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Tasks, Capacities, and Tactics: A Skill-Based Conceptualization of Emotion Regulation Across the Lifespan

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[-] Abstract and Keywords

Although widely asserted that emotion regulation improves with age, little empirical evidence is directly demonstrative of this claim. This essay examines the available work through the lens offered by developmental functionalism—a lifespan theory of emotion and emotion regulation. Following an outline of the theory and its emphasis on regulatory tasks, capacities, and tactics, the essay reviews experimental work testing age-related variation in emotion regulation. As predicted, depending on the specific skill, data indicate considerable variation in whether skills improve or decline with age. Although situational selection, positive reappraisal, use of social resource, and acceptance generally improve with age, regulatory skills relying on specific capacities (notably, executive processing) decline or remain unchanged. Patterns are interpreted in terms of age-related differences in regulatory tasks and capacities, as well as in the specific tactics used to accomplish particular regulatory ends. Directions for future empirical work are given.

Keywords: emotion, emotion regulation, lifespan development, later life, reappraisal, acceptance, suppression, developmental functionalism

Emotion and emotion regulation are centrally implicated in adaptive functioning across the lifespan. Predominantly studied among children and adolescents, regulatory capacities are nonetheless a cornerstone for adaptive success across the lifespan (Gross & Thompson, 2007; Troy, Shallcross, Wilhelm, & Mauss, 2010a) and appear among the most highly developed functions of adulthood (Muraven, Tice, & Baumeister, 1998). Less clear are questions regarding why emotions and emotion regulation change in the ways they do across the adult lifespan, which aspects of regulatory functioning improve and decline, whether people of different ages are regulating toward the same endpoints (targets), or how changes in basic capacities may be involved. This essay outlines the core assertions of developmental functionalism, a lifespan theory of emotion and its regulation. This view suggests that emotion regulatory processes are usefully conceptualized in terms of the conjoint influences of three phenomena—tasks, capacities, and tactics. From within this framework, it is argued that regulating the different components of emotions represent distinct regulatory tasks, particularly where the capacities necessary for varied forms of regulation are fluctuating developmentally; consequently, distinct patterns of regulatory tactics are used among adults from different ages. A systematic review of experimental work examining age-related variation in emotion regulation is presented and directions for future research based around the concepts of task, capacity, and tactic are outlined.

Developmental Functionalism: A Brief Overview

Developmental functionalism is a discrete emotions-based approach to the study of emotions (Consedine & Magai, 2003; Consedine, Magai, & Bonanno, 2002; Consedine & Moskowitz, 2007), emotion regulation (Consedine, 2011a;

2011b; Magai, Consedine, Krivoshekova, McPherson, & Kudadjie-Gyamfi, 2006), and their links to adaptive outcomes that pays explicit attention to lifespan developmental contexts. In this view, discrete emotions are evolved adaptations that were selected because they historically helped promote adaptive responding to recurrent classes of adaptive challenge or opportunity (Nesse, 1990). They are evolutionarily adaptive and developmentally calibrated problem solvers.

Emotions: Tasks, Capacities, and Tactics

Developmental functionalism differs from other functionalist theories insofar as it attends to the fact that adaptive challenges (tasks) vary developmentally. Early challenges like ensuring parental attention (Bowlby, 1969), internalizing physical rules, and so on are supplanted across the lifespan by challenges such as mate choice and retention, alliance, and cheater detection (Tooby & Cosmides, 2008); knowledge transmission (Carstensen & Löckenhoff, 2003); and managing reductions in systemic resources (Baltes, 1997). Such variation implies that emotions' functions also vary developmentally. If (a) emotions were selected because they facilitated adaptive responding to challenges (Tooby & Cosmides, 2008) and (b) adaptive challenges vary developmentally, it logically follows that the functions of emotions also vary across the lifespan.

Second, developmental functionalism asserts that the ways in which emotions facilitate adaptive functioning are built on basic capacities that vary across the lifespan (Consedine, 2011b). Some capabilities are available early in life, some take time to develop, and some develop and then fade as the organism ages. The functional manifestations of emotions are seen in cognitive (Keltner, Ellsworth, & Edwards, 1993), physiological (Levenson, 1994), signal (Brown & Consedine, 2004), experiential (Izard, 1991), and behavioral channels (Consedine, Strongman, & Magai, 2003). Although components tend to co-occur, at least in early life and/or when emotions are intense, each may have distinct functional roles in adaptation (Averill, 1994; Consedine & Moskowitz, 2007). Importantly, whether the specific capabilities (e.g., locomotion, expressive control, representational ability) needed for particular functions have come online is critical; emotions can only manifest their functions through those aspects of the system that are available and may thus constrain how functions manifest at different ages (Consedine, 2011b).

Because organisms of different ages are attempting to accomplish age-normatively varying tasks with capabilities that also fluctuate in an age-normative manner, developmental functionalism suggests that selective pressures create a *tactical* need to calibrate emotional functioning to the capabilities of the organism. Although emotions are predominantly selected for their utility in meeting early life demands (Baltes, 1997; Dennett, 1995; Schulz, Wrosch, & Heckhausen, 2002), there may be some exceptions in terms of deferred adaptations (Bjorklund & Pelligrini, 2002; Hernandez-Blasi & Bjorklund, 2003) or later life inclusive fitness (Carstensen & Löckenhoff, 2003). Traits may adjust dynamically through the interactions of inherited predispositions and current cues to fitness (Bjorklund & Bering, 2002; Ellis & Garber, 2000; Gottlieb, 2002a; 2002b). Logically, current cues may include evaluations of current capacity and, at least in theory, selective pressures on the postreproductive years can exist to the extent to which such characteristics enhance inclusive fitness (Carstensen & Löckenhoff, 2003; Gurven & Kaplan, 2009; Kachel, Premo, & Hublin, 2011). Emotions' functions are differentially manifest in the systems of infants, adolescents, and younger and older adults precisely *because* we have different physical, cognitive, experiential, behavioral, and social capacities at different developmental stages.

Emotion Regulation: Tasks, Capacities, and Tactics

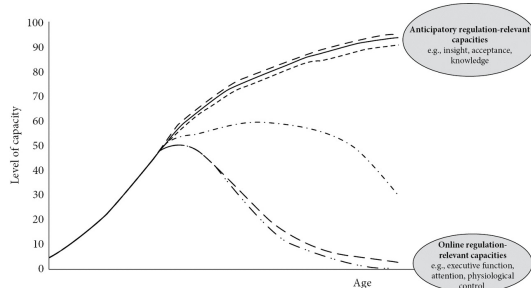
In addition to providing a useful metaphor for conceptualizing the evolutionary processes underlying the design of emotions, developmental functionalism suggests that these same three concepts—task, capacity, and tactic—provide a useful framework for organizing observations regarding age-related variation in emotion regulation. Rather than assume (or infer) that the target of regulation is to maximize felt positive emotion (Charles, Mather, & Carstensen, 2003), developmental functionalism suggests vast differentiation in the targets of regulation—the tasks that individuals of different ages are attempting.

The highly differentiated emotional repertoire seen among humans exists because distinct emotions have generally proven adaptive in specific contexts (Consedine, 2011b). Some aspects of experiential regulatory motivations are thus likely to be constrained by the core functions of each discrete emotion's experience (e.g., shame is

necessarily experienced as aversive) although other aspects (e.g., learning that shame experiences can be forestalled by skill acquisition, secrecy, or situational avoidance) are not. Although the question of age-related variation in regulatory goals remains poorly explored, research suggests that regulatory goals (in general) are well differentiated (Hackenbracht & Tamir, 2010; Rusk, Tamir, & Rothbaum, 2011; Tamir, 2011; Tamir & Ford, 2009).

Functionalist reasoning suggests that experiential versus expressive regulatory goals should be distinguished (Brown & Consedine, 2004) and that hedonic versus instrumental motivations are both evidenced in experiential regulatory processes (Tamir, Mitchell, & Gross, 2008). The ability of distinct emotional signals to influence the social environment (Brown & Consedine, 2004; Fridlund, 1994; Owren & Bachorowski, 2001) implies variation at the level of discrete emotions, and there is reason to expect further variation in whether regulatory targets concentrate on issues of experiential frequency, intensity, or duration. Consistent with other models (Gross, 1998; Westphal & Bonanno, 2004), developmental functionalism suggests that experiential and expressive regulatory targets are highly differentiated and (despite the current absence of data) that age-related variation in regulatory targets is a near certainty.

Furthermore, the view outlined here suggests that understanding age differences in emotion regulation requires an appreciation of (a) the resources necessary to accomplish regulatory goals and (b) age-normative variation in those capacities. Emotion regulation is a *skill* (Bonanno, Papa, Lalande, Westphal, & Coifman, 2004; Gross, 2001; Gross et al., 1997; Labouvie-Vief, Lumley, Jain, & Heinze, 2003; Magai et al., 2006; Troy et al., 2010a), and the capacity requirements underlying the deployment of regulatory skills remain unclear. The fact that emotion regulation emerges late in child development (Eisenberg, 2000) does, however, suggest that these requirements are complex (Consedine, 2011a). Many emotion regulatory processes require aspects of self-awareness and cultural referencing (Saarni, 1989), executive functioning (Ochsner & Gross, 2005; Urry & Gross, 2010), linguistic capacities (Eisenberg, Sadovsky, & Spinrad, 2005), knowledge of others' beliefs, intentions, and desires (Charles & Piazza, 2009), and an understanding of the connections between emotions and internal processes (Thompson & Meyer, 2007). Developmental functionalism distinguishes between two broad classes of capacity—those reflecting basic biological capacities and those reflecting acquired characteristics (Consedine, 2011a)—suggesting that the former reflect basic competencies that fluctuate in line with general developmental processes while the latter denote acquired (learned) capacities and are, commensurately, more idiosyncratic.



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Figure 10.1 . Depiction of normative developmental changes in capacities relevant to online versus anticipatory emotion regulation.

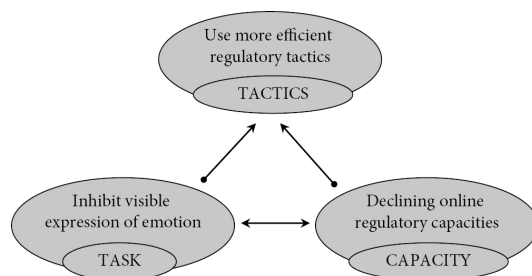
The capacities needed for different forms of regulation have complex trajectories of improvement and decline across adulthood (see Figure 10.1). Relative to younger groups, older adults appear more reflective and conscious of emotions and themselves and have greater knowledge regarding emotions, the links between situations and emotions, and the effects of emotion on others (Charles & Piazza, 2009; Labouvie-Vief, Chiodo, Goguen, Diehl, & Orwoll, 1995; Labouvie-Vief, Hakin-Larson, DeVoe, & Schoeberlein, 1989). In developmental functionalism, these capacities are seen as being particularly important to anticipatory regulation. Conversely, however, older adults have fewer somatic resources, reduced energy (Panksepp & Miller, 1995), reduced physiological flexibility (De Meersman & Stein, 2006), as well as a reduced capacity for executive tasks such as planning, inhibition, task switching, abstraction, and selective attention (Gilhooly, Phillips, Wynn, Logie, & Della Sala, 1999; Kray & Lindenberger, 2000; Maylor & Lavie, 1998). In developmental functionalism, declines in these capacities may impair “online” or reactive-type regulation and creates a specific need for the use of alternate regulatory tactics.

As in the evolved design of the emotions themselves, developmental functionalism suggests that fluctuating capacity sets creates a need for alterations in the tactics individuals use to attain regulatory goals. Persons of

different ages (and thus different regulatory tasks, goals, and capacities) operate in a manner that treats regulatory targets as problems to be solved. Because regulatory capacities change, different individuals *must* use distinct patterns of regulatory tactic. Over time, for example, some regulatory tasks may become automatized and require fewer resources (Mauss, Bunge, & Gross, 2007; Mauss, Evers, Wilhelm, & Gross, 2006); design-wise, automatization is a tactical solution to the trade-off between task and capacity. More broadly, developmental changes in capacity may make certain targets and tactics more and less viable and/or effective for individuals of different ages. Consistent with Baltes' model of selection, optimization, and compensation (Baltes, 1987; 1997), the view offered here suggests that changes in regulatory capacities promote changes in both the targets of regulation as well as in the strategies used to attain them.

By definition, regulation requires effort and should deplete a finite regulatory reservoir (Baumeister, Bratslavsky, Muraven, & Tice, 1998). Where the resource pool is reduced, tactics may necessarily become more "efficient" in terms of desired outcomes. Consistent with this view, older adults appear to differentially favor regulatory tactics such as situational selection, conflict avoidance and minimization, and reduced interpersonal reactivity (Birditt, Fingerman, & Almeida, 2005), and exhibit greater flexibility in problem-solving (Blanchard-Fields, Chen, & Norris, 1997) and goal adjustment processes (Heckhausen, 1997). Emotional understanding acquired across a lifespan may permit later-life adults to more effectively seek and manage environments that further their emotional goals. It may be that the raw "amount" of some regulatory capacities declines in later life but that such reductions are offset by an increased ability to effectively *deploy* the resources that are available—a change in regulatory tactic. These relations are graphically depicted in Figure 10.2.

Empirical Findings: Age-Related Changes in Emotion Regulation Across the Lifespan



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Figure 10.2 . The task, capacity, and tactic framework as applied to changes in emotion regulation across the adult lifespan.

Although it has been widely suggested that emotion regulation improves with age (Blanchard-Fields, 2007; Carstensen, Fung, & Charles, 2003; Carstensen & Mikels, 2005; Urry & Gross, 2010), surprisingly little empirical evidence is directly demonstrative of this claim. One reason for this lack of unambiguous empirical evidence may be that we have often treated emotion regulation as a unitary construct, neglecting to consider that different regulatory tasks rely on different sets of age-related capacities (Opitz, Gross, & Urry, 2012; Shiota & Levenson, 2009; Urry & Gross, 2010). Because of its focus on emotion regulation as a skill and the underlying capacity changes, developmental functionalism may help advance our thinking about the link between age and emotion regulation insofar as it leads to predictions about which specific *types* of emotion regulation may decline and which ones may improve with age.

As noted, advancing age typically sees executive cognitive functions such as planning, inhibition, task switching, abstraction, and selective attention decline (Gilhooly et al., 1999; Kray & Lindenberger, 2000; Maylor & Lavie, 1998; Nessler, Friedman, Johnson, & Bersick, 2007) whereas resources such as the capacity to generate positive emotional states, social skills, and emotional understanding appear to improve (Blanchard-Fields, 2007; Carstensen & Jacobs, 1993; Carstensen et al., 2011; Charles & Piazza, 2009; Nielsen, Knutson, & Carstensen, 2008; Scheibe & Blanchard-Fields, 2009). In developmental functionalism, this pattern of age-related changes in resources allows us to make predictions regarding the *types* of regulation that should decline and improve with age. Specifically, we would expect that greater age should bring declines in forms of regulation that rely primarily on executive functioning but improvements in types of regulation that are not so reliant and/or that reflect developmental changes in emotion-related motivations, social skills, or understanding/knowledge regarding emotions.

Here, we review the evidence on types of emotion regulation that either decline or improve with age. In this review, we focus on studies that have examined emotion regulation directly rather than its putative downstream effects, such as experienced emotion or emotional well-being. Where possible, we focus on studies that have evaluated successful (rather than attempted) regulation use because our predictions regard successful use of emotion regulation skills rather than attempted use (Troy, Shallcross, Wilhelm, & Mauss, 2010). Similarly, we concentrate on evidence from laboratory paradigms rather than surveys because laboratory data may be less biased by desirability, motivation, or the limits to introspection (Barrett, 1997; Robinson & Clore, 2002).

Types of Emotion Regulation That May Decline With Age

At least two comparatively well-studied types of emotion regulation rely primarily on executive capacities and should therefore decline with age: cognitive reappraisal used to decrease negative emotion and expressive suppression.

Cognitive Reappraisal Used to Decrease Negative Emotion

Reappraisal techniques, such as adopting a more detached perspective on an emotional event or making it less self-relevant, are among the most common strategies used to reduce negative experience (Gross, Richards, & John, 2006). Because such regulation is based on executive functions (Ochsner & Gross, 2005), age should be related to declines in the effectiveness of such strategies. Using a multimethod laboratory paradigm to index cognitive reappraisal success among adults aged 20–69, Shiota and Levenson (2009) found that age was related to declines in “detached reappraisal” (a type of reappraisal primarily aimed at decreasing negative emotion). Another work denotes a similar finding (Opitz, Rauch, Terry, & Urry, 2012). In this study, older relative to younger adults showed a lower ability to utilize cognitive reappraisal to decrease negative emotion. Thus, even though adults in their early 60s (“young old” people) report using cognitive reappraisal *more frequently* than do younger adults (John & Gross, 2004), older compared to younger adults appear to be less successful at using reappraisal to reduce negative experience.

Expressive Suppression

Reducing the visible signals of an emotion—expressive suppression—appears to be similarly reliant on executive functions (Baumeister et al., 1998; Richards & Gross, 2000; Schmeichel, Volokhov, & Demaree, 2008). Consequently, aging should predict a reduced ability to suppress expressions of felt emotion. However, whereas self-report data suggest suppression is used less frequently with greater age (John & Gross, 2004), the question of “success” is unclear. Several recent studies testing whether age is related to suppression success (Emery & Hess, 2011; Kunzmann, Kupperbusch, & Levenson, 2005; Magai et al., 2006; Phillips, Henry, Hosie, & Milne, 2008; Shiota & Levenson, 2009) have failed to find age differences in expressive suppression. Although there has been some suggestion of age-related variation in the specific tactic used to attain successful suppression (Magai et al., 2006), it may also be that only the most severe declines in executive functioning lead to decrements in suppressive ability (Shiota & Levenson, 2009).

Types of Emotion Regulation That May Improve With Age

Four types of emotion regulation do not appear to rely primarily on executive functions or rely on the generation of positive emotional states, social skills, and understanding emotions. Such regulatory tasks should therefore show no declines or even reveal improvements with age.

Positive Reappraisal

Unlike reappraisal in the service of decreasing negative emotion, reappraisal in the service of increasing positive emotion (“positive reappraisal”) may not require the types of executive function that decrease with age. This might be because the generation of positive emotion relies on different cognitive and neural mechanisms than the decrease of negative emotion (e.g., McRae, Ochsner, Mauss, Gabrieli, & Gross, 2008), including the strategic recall of positive memories and the “pull” (rather than effortful direction) of attention to positive aspects of a situation. Unlike executive functions, older adults appear more effective than younger adults at such approaches (Charles et al., 2003; Isaacowitz, Toner, & Neupert, 2009; Isaacowitz, Wadlinger, Goren, & Wilson, 2006; Mather &

Carstensen, 2005). Relative to younger groups, older adults report greater reliance on positive reappraisal (Charles & Carstensen, 2008), and laboratory work shows that they are better at implementing a positive refocusing strategy (thinking of a positive memory while viewing a negative film clip) (Phillips et al., 2008). More recently, a multimethod study contrasting detached and positive forms of reappraisal found that older (vs. younger) adults showed improvements in positive but impairments in detached reappraisal (Shiota & Levenson, 2009). Taken as a whole, this evidence suggests that it is positive reappraisal in particular (vs. reappraisal to reduce negative emotion) that improves with age.

Using Social Support

Although the overall size of the social network tends to decrease over the lifespan (Morgan, 1988), older adults prioritize and may have a greater proportion of close relationships (Lang, 2001; Lang & Carstensen, 1994). Data suggest that older adults also experience fewer negative interactions and less anger in close relationships than do healthy younger adults (Akiyama, Antonucci, Takahashi, & Langfahl, 2003; Birditt & Fingerman, 2005; Birditt et al., 2005). Because their interactions are focused on close, relatively positive relationships from which they can draw support, older adults may have higher levels of social support than do younger adults (Opitz, Gross et al., 2012). Use of social support may represent a particularly effective means of regulating emotions in later life by reducing negative emotion and increasing positive emotion (Cacioppo, Hughes, Waite, Hawkley, & Thisted, 2006; Steverink & Lindenberg, 2006). People who report experiencing more positive social relationships also score higher on measures of ability to strategically regulate emotions (Lopes et al., 2004; Lopes, Salovey, Cote, Beers, & Petty, 2005) perhaps implying that social support may facilitate other forms of emotion regulation. Together, this evidence supports the notion that, with age, adults become better at utilizing social resources to regulate emotion.

Situation Selection and/or Modification

Selecting or changing situations in such a way as to facilitate the avoidance/minimization of nondesired states and/or attainment of desired states is one emotion regulation strategy that may increase with age because it does not rely on executive functions and because it does rely on skills that appear to improve with age: knowledge about emotions, and, in particular, affective forecasting (Blanchard-Fields, Mienaltowski, & Seay, 2007; Scheibe, Mata, & Carstensen, 2011). Although available data provide only somewhat indirect evidence, studies suggest that older adults are more likely to effectively avoid (or avoid escalating) unpleasant social situations (Birditt et al., 2005; Blanchard-Fields, 2007; Blanchard-Fields et al., 1997; Charles & Carstensen, 2008; Charles & Piazza, 2009) and experience lower negative emotion in conflict situations (Charles, Piazza, Luong, & Almeida, 2009). This ability may be specific to social contexts because, in nonsocial problem situations, older adults are at least as likely as young adults to continue engaging in problem-focused (as compared to avoidant) coping (Blanchard-Fields, 2007; Blanchard-Fields et al., 2007). Perhaps as a result of increased ability to avoid unpleasant situations, exposure to daily stressors, particularly social ones, generally declines with age (Birditt et al., 2005; Stawski, Sliwinski, Almeida, & Smyth, 2008). Successful avoidance of situations that engender negative emotions and seeking out of situations that engender positive emotions in the service of emotion regulation might be due to increased understanding of what constitutes the most effective emotion-regulatory strategy in each particular context (Blanchard-Fields, 2007).

Acceptance

Given that it is not always possible to avoid negative emotional situations, acceptance is considered an effective strategy for managing the negative emotions that can result. Rather than simply giving up (as the term may at first glance suggest), acceptance is defined as the process of engaging with (vs. avoiding) negative experiences without judging them to be detrimental (Hayes, Luoma, Bond, Masuda, & Lillis, 2006). Acceptance is a promising candidate to consider as an emotion regulation strategy that may improve with age, for two reasons. First, acceptance does not appear to rely on cognitive functions that decline with age (Schloss & Haaga, 2011). Second, theoretical support of the idea that age is associated with increased acceptance comes from the literature on wisdom. *Wisdom* has been defined as a knowledge system that governs the conduct and understanding of life (Baltes & Smith, 2008). A key component of wisdom is acceptance of reality, including uncertainty, unpredictability, and impermanence and the negative emotions that often accompany these experiences (Ardelt, 2000). If we allow that wisdom generally increases with age (Clayton, 1982; Tentori, Osherson, Hasher, & May, 2001) and that acceptance is a key component of wisdom, it seems likely that acceptance may also increase with age.

A recent study found support for the hypothesis that acceptance increases with age (Shallcross, Ford, Floerke, & Mauss, 2013). A community sample of 340 adults, aged 21–73 years, completed measures of acceptance as well as multiple experiential and physiological indices of trait and state negative affect up to 6 months later. As expected, age was associated with greater acceptance, as well as with lower anger and anxiety (but not sadness) across measurement modalities. Moreover, acceptance mediated age-related decreases in anger and anxiety. These results suggest that, as hypothesized, acceptance increases with age and creates the possibility that acceptance may be an important mechanism in the link between aging and reductions in certain classes of negative emotion.

Discussion, Interpretations, and Future Directions

Although the number experimental works examining lifespan differences in emotion regulation has substantially increased across the past decade, the field remains in its infancy (Consedine, 2011a). Certainly, effective emotion regulation is a critical adaptive capacity in both younger (Bonanno et al., 2004; Westphal, Selvert, & Bonanno, 2010) and older (Carstensen et al., 2003; Charles & Carstensen, 2010; Consedine, 2011a) samples. However, core descriptive questions regarding normative patterns of improvement or change are yet to be definitively answered, as are subsidiary questions regarding the typical targets of emotion regulation at different stages of development, the capacities needed for various forms of regulation, and the means by which individuals with fluctuating capacities attain regulatory ends. Similarly indistinct are questions regarding the links between emotion regulatory performance and the physical, social, and psychological health outcomes that are increasingly a focus in psychological research. In the preceding section, a developmental functionalist view of emotion regulation across adulthood was presented. In the next section, we revisit the available experimental work from this perspective before outlining preliminary conclusions, highlighting themes, and offering some directions for future empirical development.

Although other bodies of research (e.g., lifespan attachment and personality research) are relevant to the questions considered here, we elected to concentrate our review on studies employing *experimental* designs in which regulatory “success” was directly assessed (rather than inferred) and in which demand characteristics are likely lessened. To begin, it is worth noting that although there is an ongoing increase in the number of studies, the current corpus of data remains small; more work is quite clearly needed. Consistent with prior writers, however, the broadest conclusion we might draw from the current body of experimental work is that aging does not appear to bring a unilateral decline in emotion regulatory ability. Consistent with assertions from developmental functionalism, however, there are some early indications that different types of emotion regulatory task show distinct patterns of improvement and decline across age groups. Of particular note is the previous suggestion (Consedine, 2011a) that normative age reductions in executive-type tasks should mean that regulatory tasks relying on such capacities should be relatively impaired whereas those linked to positive emotion generation or social functioning might show preservation or improvement.

Findings were mixed regarding this broad prediction. Consistent with expectation, there appear to be improvements in types of emotion regulation linked to the generation of positive states (Charles et al., 2003; Isaacowitz et al., 2009; Isaacowitz et al., 2006; Mather & Carstensen, 2005; Phillips et al., 2008; Shiota & Levenson, 2009), in social contexts and/or through use of social supports as a regulatory resource (Akiyama et al., 2003; Birditt & Fingerman, 2005; Birditt et al., 2005; Lopes et al., 2004; 2005; Opitz, Gross et al., 2012), in situational selection/modification (Birditt et al., 2005; Blanchard-Fields, 2007; Blanchard-Fields et al., 1997; Blanchard-Fields et al., 2007; Charles & Carstensen, 2008; Charles & Piazza, 2009; Charles et al., 2009; Stawski et al., 2008), and, at least according to preliminary data, in acceptance (Shallcross et al., 2013).

Conversely, however, our review of empirical studies found that expressive suppression—which is thought to rely on executive functioning (Baumeister et al., 1998; Richards & Gross, 2000; Schmeichel et al., 2008)—found few differences across age groups (Emery & Hess, 2011; Kunzmann et al., 2005; Magai et al., 2006; Phillips et al., 2008; Shiota & Levenson, 2009). Although the absence of effects may reflect insufficient declines in executive functioning among the samples studied to date (Shiota & Levenson, 2009), the pattern might be taken as broadly inconsistent with developmental functionalism’s assertions. Recall, however, that, in line with several other authors (Emery & Hess, 2011), developmental functionalism interprets data indicating differential effects of expressive regulation on experiential (Magai et al., 2006) or cognitive (Emery & Hess, 2011) systems as likely indicating that

older and young adults achieve expressive control via different *tactics* (Consedine, 2011a). It may be that some forms of emotion regulation are, in fact, less (capacity) demanding for older groups (Scheibe & Blanchard-Fields, 2009), perhaps because the data are indexing age-related increases in the automatization of common forms of regulation with age (see below).

As expected, given the importance that developmental functionalism places on executive processes as a core capacity for real-time regulation (Ochsner & Gross, 2005), studies of reappraisal to decrease negative emotion showed a consistent reduction in this ability across age groups (Opitz, Rauch et al., 2012; Shiota & Levenson, 2009). These studies are significant for two reasons. First, the Opitz, et al. (2012) study provides among the first evidence of differential neural activation during emotion regulatory tasks across age groups, with lower activation in the left ventrolateral prefrontal cortex among older adults. Although differences in activation did not mediate age-related decrements in reappraisal ability, the study provides one of the few demonstrations that certain types of emotion regulatory task may be associated with age-related variation in activation in theoretically expected brain regions. Second, because older samples report using cognitive reappraisal *more frequently* than do younger adults (John & Gross, 2004), these findings suggest that there may be clear capacity constraints to regulatory *success*.

More broadly, developmental functionalism offers a useful lens to consider the implications of the findings to date and to both consider what they are telling us as well as within which to consider the “next steps” in this important lifespan research agenda. In beginning to evaluate these findings, it is worth noting that age-related improvements were more consistently evident when *experience* was being regulated (positive reappraisal, use of social support/coping, situational selection/modification, and acceptance) but less reliable for regulatory tasks necessitating expressive control. Because different components of emotions have distinct functions (Averill, 1994), they likely represent distinct regulatory challenges (Consedine, 2011a). In particular, the regulation of signals (expressions) has capacity requirements that are distinct from those needed to regulate experience (Consedine et al., 2002). Developmentally then, this pattern may be telling us that the resource base necessary for effective experiential regulation is either maintained or enhanced with age whereas that needed for expressive regulation declines.

Although decrements in negative reappraisal must be borne in mind, one intriguing area for future work lies in automatic emotion regulation (AER). Although it is unclear whether all forms of AER are best characterized as skills, insofar as they are (a) not typically *volitionally* deployed (Mauß et al., 2007) and, in some instances such as repression, (b) may not be *capable* of being brought under voluntary control, AER minimizes resource demand and may thus become more common and useful with age. Although no research to date has directly examined age differences in AER (Consedine, 2011a), two considerations suggest that such studies may be of benefit. First, studies of personality factors closely linked to regulatory styles such as adult attachment consistently show greater dismissiveness in older cohorts (Consedine & Magai, 2003; Davila, Burge, & Hammen, 1997; Fiori, Consedine, & Magai, 2009; Kafetsios & Sideridis, 2006; Magai, Hunziker, Mesias, & Culver, 2000; Mickelson, Kessler, & Shaver, 1997; Webster, 1997; Zhang & Labouvie-Vief, 2004), implying that these adults will have more restrictive expressive and experiential goals (Consedine, Fiori, & Magai, 2012; Consedine & Magai, 2003). Assuming that these goals are fashioned in early life creates the possibility that current cohorts of older adults may habitually down-regulate the expression or experience of certain negative emotions and, thus, become differentially efficient at it.

Second, recent findings indicative of reduced effects of emotion regulation on other processes may imply that older adults are increasing their reliance on AER—in developmental functionalism, this is seen as a tactical adaptation to the problem posed by fewer resources available for online regulation (c.f., Baltes, 1997). In the Emery and Hess (2011) study, for example, suppression instructions led to reduced memory for emotional pictures in young adults but did not impair memory in older adults (Emery & Hess, 2011). Similarly, instructions to reduce negative feelings in response to a disgusting film clip impaired older adults’ performance on a working memory task less than it did younger adults’ performance (Scheibe & Blanchard-Fields, 2009). Reduced decrements in cognitive performance when regulating among older individuals are consistent with the possibility that older adults may make greater use of automatized forms of regulation. In theory, more habitual expressive suppression might lead to a situation in which fewer executive resources are consumed during suppression and, thus, more resources are available to concentrate on the emotional material. Alternately, such findings may also reflect greater compartmentalization of mental processes and/or the deployment of alternate tactics to accomplish the same

regulatory goal (Magai et al., 2006). In contrast to the Emery and Hess (2011) study, the Magai et al. (2006) report showed that expressive suppression had a *greater* impact on both self-reported experience and language use among older adults, a finding that was interpreted as indicating suppression was being partially accomplished by controlling experience, such that a smaller amount of expressive regulation was required to begin with. Studies examining the possible moderational effects of trait regulatory tendencies on experimental regulatory performance are one approach to these questions.

However, although automatization appears a useful avenue within which to extend our understanding of age differences in emotion regulatory performance, an interpretation of improved experiential regulation as stemming from greater automatization would necessarily struggle to interpret findings indicating that older adults perform more poorly when asked to reappraise in a manner that decreases negative emotion (Opitz, Gross et al., 2012; Shiota & Levenson, 2009). If, (a) cohorts of older adults have more experiential goals aimed at minimizing negative emotional experience and (b) automatization occurs as a function of habitual deployment (i.e., repeated use across a lifespan), we might have expected greater ability in this area. That the available data point in the opposite direction may imply several possibilities worth examining. First, it may be that positive versus negative reappraisals rely on different mechanisms or capacities or that losses in executive capacity are insufficiently offset by any small gains acquired through automatization. Alternately, it may be a motivational or regulatory target issue, insofar as older adults are known to place a premium on positive emotional experience; it may be that they are more motivated regarding increasing positive (vs. decreasing negative) experience.

Conclusion

Recent years have seen somewhat of a groundswell in experimental studies examining aspects of emotion regulation across the adult lifespan. Despite ongoing insight, this literature remains in a fledgling state, and the review presented here suggests that three interrelated areas of study would provide fertile avenues for increasing our understanding of lifespan differences in emotion regulation.

1. What *tasks and goals* (emotional and otherwise) are typical at different stages of adulthood? How well differentiated are these goals, and can we move beyond hedonic characterizations to examine age-related differences in discrete emotions and/or the possibility that the regulatory goals of adults from different stages of development vary in terms of intensity, frequency, and duration?
2. What *capacities* are needed for effective emotion regulation, and how do they vary at different stages of adulthood? How should capacities be conceptualized, manipulated, and measured and in which research designs?
3. What are the age differences in the *tactics* used to achieve emotional and other goals? In particular, are there differences in the ways adults from different stages of development (or with different capacity sets) accomplish reactive versus anticipatory regulatory goals?

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