewed rely on laboratory-based experiments in which the tasks involved are relatively removed from context also raises concerns, given that motivation is a key driver of age-related differences in this domain and the enhanced motivation of older workers may be less likely to emerge in situations low in meaningfulness. The artificial nature of laboratory contexts also means that regulation will be performed under instruction (i.e., controlled) rather than spontaneous; tasks performed in this situation will therefore be more likely to require fluid processing in comparison to everyday interpersonal emotion regulation. Together, these factors suggest that any older worker advantages might be understated in the research available.

The fact that many of the studies available only compare younger adults with older adults of advanced years further raises the possibility of any older worker detriments in this domain being overstated. Studies of tasks where younger adults outperform older adults typically report that the performance of middle-aged adults (usually aligning with the ages of older workers) falls somewhere between the two other groups (e.g., Sze et al.'s, 2012, study of emotion identification from static images). This would suggest that conclusions based on samples only involving older adults whose age exceeds typical working years might need to be tempered in their application to workers. However, more research on working aged samples is needed to confirm this suggestion, as not all mechanisms underlying age effects change in a linear manner throughout the adult lifespan (e.g., Hartshorne & Germine, 2015).

A final critical point with respect to the evidence base is that so far there has been little consideration of whether differences between older and younger workers are in part related to

their tenure or working experience, rather than merely their age (North, 2019). While changes in fluid intelligence and motivation are specifically age-related, changes in crystallized intelligence may also stem from tenure or working experience. It remains to be seen, therefore, whether older workers who lack in tenure and work experience will experience the same performance benefits in relation to interpersonal emotion regulation in the workplace.

Notwithstanding the clear need for more direct empirical research on this topic, the theoretical and empirical evidence available point to an older worker advantage in regulating others' feelings. A complementary possibility is that older adults may also have less need for interpersonal emotion regulation in the first place, because they tend to have more pleasant social interactions than do younger adults. According to Fingerman and Charles (2010), when a person perceives that an interlocutor has less time left, they tend to refrain from conflict and to behave in a more forgiving manner. Stereotypes and respect towards those older than oneself further enhance the likelihood of more positive interactions with older adults. Together with the fact that older adults tend to prioritize emotional meaning and thus strive for positivity in their interactions, these factors mean that older workers may be less likely to encounter situations requiring interpersonal emotion regulation, such as dealing with irate customers, envious co-workers, and frustrated managers.

Implications

The analysis of age and interpersonal emotion regulation ability has important implications, given the aging nature of the workforce and the increasing need to rely on older workers (Schalk et al., 2010). Interpersonal emotion regulation is integral to effective performance in many job roles. For example, leaders need to be able to shape the feelings of their team members, in order to inspire hope and enthusiasm and to overcome followers' anxieties. Coworkers need to be able to manage the feelings of 'difficult' teammates and to provide support during stressful situations. The conclusion that older workers are likely to be

better than younger workers (and certainly at least as good as them) at regulating the emotions of those they interact with therefore has implications for their job performance. This knowledge may be valuable in helping to push back against discrimination in personnel decisions driven by negative stereotypes about older workers, as well as occurrences of 'soft' discrimination, such as negative attitudes or a lack of respect (Stypinska & Turek, 2017).

The ability to manage others' feelings is particularly valuable in 'people work' professions. For example, workers in retail jobs must be able to minimize customer anger during service failures and to enhance positive emotions that are crucial for driving sales and customer loyalty (Niven et al., 2013). 'People work' organizations will become increasingly in need of older workers (Department for Education, 2018), and the analysis presented in this paper suggests a positive outlook for those organizations that make use of their skills. Targeted recruitment strategies and efforts made to retain older workers are important approaches for such organizations to consider.

The implications of the analysis presented in this paper extend beyond job performance to other relevant aspects of organizational life, such as well-being. Prior research indicates that using interpersonal emotion regulation affects workers' well-being (e.g., Niven, Totterdell, Holman, & Headley, 2012). Although attempts to improve others' feelings are usually associated with well-being gains, when such attempts do not solicit positive feedback from those they are directed towards – likely because they are engaged inexpertly – they can lead to well-being depletion (Martínez-Íñigo et al., 2013). Thus, older workers' interpersonal emotion regulation ability might serve as a protective factor for their well-being, through enhancing the success of their regulatory attempts and therefore inducing the positive feedback needed to attain positive well-being outcomes.

On a practical level, the mechanisms underlying success at interpersonal emotion regulation suggest potential pathways for interventions in order to improve regulatory

abilities among workers. Studies involving cognitive training suggest that gains can be made in people's fluid intelligence, including among older adults (Plemons et al., 1978). Similarly, motivation can be altered, for example, through compassion training (Leiberg, Klimecki, & Singer, 2011). As crystallized intelligence reflects experience, greater exposure to relevant situations could also build skills in this domain. However, practice will not automatically improve crystallized intelligence, as one can also crystallize bad habits. Accordingly, and given that the present analysis suggests an older workers advantage in interpersonal emotion regulation, a potentially promising avenue for interventions may be to make use of older workers in role modelling or shadowing exercises, to help develop younger workers through exposure to good examples. Such an approach might serve a dual function in also making older workers feel more valued, thus encouraging them to remain in the organization. Given that older workers may only be more motivated towards interpersonal emotion regulation – and therefore outperform younger workers – in personally meaningful situations, organizations may also seek to enhance the organizational and/or team identification of older workers in order to capitalize on these benefits.

Future directions

Several clear gaps in our knowledge about age and interpersonal emotion regulation ability are evident from the analysis in this paper, which suggest avenues for future investigations. In particular, for most of the composite tasks involved in interpersonal emotion regulation, there is no direct empirical data available on how age relates to performance. Studies of age differences would be particularly valuable if they sought to include younger and older workers, as well as workers who exceed typical working age. This would provide greater insight into not only whether but also *when* age-related changes in the ability to engage in the composite tasks involved in managing others' emotions occur.

One way to collect data on this topic might be to design a realistic, interactive simulation in which the performance of participants from different age groups is compared with respect to a series of tasks. An example might involve an encounter with an angry or sad customer in a store. Participants could play the role of a service agent and respond to multiple tasks throughout the service encounter, representing the tasks involved in interpersonal emotion regulation (e.g., identifying the customer's feelings, setting a goal emotion for the customer, selecting a regulation strategy, choosing when to implement the strategy). Expert raters (e.g., researchers or high performing service agents) could rate the possible options during each task in order to determine the efficacy of participants' responses. Researchers could also study age differences in some of the composite tasks by capitalizing on existing experimental paradigms (e.g., on resource depletion; Martínez-Íñigo et al., 2013).

Field research, for example, involving supervisors' or customers' ratings of the effectiveness of workers' interpersonal emotion regulation, could also be highly informative about overall age differences in the spontaneous use of interpersonal emotion regulation in the workplace, and would address concerns raised about controlled laboratory studies failing to generate the theorized motivational benefits of older workers. However, it would be more difficult to isolate age effects with relation to specific regulation tasks, meaning that this type of research might be less informative about where and why age differences might emerge.

Studies could also explore in more depth some of the conditions under which age differences are magnified or lessened. The conclusions of this analysis on moderators of age differences were largely based on theory, with very few empirical studies actually demonstrating the relevance of the expected moderators. Factors such as personal relevance and the cognitive demand of the situation could therefore be integrated into study designs, either through experimental manipulations or including measures in field research.

An important point to consider, with regards to study design, is the possibility that cross-sectional designs, in which participants are sampled or tested at a single time point, might result in a 'healthy worker' effect biasing the evidence base, because older adults who do suffer deficits are more likely to exit the workforce (Zacher, 2015). Such designs also fail to separate out age effects from birth cohort effects. Longitudinal designs, where participants are sampled on multiple occasions over time, may be helpful in overcoming these issues.

Conclusions

As work organizations increasingly look to employ or continue the employment of older workers, the question of their relative abilities in comparison to younger workers is more pertinent than ever. The present analysis suggests an optimistic conclusion in relation to older workers' abilities in the domain of interpersonal emotion regulation, which is a process that promotes effective performance across a range of roles. However, the lack of direct empirical evidence testing for age-related changes in most of the composite tasks involved in managing others' feelings tempers this conclusion. It is hoped that this article will stimulate more empirical work in this important area, guided by the analysis of tasks involved in interpersonal emotion regulation presented here, in order to broaden the evidence base on the association between age and emotion regulation.

References

Avolio, B. J., Waldman, D. A., & McDaniel, M. A. (1990). Age and work performance in nonmanagerial jobs: The effects of experience and occupational type. *Academy of Management Journal*, *33*(2), 407-422. https://doi.org/10.5465/256331

Baddeley, A. (1992). Working memory. *Science*, *255*(5044), 556-559. https://doi.org/10.1126/science.1736359

Banich, M. T. (2009). Executive function: The search for an integrated account. *Current Directions in Psychological Science*, *18*(2), 89-94. https://doi.org/10.1111/j.1467-8721.2009.01615.x

Baltes, P. B., & Lindenberger, U. (1997). Emergence of a powerful connection between sensory and cognitive functions across the adult life span: A new window to the study of cognitive aging? *Psychology and Aging*, *12*(1), 12-21. https://doi.org/10.1037/0882-7974.12.1.12

Baltes, P. B., Lindenberger, U., & Staudinger, U. M. (2006). Life span theory in developmental psychology. In R. M. Lerner (Ed.), *Handbook of child psychology: Theoretical models of human development* (pp. 569–664). Wiley.

Barrett, L. F., Mesquita, B., & Gendron, M. (2011). Context in emotion perception. *Current Directions in Psychological Science*, *20*(5), 286-290. https://doi.org/10.1177/0963721411422522

Baumeister, R. F., Vohs, K. D., & Tice, D. M. (2007). The strength model of self-control. *Current Directions in Psychological Science*, *16*(6), 351-355. https://doi.org/10.1111/j.1467-8721.2007.00534.x

Beadle, J. N., & De la Vega, C. E. (2019). Impact of aging on empathy: Review of psychological and neural mechanisms. *Frontiers in Psychiatry*, *10*, 331. https://doi.org/10.3389/fpsyt.2019.00331

Beadle, J. N., Sheehan, A. H., Dahlben, B., & Gutchess, A. H. (2015). Aging, empathy, and prosociality. *Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, *70*(2), 213-222. https://doi.org/10.1093/geronb/gbt091

Blanchard-Fields, F. (2007). Everyday problem solving and emotion: An adult developmental perspective. *Current Directions in Psychological Science*, *16*(1), 26-31. https://doi.org/10.1111/j.1467-8721.2007.00469.x

Bonanno, G. A., & Burton, C. L. (2013). Regulatory flexibility: An individual differences perspective on coping and emotion regulation. *Perspectives on Psychological Science*, *8*(6), 591-612. https://doi.org/10.1177/1745691613504116

Botvinick, M. M., Cohen, J. D., & Carter, C. S. (2004). Conflict monitoring and anterior cingulate cortex: an update. *Trends in Cognitive Sciences*, *8*(12), 539-546. https://doi.org/10.1016/j.tics.2004.10.003

Brasseur, S., Grégoire, J., Bourdu, R., & Mikolajczak, M. (2013). The profile of emotional competence (PEC): Development and validation of a self-reported measure that fits dimensions of emotional competence theory. *PloS One*, *8*(5): e62635. https://doi.org/10.1371/journal.pone.0062635

Bugg, J. M., Zook, N. A., DeLosh, E. L., Davalos, D. B., & Davis, H. P. (2006). Age differences in fluid intelligence: contributions of general slowing and frontal decline. *Brain and Cognition*, *62*(1), 9-16. https://doi.org/10.1016/j.bandc.2006.02.006

Bush, G., Luu, P., & Posner, M. I. (2000). Cognitive and emotional influences in anterior cingulate cortex. *Trends in Cognitive Sciences*, *4*(6), 215-222. https://doi.org/10.1016/S1364-6613(00)01483-2

Busselle, R. (2017). Schema theory and mental models. In P. Rossler (Ed.), *The international encyclopedia of media effects* (pp. 1753-1760). Wiley-Blackwell.

Cabello, R., Sorrel, M. A., Fernández-Pinto, I., Extremera, N., & Fernández-Berrocal, P. (2016). Age and gender differences in ability emotional intelligence in adults: A cross-sectional study. *Developmental Psychology*, *52*(9), 1486-1492. https://doi.org/10.1037/dev0000191

Calder, A. J., Burton, A. M., Miller, P., Young, A. W., & Akamatsu, S. (2001). A principal component analysis of facial expressions. *Vision Research*, *41*(9), 1179-1208. https://doi.org/10.1016/S0042-6989(01)00002-5

Carstensen, L. L. (2006). The influence of a sense of time on human development. *Science*, *312*(5782), 1913-1915. https://doi.org/10.1126/science.1127488

Carstensen, L. L., Fung, H. H., & Charles, S. T. (2003). Socioemotional selectivity theory and the regulation of emotion in the second half of life. *Motivation and Emotion*, *27*(2), 103-123. https://doi.org/10.1023/A:1024569803230

Carver, C. S., & Scheier, M. F. (1981). *Attention and self-regulation: A control-theory approach to human behavior*. Springer. https://doi.org/10.1007/978-1-4612-5887-2

Cattell, R. B. (1943). The measurement of adult intelligence. *Psychological Bulletin*, *40*(3), 153-193. https://doi.org/10.1037/h0059973

Charles, S. T. (2010). Strength and vulnerability integration: A model of emotional well-being across adulthood. *Psychological Bulletin*, *136*(6), 1068-1091. https://doi.org/10.1037/a0021232

Cheung, F. Y. L., & Tang, C. S. K. (2010). Effects of age, gender, and emotional labor strategies on job outcomes: Moderated mediation analyses. *Applied Psychology: Health and Well-Being*, *2*(3), 323-339. https://doi.org/10.1111/j.1758-0854.2010.01037.x

Clay, O. J., Edwards, J. D., Ross, L. A., Okonkwo, O., Wadley, V. G., Roth, D. L., & Ball, K. K. (2009). Visual function and cognitive speed of processing mediate age-related decline in memory span and fluid intelligence. *Journal of Aging and Health, 21*(4), 547-566. https://doi.org/10.1177/0898264309333326

Dahling, J. J., & Perez, L. A. (2010). Older worker, different actor? Linking age and emotional labor strategies. *Personality and Individual Differences*, *48*(5), 574-578. https://doi.org/10.1016/j.paid.2009.12.009

Davis, M. H. (1983). The effects of dispositional empathy on emotional reactions and helping: A multidimensional approach. *Journal of Personality*, *51*(2), 167-184. https://doi.org/10.1111/j.1467-6494.1983.tb00860.x

Deci, E. L., & Ryan, R. M. (2000). The" what" and" why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, *11*(4), 227-268. https://doi.org/10.1207/S15327965PLI1104_01

Department for Education (2018). *Employer Skills Survey 2017 research report*. Retrieved May 5, 2020, from https://www.gov.uk/government/publications/employer-skills-survey-2017-uk-report

Diefendorff, J. M., & Gosserand, R. H. (2003). Understanding the emotional labor process: A control theory perspective. *Journal of Organizational Behavior*, *24*(8), 945-959. https://doi.org/10.1002/job.230

Doerwald, F., Scheibe, S., Zacher, H., & Van Yperen, N. W. (2016). Emotional competencies across adulthood: State of knowledge and implications for the work context. *Work, Aging and Retirement*, *2*(2), 159-216. https://doi.org/10.1093/workar/waw013

Eldesouky, L., & English, T. (2018). Another year older, another year wiser? Emotion regulation strategy selection and flexibility across adulthood. *Psychology and Aging*, *33*(4), 572-585. https://doi.org/10.1037/pag0000251

English, T., & Carstensen, L. L. (2013). *Shifts in emotional experience and regulation across adulthood.* In D. Hermans, B. Rimé, & B. Mesquita (Eds.), *Changing emotions* (p. 31–36). Psychology Press.

Eurostat (2019). Ageing Europe: Looking at the lives of older people in the EU. European Commission. https://doi.org/10.2785/811048

Falkenstein, M., Hoormann, J., & Hohnsbein, J. (2001). Changes of error-related ERPs with age. *Experimental Brain Research*, *138*(2), 258-262. https://doi.org/10.1007/s002210100712

Fantini-Hauwel, C., & Mikolajczak, M. (2014). Factor structure, evolution, and predictive power of emotional competencies on physical and emotional health in the elderly. *Journal of Aging and Health*, *26*(6), 993-1014. https://doi.org/10.1177/0898264314535633

Feeney, J., Gaffney, P., & O'Mara, S. M. (2012). Age and cortisol levels modulate judgment of positive and negative facial expressions. *Psychoneuroendocrinology*, *37*(6), 827-835. https://doi.org/10.1016/j.psyneuen.2011.09.015

Fingerman, K. L., & Charles, S. T. (2010). It takes two to tango: Why older people have the best relationships. *Current Directions in Psychological Science*, *19*(3), 172-176. https://doi.org/10.1177/0963721410370297

Foster, J. D., Campbell, W. K., & Twenge, J. M. (2003). Individual differences in narcissism: Inflated self-views across the lifespan and around the world. *Journal of Research in Personality*, *37*(6), 469-486. https://doi.org/10.1016/S0092-6566(03)00026-6

Gabriel, A. S., Cheshin, A., Moran, C. M., & van Kleef, G. A. (2016). Enhancing emotional performance and customer service through human resources practices: A systems perspective. *Human Resource Management Review*, *26*(1), 14-24. https://doi.org/10.1016/j.hrmr.2015.09.003

Gabriel, A. S., Koopman, J., Rosen, C. C., Arnold, J. D., & Hochwarter, W. A. (2019). Are coworkers getting into the act? An examination of emotion regulation in coworker exchanges. *Journal of Applied Psychology, 105*(8), 907-929. https://doi.org/10.1037/apl0000473

Grainger, S. A., Henry, J. D., Phillips, L. H., Vanman, E. J., & Allen, R. (2017). Age deficits in facial affect recognition: The influence of dynamic cues. *Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, *72*(4), 622-632. https://doi.org/10.1093/geronb/gbv100

Gross, J. J. (1998). The emerging field of emotion regulation: An integrative review. *Review of General Psychology*, *2*(3), 271-299. https://doi.org/10.1037/1089-2680.2.3.271

Gross, J. J. (2015). Emotion regulation: Current status and future prospects. *Psychological Inquiry*, *26*(1), 1-26. https://doi.org/10.1080/1047840X.2014.940781

Hallam, G. P., Webb, T. L., Sheeran, P., Miles, E., Niven, K., Wilkinson, I. D., ... & Farrow, T. F. (2014). The neural correlates of regulating another person's emotions: An exploratory fMRI study. *Frontiers in Human Neuroscience*, *8*, 376. https://doi.org/10.3389/fnhum.2014.00376

Hämmerer, D., Müller, V., & Li, S. C. (2014). Performance monitoring across the lifespan: still maturing post-conflict regulation in children and declining task-set monitoring in older adults. *Neuroscience & Biobehavioral Reviews*, *46*(1), 105-123. https://doi.org/10.1016/j.neubiorev.2014.06.008

Hartshorne, J. K., & Germine, L. T. (2015). When does cognitive functioning peak? The asynchronous rise and fall of different cognitive abilities across the life span. *Psychological Science*, *26*(4), 433-443. https://doi.org/10.1177/0956797614567339

Horn, J. L., & Cattell, R. B. (1967). Age differences in fluid and crystallized intelligence. *Acta Psychologica*, *26*, 107-129. https://doi.org/10.1016/0001-6918(67)90011-X

Ickes, W., & Simpson, J. A. (2001). Motivational aspects of empathic accuracy. In G. J. O. Fletcher & M. S. Clark (Eds.), *Blackwell handbook of social psychology: Interpersonal processes*. (pp. 229-249). Blackwell.

Ickes, W., Stinson, L., Bissonnette, V., & Garcia, S. (1990). Naturalistic social cognition: Empathic accuracy in mixed-sex dyads. *Journal of Personality and Social Psychology*, *59*(4), 730-742. https://doi.org/10.1037/0022-3514.59.4.730

Jarman, R. E., & Windsor, T. D. (in press). "Calm down," "Cheer up": How age influences the way we manage emotion in social partners. *Research on Aging*. https://doi.org/10.1177/0164027520946680

John, O. P., & Robins, R. W. (1994). Accuracy and bias in self-perception: individual differences in self-enhancement and the role of narcissism. *Journal of Personality and Social Psychology*, *66*(1), 206- 219. https://doi.org/10.1037/0022-3514.66.1.206.

Johnson, S. J., Machowski, S., Holdsworth, L., Kern, M., & Zapf, D. (2017). Age, emotion regulation strategies, burnout, and engagement in the service sector: Advantages of older workers. *Journal of Work and Organizational Psychology*, *33*(3), 205-216. https://doi.org/10.1016/j.rpto.2017.09.001

Joyce, A. W. (2017). Mechanisms of automaticity and anticipatory control in fluid intelligence. *Applied Neuropsychology: Child*, *6*(3), 212-223. https://doi.org/10.1080/21622965.2017.1317486

Keightley, M. L., Winocur, G., Burianova, H., Hongwanishkul, D., & Grady, C. L. (2006). Age effects on social cognition: Faces tell a different story. *Psychology and Aging*, *21*(3), 558-572. https://doi.org/10.1037/0882-7974.21.3.558

Kenny, G. P., Yardley, J. E., Martineau, L., & Jay, O. (2008). Physical work capacity in older adults: Implications for the aging worker. *American Journal of Industrial Medicine*, *51*(8), 610-625. https://doi.org/10.1002/ajim.20600

Kievit, R. A., Fuhrmann, D., Borgeest, G. S., Simpson-Kent, I. L., & Henson, R. N. (2018). The neural determinants of age-related changes in fluid intelligence: a pre-registered, longitudinal analysis in UK Biobank. *Wellcome Open Research*, *3*: 38. https://doi.org/10.12688/wellcomeopenres.14241.2

Labouvie-Vief, G. (2003). Dynamic integration: Affect, cognition, and the self in adulthood. *Current Directions in Psychological Science*, *12*(6), 201-206. https://doi.org/10.1046/j.0963-7214.2003.01262.x

Labouvie-Vief, G., DeVoe, M., & Bulka, D. (1989). Speaking about feelings: Conceptions of emotion across the life span. *Psychology and Aging*, *4*(4), 425-437. https://doi.org/10.1037/0882-7974.4.4.425

Lain, D., & Vickerstaff, S. (2014). Working beyond retirement age: Lessons for policy. In S. Harper & K. Hamblin (Eds.), *International handbook on ageing and public policy* (pp. 242–255). Edward Elgar.

Leiberg, S., Klimecki, O., & Singer, T. (2011). Short-term compassion training increases prosocial behavior in a newly developed prosocial game. *PloS One*, *6*(3), e17798. https://doi.org/10.1371/journal.pone.0017798

Ligneau-Hervé, C., & Mullet, E. (2005). Perspective-taking judgments among young adults, middle-aged, and elderly people. *Journal of Experimental Psychology: Applied*, *11*(1), 53-60. https://doi.org/10.1037/1076-898X.11.1.53

Little, L. M., Gooty, J., & Williams, M. (2016). The role of leader emotion management in leader–member exchange and follower outcomes. *The Leadership Quarterly*, *27*(1), 85-97. https://doi.org/10.1016/j.leaqua.2015.08.007

Little, L. M., Kluemper, D., Nelson, D. L., & Ward, A. (2013). More than happy to help? Customer-focused emotion management strategies. *Personnel Psychology*, *66*(1), 261-286. https://doi.org/10.1111/peps.12010

Long, M. R., Horton, W. S., Rohde, H., & Sorace, A. (2018). Individual differences in switching and inhibition predict perspective-taking across the lifespan. *Cognition*, *170*, 25-30. https://doi.org/10.1016/j.cognition.2017.09.004

Madrid, H. P., Niven, K., & Vasquez, C. A. (2019). Leader interpersonal emotion regulation and innovation in teams. *Journal of Occupational and Organizational Psychology*, *92*(4), 787-805. https://doi.org/10.1111/joop.12292

Martínez-Íñigo, D., Poerio, G. L., & Totterdell, P. (2013). The association between controlled interpersonal affect regulation and resource depletion. *Applied Psychology: Health and Well-Being*, *5*(2), 248-269. https://doi.org/10.1111/aphw.12009

Mayer, J., Salovey, P., Caruso, D., & Sitarenios, G. (2003). Measuring emotional intelligence with the MSCEIT V2.0. Emotion, 3, 97-105. https://doi.org/10.1037/1528-3542.3.1.97

Murphy, N. A., Lehrfeld, J. M., & Isaacowitz, D. M. (2010). Recognition of posed and spontaneous dynamic smiles in young and older adults. *Psychology and Aging*, *25*(4), 811-821. https://doi.org/10.1037/a0019888

Murry, M. (2018). *Interpersonal emotion regulation in younger and older adults* (Unpublished doctoral dissertation) Northeastern University, Boston.

Netzer, L., Van Kleef, G. A., & Tamir, M. (2015). Interpersonal instrumental emotion regulation. *Journal of Experimental Social Psychology*, *58*, 124-135. https://doi.org/10.1016/j.jesp.2015.01.006

Newman, D. A., Joseph, D. L., & MacCann, C. (2010). Emotional intelligence and job performance: The importance of emotion regulation and emotional labor context. *Industrial and Organizational Psychology*, *3*(2), 159-164. https://doi.org/10.1111/j.1754-9434.2010.01218.x

Ng, T. W., & Feldman, D. C. (2012). Evaluating six common stereotypes about older workers with meta-analytical data. *Personnel Psychology*, *65*(4), 821-858. https://doi.org/10.1111/peps.12003

Niven, K. (2016). Why do people engage in interpersonal emotion regulation at work? *Organizational Psychology Review*, *6*(4), 305-323. https://doi.org/10.1177/2041386615612544

Niven, K. (2017). The four key characteristics of interpersonal emotion regulation. *Current Opinion in Psychology*, *17*, 89-93. https://doi.org/10.1016/j.copsyc.2017.06.015

Niven, K., Totterdell, P., & Holman, D. (2009). A classification of controlled interpersonal affect regulation strategies. *Emotion*, *9*(4), 498-509. https://doi.org/10.1037/a0015962

Niven, K., Totterdell, P., Holman, D., & Cameron, D. (2013). Emotional labor at the unit-level. In A. A. Grandey, J. M. Diefendorff, & D. E. Rupp (Eds.), *Emotional labor in the 21st century* (pp. 121-144). Taylor and Francis. https://doi.org/10.4324/9780203100851

Niven, K., Totterdell, P., Holman, D., & Headley, T. (2012). Does regulating others' feelings influence people's own affective well-being? *Journal of Social Psychology*, *152*(2), 246-260. https://doi.org/10.1080/00224545.2011.599823

Niven, K., Troth, A. C., & Holman, D. (2019). Do the effects of interpersonal emotion regulation depend on people's underlying motives? *Journal of Occupational and Organizational Psychology*, *92*(4), 1020-1026. https://doi.org/10.1111/joop.12257

North, M. S. (2019). A GATE to understanding "older" workers: Generation, age, tenure, experience. *Academy of Management Annals*, *13*(2), 414-443. https://doi.org/10.5465/annals.2017.0125

Plemons, J. K., Willis, S. L., & Baltes, P. B. (1978). Modifiability of fluid intelligence in aging: A short-term longitudinal training approach. *Journal of Gerontology*, *33*(2), 224-231. https://doi.org/10.1093/geronj/33.2.224

Rabbitt, P. (2016). Crystallized intelligence. In N. A. Pachana (Ed.), *Encyclopedia of geropsychology*. Springer Science. https://doi.org/10.1007/978-981-287-080-3_147-1

Reeck, C., Ames, D. R., & Ochsner, K. N. (2016). The social regulation of emotion: An integrative, cross-disciplinary model. *Trends in Cognitive Sciences*, *20*(1), 47-63. https://doi.org/10.1016/j.tics.2015.09.003

Reed, A. E., & Carstensen, L. L. (2012). The theory behind the age-related positivity effect. *Frontiers in Psychology*, *3*, 339. https://doi.org/10.3389/fpsyg.2012.00339

Richter, D., & Kunzmann, U. (2011). Age differences in three facets of empathy: Performance-based evidence. *Psychology and Aging*, *26*(1), 60-70. https://doi.org/10.1037/a0021138

Riediger, M., Schmiedek, F., Wagner, G. G., & Lindenberger, U. (2009). Seeking pleasure and seeking pain: Differences in prohedonic and contra-hedonic motivation from adolescence to old age. *Psychological Science*, *20*(12), 1529-1535. https://doi.org/10.1111/j.1467-9280.2009.02473.x

Ruffman, T., Henry, J. D., Livingstone, V., & Phillips, L. H. (2008). A meta-analytic review of emotion recognition and aging: Implications for neuropsychological models of aging. *Neuroscience & Biobehavioral Reviews*, *32*(4), 863-881. https://doi.org/10.1016/j.neubiorev.2008.01.001

Salovey, P., & Mayer, J. D. (1990). Emotional intelligence. *Imagination, Cognition and Personality*, *9*(3), 185-211. https://doi.org/10.2190/DUGG-P24E-52WK-6CDG

Salthouse, T. A. (1996). The processing-speed theory of adult age differences in cognition. *Psychological Review*, *103*(3), 403-428. https://doi.org/10.1037/0033-295x.103.3.403

Schalk, R., Van Veldhoven, M., De Lange, A. H., De Witte, H., Kraus, K., Stamov-Roßnagel, C., ... & Bertrand, F. (2010). Moving European research on work and ageing forward: Overview and agenda. *European Journal of Work and Organizational Psychology*, *19*(1), 76-101. https://doi.org/10.1080/13594320802674629

Scheibe, S., & Blanchard-Fields, F. (2009). Effects of regulating emotions on cognitive performance: What is costly for young adults is not so costly for older adults. *Psychology and Aging, 24*(1), 217-223. https://doi.org/10.1037/a0013807

Scheibe, S., Mata, R., & Carstensen, L. L. (2011). Age differences in affective forecasting and experienced emotion surrounding the 2008 US presidential election. *Cognition & Emotion*, *25*(6), 1029-1044. https://doi.org/10.1080/02699931.2010.545543

Scheibe, S., & Zacher, H. (2013). A lifespan perspective on emotion regulation, stress, and well-being in the workplace. In P. L. Perrewé, C. C. Rosen, & J. R. B. Halbesleben (Eds.), *Research in occupational stress and well-being: Vol. 11. The role of emotion and emotion regulation in job stress and well being* (pp. 163-193). Emerald Group Publishing. https://doi.org/10.1108/S1479-3555(2013)0000011010

Schmeichel, B. J., Volokhov, R. N., & Demaree, H. A. (2008). Working memory capacity and the self-regulation of emotional expression and experience. *Journal of Personality and Social Psychology*, *95*(6), 1526-1540. https://doi.org/10.1037/a0013345

Simões-Franklin, C., Hester, R., Shpaner, M., Foxe, J. J., & Garavan, H. (2010). Executive function and error detection: the effect of motivation on cingulate and ventral striatum activity. *Human Brain Mapping*, *31*(3), 458-469. https://doi.org/10.1002/hbm.20879

Slessor, G., Miles, L. K., Bull, R., & Phillips, L. H. (2010). Age-related changes in detecting happiness: Discriminating between enjoyment and nonenjoyment smiles. *Psychology and Aging*, *25*(1), 246-250. https://doi.org/10.1037/a0018248

Sliter, M., Chen, Y., Withrow, S., & Sliter, K. (2013). Older and (emotionally) smarter? Emotional intelligence as a mediator in the relationship between age and emotional labor strategies in service employees. *Experimental Aging Research*, *39*(4), 466-479. https://doi.org/10.1080/0361073X.2013.808105

Stypinska, J., & Turek, K. (2017). Hard and soft age discrimination: the dual nature of workplace discrimination. *European Journal of Ageing*, *14*(1), 49-61. https://doi.org/10.1007/s10433-016-0407-y

Sze, J. A., Goodkind, M. S., Gyurak, A., & Levenson, R. W. (2012). Aging and emotion recognition: Not just a losing matter. *Psychology and Aging*, *27*(4), 940-950. https://doi.org/10.1037/a0029367

Tamir, M. (2009). What do people want to feel and why? Pleasure and utility in emotion regulation. *Current Directions in Psychological Science*, *18*(2), 101-105. https://doi.org/10.1111/j.1467-8721.2009.01617.x

Tamir, M. (2016). Why do people regulate their emotions? A taxonomy of motives in emotion regulation. *Personality and Social Psychology Review*, *20*(3), 199-222. https://doi.org/10.1177/1088868315586325

Tice, D. M., & Bratslavsky, E. (2000). Giving in to feel good: The place of emotion regulation in the context of general self-control. *Psychological Inquiry*, *11*(3), 149-159. https://doi.org/10.1207/S15327965PLI1103_03

Troth, A. C., Lawrence, S. A., Jordan, P. J., & Ashkanasy, N. M. (2018). Interpersonal emotion regulation in the workplace: a conceptual and operational review and future research agenda. *International Journal of Management Reviews*, *20*(2), 523-543. https://doi.org/10.1111/ijmr.12144

Urry, H. L., & Gross, J. J. (2010). Emotion regulation in older age. *Current Directions in Psychological Science*, *19*(6), 352-357. https://doi.org/10.1177/0963721410388395

Wang, J. J., & Kaufman, A. S. (1993). Changes in fluid and crystallized intelligence across the 20-to 90-year age range on the K-BIT. *Journal of Psychoeducational Assessment*, *11*(1), 29-37. https://doi.org/10.1177/073428299301100104

Wang, Y., & Yang, L. (2014). Suppression (but not reappraisal) impairs subsequent error detection: An ERP study of emotion regulation's resource-depleting effect. *PloS One*, *9*(4), e96339. https://doi.org/10.1371/journal.pone.0096339

Webb, T. L., Schweiger Gallo, I., Miles, E., Gollwitzer, P. M., & Sheeran, P. (2012). Effective regulation of affect: An action control perspective on emotion regulation. *European Review of Social Psychology*, *23*(1), 143-186. https://doi.org/10.1080/10463283.2012.718134

Wieck, C., & Kunzmann, U. (2015). Age differences in empathy: Multidirectional and context-dependent. *Psychology and Aging*, *30*(2), 407-419. https://doi.org/10.1037/a0039001

Yuan, P., Voelkle, M. C., & Raz, N. (2018). Fluid intelligence and gross structural properties of the cerebral cortex in middle-aged and older adults: A multi-occasion longitudinal study. *NeuroImage*, *172*, 21-30. https://doi.org/10.1016/j.neuroimage.2018.01.032

Zacher, H. (2015). Successful aging at work. *Work, Aging and Retirement*, *1*(1), 4-25. https://doi.org/10.1093/workar/wau006

Zaki, J. (2020). Integrating empathy and interpersonal emotion regulation. *Annual Review of Psychology*, *71*, 517-540. https://doi.org/10.1146/annurev-psych-010419-050830

Zaki, J., & Williams, W. C. (2013). Interpersonal emotion regulation. *Emotion*, *13*(5), 803-810. https://doi.org/10.1037/a0033839

Zapf, D., Johnson, S. J., & Beitler, L. A. (2019). Lifespan perspectives on emotion, stress, and conflict management. In B. B. Baltes, C. W. Rudolph, & H. Zacher (Eds.), *Work across the lifespan* (pp. 533-560). Academic Press.

Table 1. Interpersonal emotion regulation strategy types (based on Gross, 2015)

Strategy type	Description	Example
Situation selection	Strategies that involve putting the target in an environment expected to elicit goal emotions or taking the target out of an environment expected to elicit contra-goal emotions	Inviting team members to a fun social event
Situation modification	Strategies that involve changing the environment the target is already in such that the stimulus that elicited a contra-goal emotion is removed or altered, or a new stimulus is introduced to promote goal emotions	Intervening in an argument between colleagues to reduce the level of conflict in the discussion
Attentional deployment	Strategies that involve shifting the target's attention away from or towards an emotion-eliciting stimulus	Telling a joke to distract a subordinate from disappointing news
Cognitive change	Strategies that involve altering how the target appraises a stimulus in order to change its emotional impact	Reframing a customer's long wait in a restaurant as being due to the food being freshly cooked
Response modulation	Strategies that involve changing the target's outward expression of emotion	Telling a client to calm down

Table 2. Age-related differences in interpersonal emotion regulation

Regulation tasks	Influences on success	Predicted age effects	Predicted moderators	Empirical evidence
Stage 1: Identification of target's emotions				
• Detect and categorize emotion in others based on external cues • Calibrate signs of emotion in others within social contexts	• Fluid intelligence • Crystallized intelligence, motivation	• Younger workers will be better at detection and categorization of emotion cues than older workers • Older workers will be more able to calibrate emotional cues than younger workers • Overall, there will be no age differences in performance at this stage	When under high cognitive load and/or when the situation is of low personal relevance, younger workers will outperform older workers. Conversely, under low load and/or high relevance, older workers will outperform younger workers	Direct evidence is supportive of lack of age differences and proposed moderators
Stage 2: Evaluation of the need for regulation				
• Determine an appropriate goal emotion for the target • Appraise whether or not regulation is necessary	• Motivation • Motivation	• Older workers will set more appropriate goal states than younger workers • Older workers will be more accurate at monitoring discrepancies between current and goal emotions than younger workers • Overall, age will be positively related to performance at this stage	Boundaries to the older worker advantage will occur when the situation is of low personal relevance	Indirect evidence is mostly consistent with performance advantages for older workers; no evidence for moderators

Stage 3: Selection of an interpersonal emotion regulation strategy				
• Decide whether to take an active or passive regulatory approach • Decide which strategy(s) will be most effective in the given situation	• Crystallized intelligence, fluid intelligence • Crystallized intelligence, motivation	• The overall quality of decisions will be similar • Older workers will make better decisions about which strategies to select • Overall, age will be positively related to performance at this stage	Boundaries to the older worker advantage will occur when the regulator is under high cognitive load and/or the situation is of low personal relevance	Indirect evidence is mostly consistent with performance advantages for older workers; no evidence for moderators
Stage 4: Implementation of interpersonal emotion regulation				
• Identify an appropriate time to regulate others' emotions • Apply the chosen interpersonal emotion regulation strategy • Applying another strategy or strategies if initial regulation attempt is not successful	• Crystallized intelligence, motivation • Fluid intelligence or crystallized intelligence • Crystallized intelligence, fluid intelligence, motivation	• Older workers will be more able to identify opportunities for regulation • Younger workers will have greater regulatory resources, but older workers will compensate through selection and optimization of strategies • Workers will be equally effective at deciding if another attempt is needed, but older workers will have a larger repertoire to select a new strategy from • Overall, age will be positively related to performance at this stage	Boundaries to the older worker advantage will occur when the regulator is under high cognitive load and/or the situation is of low personal relevance	Indirect evidence is mostly consistent with performance advantages for older workers; no evidence for moderators