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Keywords: Emotion, Emotion Regulation, Self-Regulation, Choice.

Word Count main text: 6294.
Abstract

Individuals have a remarkable ability to control or regulate their emotions in various ways in order to adapt to dynamic and changing situational demands. Choosing adaptively between these various available regulatory options is strongly related to healthy functioning and well-being. Despite being clearly important, emotion regulation choice has not been directly investigated or clearly conceptualized until recently. In this chapter I review the importance of emotion regulation choice, and then present a new conceptual framework that is utilized to explore central emotional, cognitive and motivational determinants as well as underlying mechanisms of emotion regulation choice. I end with broad implications and future directions.
A few months ago, I had to take a long 12 hour international flight in order to get home. Having more than enough time to spend, I started looking around me. While some people were sleeping (in extremely creative body postures), or watching movies (with delight that they finally have enough time to watch Tolkien's full trilogy), others appeared quite alert and fearful, especially when the captain announced that the plane started its final descent. While appearing fearful, luckily these individuals were able to choose between different regulatory options to control their fear. For example, they could choose whether they want to deal with their flight phobia by disengaging via closing their window sheds while immersing themselves in unrelated yet demanding conversations. Alternatively, they could be choosing to look outside the window while explaining some facts including a decline in crashing statistics since autopilots took charge.

Emotion regulatory choices are an integral part of our daily lives in a dynamically changing affective world. By emotion regulation choice I mean the choices individuals make as to how they should regulate their emotions in a particular context when regulation is warranted and more than one regulatory option is active. Furthermore, given the abundance of knowledge on explicit emotion regulation strategies and the relative lack of evidence on implicit emotion regulation, I limit this chapter to deliberate and explicit forms of emotion regulation choice.

Can we consistently predict the regulatory choices individuals make to deal with their emotions? Are there specific emotional, cognitive and motivational influences that systematically affect these regulatory preferences? What are the major factors underlying the regulatory choice process? And what are the broad implications of regulatory choices? The present chapter tries to answer these important questions. Specifically, I
will begin by introducing the importance of emotion regulation choice and its relative lack of empirical investigation. I will then introduce a recent conceptual model that is utilized to explain dominant emotional, cognitive and motivational determinants, and underlying mechanisms of emotion regulation choice between dominant cognitive emotion regulation categories. I will close by describing broad implications and future directions.

The Importance of Emotion Regulation Choice

The different ways individuals can go about controlling their emotions has attracted scholars for centuries. Nevertheless, emotion regulation has become an independent field only recently (Gross, 1998, 2007, 2010; Koole, 2009; Tamir, 2011). From its early days a central question in this field has been whether different forms of emotion regulation have different consequences. However, in a first generation of studies different forms of emotion regulation have been considered to be either generally adaptive or maladaptive.

To give two well-known examples, consider first Nolen-Hoeksema's influential response styles theory contrasting maladaptive rumination with distraction (Nolen-Hoeksema, 1991; Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008 for reviews). Multiple studies have widely established that ruminating on negative attributes of one's self, is strongly related to the development, maintenance, and recurrence of depressive episodes relative to distracting attention away from negative self attributions. As a second example, consider Gross's canonical process model and supporting evidence from multiple studies showing the relative superiority of reappraising the meaning of negative events over suppression of affective expressions, with respect to a wide range of
affective, cognitive, and social indicators of adaptive functioning (Gross, 2002; Gross & Thompson, 2007 for reviews). The centrality of the alleged dichotomy between “adaptive” and “maladaptive” forms of emotion regulation is captured by a recent meta-analysis that summarized a decade of work on the relationship between some regulation strategies (rumination, suppression) and psychopathology and other strategies (reappraisal, problem solving) and resilience (Aldao et al., 2010).

There is no doubt that the first generation of studies has enormously advanced the field of emotion regulation. However, with its rapid growth a second generation of studies that emerged has begun to find inconsistencies in the formerly unconditional maladaptive/adaptive label given to different strategies. For example, the ostensibly maladaptive strategy of rumination was found to have adaptive and maladaptive flavors (Watkins, 2008) as well as to be advantageous in situations where a single goal needs to be maintained in the face of distractors (Altamirano, Miyake, & Whitmer, 2010), and the ostensibly maladaptive strategy of suppression was shown to be beneficial in extremely adverse situations (e.g., Bonanno & Keltner, 1997). At the same time, the ostensibly adaptive strategy of distraction was found to be maladaptive when long term adjustment is required (Kross & Ayduk, 2008), and the ostensibly adaptive strategy of reappraisal was found to be less effective when dealing with particularly high intensity emotional situations (Sheppes, Catran, & Meiran, 2009; Sheppes & Meiran, 2007, 2008).

The main conclusion deriving from the second generation of studies is that emotion regulation strategies have different consequences in different contexts. This means that healthy adaptation is the result of flexibly choosing between regulation strategies to adapt to differing situational demands (e.g., Bonanno, 2005; Kashdan &
Rottenberg, 2010; Troy & Mauss, in press, for reviews). To illustrate, Kashdan and Rottenberg (2010) argue that different forms of psychopathology can be characterized by different ways in which flexible regulation choice breaks down, and Troy and Mauss’s (in press) and Bonanno’s (2005) influential accounts highlight how flexible regulation choice promotes resilience in the face of stress and trauma.

Although emotion regulation choice is now viewed as a crucial element in healthy adaptation, until recently it has only been indirectly studied. Two forms of important yet indirect evidence come from correlational studies involving self report questionnaires that assess individual differences in people’s frequency of using different regulatory strategies across situations (e.g., Garnefski et al., 2001; Gross & John, 2003; John & Gross, 2007; Nolen Hoeksema 2001) and from laboratory experiments that involve evaluating spontaneous use of emotion regulation strategies in emotional inducing situations (e.g., Ehring, Tuschen-Caffier, Schnülle, Fischer, & Gross, 2010; Gruber, Harvey & Gross, 2012). While showing important links to well-being and various forms of psychopathology (see Alado et al., 2010 for a review), these studies do not assess the factors that influence individuals to predominantly prefer using a particular regulatory strategy over another. Even more conventional studies of emotion regulation did not examine which regulation strategies are chosen in different emotional contexts, because the experimental design involved directly instructing participants to use regulation strategies in different situations. Consider for example, the most direct and convincing evidence regarding the importance of flexible regulation patterns, which showed that the ability to flexibly alternate between enhancing and suppressing emotion strongly predicts healthy adaptation (Bonanno, Papa, Lalande, Westphal, & Coifman, 2004), over an
extended time period (Westphal, Seivert, & Bonanno, 2010), and that flexible regulation can protect from complicated grief patterns in bereavement (Gupta & Bonanno, 2011). In these and other studies, the regulation strategies employed by participants were determined by the experimenter, leaving the important topic of determinants and consequences of emotion regulation choice unexplored.

**Conceptualizing Emotion Regulation Choice**

Recently my colleagues and I developed a conceptual framework to explain (1) major determinants and (2) underlying mechanisms of emotion regulation choice (Sheppes, Scheibe, Suri, Radu, Blechert, & Gross, in press). A central working hypothesis in this framework is that healthy individuals would be sensitive to the central costs and benefits associated with the implementation of each regulatory option under different contexts. With this working hypothesis in mind, certain emotional, cognitive, and motivational contextual factors are likely to bias regulatory choices in ways that are congruent with the differential consequences of implementing these strategies under these conditions. In illuminating the underlying mechanisms of emotion regulation choice a further argument suggests that healthy regulation choice should require in some contexts an ability to recruit deliberate executive control processes that can override contrasting associative emotional processes. This interplay of higher control processes that can override opposing associative processes is at the heart of many models of self regulation (e.g., Muraven & Baumeister, 2000). Moreover, the regulation choice process gives a central weight to differences between strategies' underlying engagement/disengagement dimension relative to other potent factors such as cognitive effort. To better help
appreciate the broader context of this emotion regulation choice conceptual framework I elaborate it below.

The starting point of this conceptual framework is that the limited cognitive capacity individuals have poses permanent processing constraints. These constraints result in a constant competition between emotion generation and emotion regulation processes (Gross, Sheppes, & Urry, 2011a,b) for dominance over behavior. Our conceptual account draws upon major information processing theories (e.g., Hubner, Steinhauser, & Lehle, 2010; Pashler, 1998) and the process model of emotion regulation (Gross & Thompson, 2007) to suggest that regulating one’s emotions, involves recruiting deliberate executive control mechanisms that try to modify the nature of emotional information processing at two major cognitive stages (Sheppes & Gross, 2011, 2012). These two major cognitive stages include an early attentional selection stage and a late semantic meaning stage. Specifically, regulation can be achieved via early disengagement from emotional processing at the attention selection stage, or via an engagement with emotional processing that is modulated at a late semantic meaning stage (e.g., Johnston & Heinz, 1978; Lehle & Hubner, 2008). This conceptual framework focuses on two particular regulatory strategies that are frequently used in everyday life and that have their major influence in each of these two cognitive stages of information processing.

Incoming emotional information can be regulated at an early attentional selection processing stage by disengaging from emotional information processing before it undergoes elaborated processing. A classic early selection strategy is distraction, which involves disengaging attention from emotional processing before it is represented in
working memory by producing neutral thoughts that are independent from and not in conflict with emotional information (e.g., van Dillen & Koole, 2007).

Engagement with incoming emotional information that passes the early attentional selection stage can still be regulated at a late semantic meaning processing stage before it affects behavior. A classic late selection regulation strategy is reappraisal, which involves engaging with and elaborating emotional information prior to changing its meaning in a late processing stage (e.g., Gross, 2002). In reappraisal, the neutral reinterpretation is semantically dependent and in direct conflict with the original emotional information.

According to our conceptual framework, these underlying characteristics of disengagement distraction and engagement reappraisal result in a differential cost-benefit tradeoff (Sheppes & Gross, 2011, in press). Specifically, the benefits of blocking emotional information early before it gathers force via distraction are that emotionally high intensity information can be successfully modulated. Cognitively, this successful modulation involves relatively simple processes, because the generation of regulatory neutral thoughts in distraction is independent from and does not conflict with the original emotional information. Nevertheless, the major cost of distraction is that because it does not allow processing, evaluating, and remembering emotional information, motivationally it is less beneficial for one's long term goals and adaptation (Wilson & Gilbert, 2008 for a review). Specifically, distraction does not allow for emotional events that are being repeatedly encountered to be attended to and provided with adequate explanation, a requirement that is at the heart of many long term goals where an individual has to face difficulties in order to adapt.
The underlying characteristics of engagement reappraisal result in a different set of costs and benefits. Specifically, the elaborated semantic processing that occurs prior to late modulation should be emotionally costly as it can less successfully block high intensity emotional information. Cognitively, reappraisal engages relatively complex processes, because the generation of alternative construals is dependent on and in conflict with the original emotional information. Nevertheless, the major benefit of engaging with emotional information is that motivationally it allows processing, evaluating, and remembering emotional information which are crucial for long term goals and for adaptation.

Direct empirical support for the costs and benefits of employing (rather than freely choosing) distraction and reappraisal comes from behavioral and electrophysiological studies. Specifically, several behavioral studies showed that employing early disengagement distraction in high sadness emotional intensity situations resulted in successful regulation (Sheppes & Meiran, 2007), and did not result in an increased expenditure of cognitive resources (Sheppes et al., 2009; Sheppes & Meiran, 2008). At the same time, distraction’s lack of emotional processing was demonstrated in an impaired memory for emotional information (Sheppes & Meiran, 2007, 2008), and distraction’s motivational costs were evident in a lack of long term attenuation of the intensity or quality of important negative autobiographical emotional events (Kross & Ayduk, 2008). By contrast, these studies showed that while employing late engagement reappraisal in low sadness emotional intensity situations was successful, under high sadness emotional intensity situations resulted in less successful modulation, and resulted in an increased expenditure of cognitive resources. The elaborated emotional processing
was demonstrated in intact memory for emotional information (see also Dillon, Ritchey, Johnson, & LaBar, 2007; Richards & Gross, 1999, 2000), and reappraisal’s *motivational* benefits evinced in adaptation to distressing events that are important for one's long term goals and functioning.

In two recent electrophysiological studies, my colleagues and I took advantage of the excellent temporal resolution of electroencephalogram (EEG) and event related potentials (ERPs) to provide further support for the differential underlying cognitive mechanisms and consequences of employing distraction and reappraisal (Blechert, Sheppes, Di Tella, Williams, & Gross, 2012; Thiruchselvam, Blechert, Sheppes, Rydstrom, & Gross, 2011). Recent ERP studies in emotion regulation showed that distraction (e.g., Dunning & Hajcak, 2009; Hajcak, Dunning, & Foti, 2009) and reappraisal (e.g., Foti & Hajcak, 2008; Hajcak & Nieuwenhuis, 2006) modulate the late positive potential (LPP) - an electro-cortical component that is enhanced during emotionally arousing viewing and which reflects enhanced attentional and semantic meaning processing of emotionally salient information (Hajcak, MacNamara, & Olvet, 2010).

Consistent with the framework, we found that implementing distraction resulted in a strong modulation of an initial phase of the LPP that represents early disengagement of emotional information before it is represented in working memory, and reappraisal only modulated the late phase of the LPP representing engagement and elaborated meaning prior to late modulation (Thiruchselvam et al., 2011). In that same study, we also tested our prediction that motivationally, distraction relative to reappraisal cannot accord with major long term goals. Specifically, distraction does not allow attending and
explaining emotional information, which result in subsequent attenuation of emotional responses relative to novel emotional situations (Wilson & Gilbert, 2008). To that end, our participants were re-exposed to emotional materials they have previously distracted or reappraised. Consistent with our prediction, we found that emotional materials with a distraction but not reappraisal history demonstrated an enhanced LPP during re-exposure which represents an extended influence of negative emotional processing beyond the regulatory episode. Prolonged influence of emotional events is considered maladaptive with many long term goals that require dealing with emotional events that are repeatedly encountered (see also MacNamara, Ochsner, & Hajcak, 2011). In a similar vein, we recently showed that repeated reappraisal efforts with biologically significant emotional stimuli (i.e., angry facial expressions) resulted in a gradual change to the basic evaluation and thus representation of these emotional stimuli (Blechert et al., 2012).

**Emotion Regulation Choice: Emotional, Cognitive, and Motivational Determinants**

In a recent set of studies my colleagues and I have evaluated central determinants of emotion regulation choice (Sheppes et al., 2011; Sheppes et al., in press). Prior to discussing these studies I wish to briefly describe the novel paradigm we developed to enable the evaluation of emotion regulation choice. In short, participants that come to the lab initially undergo a learning phase followed by a training phase where they are being taught the differences between distraction and reappraisal as well as how to implement each. In the actual task, participants are exposed to series of trials that involve a brief presentation of an emotional stimulus followed by a choice screen where they decide their preferred regulatory strategy. Following a short preparation period, the
emotional stimulus reappears and participants are instructed to implement their chosen strategy and to rate how they feel. In general, participants are instructed to freely choose between distraction and reappraisal and to base their choice on the strategy they think will make them feel less negative. The main dependent measure is the proportion of choice of each regulatory option. To evaluate adherence of participants' reports of their chosen regulatory strategies (achieved via which button they pressed during the choice screen), we either asked participants to talk out loud their chosen strategies during strategy implementation or we administered a surprise memory test for emotional materials that were presented (see Sheppes et al., 2011). These two methods have proven satisfactory. Specifically, adherence levels were evident in high agreement between participants button responses and their talk out loud protocols, and in finding that on trials that participants indicate that they chose to distract, memory was worse (and not significantly different from chance) relative to trials participants indicated that they chose to reappraise (Sheppes et al., 2011).

The first determinant of regulation choice examined is emotional intensity which is a key dimension of variation across emotional contexts (Sheppes et al., 2011). Based on the emotion regulation choice conceptual framework, we predicted that under low negative emotional intensity situations, individuals would prefer to choose late selection engagement reappraisal over early selection disengagement distraction because reappraisal can both successfully modulate emotional responding and provide long term affective adaptation. However, we predicted that under high negative intensity situations participants would switch to prefer to choose early disengagement distraction over
reappraisal, because only distraction can successfully block emotional information early before it gathers force.

To test our predictions, we manipulated emotional intensity with emotional images or unpredictable electric stimulation and had participants choose between distraction and reappraisal (Sheppes et al., 2011). The results strongly supported our predictions in both emotional contexts. Specifically, participants preferred to reappraise their emotional reactions to low negative intensity pictures and to a threat of low intensity of electric shocks, but they preferred to distract from their emotional reactions to high negative intensity pictures and to a threat of high intensity electric shocks.

In a follow up study we wanted to examine the robustness of the effect of emotional intensity on regulation choice (Sheppes et al., in press). To that end, we examined whether individuals would keep their regulatory preferences under different emotional intensities even when offered a potent reinforcement (monetary incentive) to engage in a counter preference regulatory option. Although we found that monetary incentives influenced regulatory choices in the expected direction, the basic preference to reappraise low intensity emotional situations and to distract high intensity emotional situations remained evident even when participants were paid high monetary amounts to choose the contrasting strategy. These results suggest that emotional intensity strongly influences regulatory preferences.

The second determinant we examined was the cognitive complexity of generating an emotion regulation strategy (Sheppes et al., in press). Emotion regulation can be viewed as involving several sequential cognitive processes that involve generation, implementation and maintenance (Kalisch, 2009; Ochsner & Gross, 2008). Generation
involves finding an adequate regulatory option that can replace emotional information processing. Implementation involves activating a regulatory strategy, and maintenance involves holding it in an active state as long as regulation is required. Because generation operates early in the sequence of an emotion regulation episode, it is likely to affect emotion regulation choice. In distraction the generation process is simple because the neutral thoughts that are produced can be of any content as long as they are absorbing. However, in reappraisal the generation process is complex because the formation of an alternative neutral reinterpretation depends on the original emotional information. To examine this disparity we showed that when the generation process was simplified, by providing participants concrete regulatory options for distraction and reappraisal, reappraisal was more frequently chosen.

The third determinant of emotion regulation choice involved investigating the influence of motivational goals (Sheppes et al., in press). An important motivational goal for choosing a regulatory strategy involves evaluating whether an emotional stimulus will be encountered once or multiple times. While an emotional stimulus that is encountered once can be regulated with strategies such as distraction that provide short term relief, emotional stimuli that are encountered multiple times can be better regulated with strategies like reappraisal that involves engaging with emotional processing that results in gradual adaptation (e.g., Wilson & Gilbert, 2008; Blechert et al., 2012). We therefore expected and found that when participants were told that they would encounter emotional stimuli more than once they preferred to reappraise more, relative to when they expected to encounter an emotional stimulus once.

**Emotion Regulation Choice: Underlying Mechanisms**
The previous section established that central emotional, cognitive, and motivational factors strongly influence individuals' preferences between two regulation strategies that modulate emotional responding at an early attentional stage (distraction) or a late semantic meaning stage (reappraisal). In this section I turn to the issue of the mechanisms that are at the core of emotion regulation choice.

According to our conceptual framework, emotion regulation choice should involve a general ability of deliberate executive control processes to override competing associative emotional processes. In line with central models of self control (e.g., Muraven & Baumeister, 2000), an ability to recruit central control processes that can moderate the influence of drives and emotions is crucial for daily functioning. In addition, the actual regulatory choice process is heavily influenced by the engagement/disengagement dimension where people are weighting their preference to employ early attentional disengagement from emotional processing (distraction) versus engagement with emotional processing prior to late modulation at the semantic meaning processing stage (reappraisal).

Providing supporting evidence for the involvement of deliberate executive control processes that override associative emotional processes in emotion regulation choice is important, given a potential alternative more parsimonious account. According to this more parsimonious account emotion regulation choice can be fully explained by a direct influence from simple associative emotional processes (e.g., Bradley, Codispoti, Cuthbert, & Lang, 2001). Specifically, according to an associative emotional process account as negative emotional intensity increases it directly activates a basic defensive system to shift from an engagement (or sensory intake) preference which leads to preferring
reappraisal, to a disengagement (or sensory rejection) preference which may result in an increased preference to distract. Alternatively, according to the emotion regulation choice account individuals can use deliberate executive processes in preferring to reappraise in low negative intensity situations and to distract in high negative intensity situations. Because both accounts lead to the same regulatory choice prediction in negative emotional situations, in order to determine between them we investigated down-regulation of positive emotional situations -- an emotional context where the two accounts diverge. Specifically, the associative emotional process account would argue that as positive emotional intensity increases it directly activates a basic appetitive system that would lead to an increased preference to engage. By contrast, the emotion regulation choice account would predict that the operation of deliberate control processes, whose goal is to provide down-regulation of positive emotional situations, would involve overriding the associative tendency to engage, resulting in an increased preference to disengage as positive emotional intensity increases. The results, which showed a clear tendency to disengage via distraction as positive emotional intensity increased, clearly support the involvement of deliberate executive control processes that override opposing associative emotional processes originating from the appetitive system (Sheppes et al., in press).

While these results support the involvement of deliberate executive control processes in emotion regulation choice, an important question remains: what are the dimensions that receive central weight in the choice between distraction and reappraisal? One central dimension in my conceptual account is engagement/disengagement according to which when people prefer to reappraise they wish to engage in emotional
processing and when they want to distract they want to disengage from emotional processing. However, a second potential key dimension is the amount of cognitive effort people wish to exert (e.g., Chajut & Algom, 2003; Kool, McGuire, Rosen, & Botvinick, 2010; Muraven & Baumeister, 2000) according to which when people prefer to reappraise they are willing to exert considerable effort and when they want to distract they wish to preserve cognitive effort. Accordingly, when people prefer to distract in high negative emotional intensity situations, do they prefer to disengage from emotional processing or do they prefer to reserve their cognitive resources and go with the easy regulatory option?

To determine between these two options, we had participants choose between two types of distractions that involve making mathematical computations (e.g., see Erber & Tesser, 1992; van Dillen & Koole, 2007 for similar operationalization of attentional distractions): one regulatory option was cognitively simple and involved minor disengagement from emotional processing (subtract 2s) and a second regulatory option was cognitively effortful yet highly disengaging from emotional processing (subtract 7s). The logic was that if the cognitive effort dimension is central in regulatory choice then one should expect that the preference to use the more simple subtract 2s distraction would increase as negative emotional intensity increases. However, if the engagement/disengagement dimension is central in regulatory choice, we should expect that the preference to use the more disengaging (despite it being also more effortful) subtract 7s distraction would increase as negative emotional intensity increases.

Results strongly supported the centrality of the engagement/disengagement dimension where participants preferred to disengage from emotional processing in the
high intensity condition despite this regulatory option was clearly more effortful (Sheppes et al., in press). In addition, when participants were performing the subtract 7s option their actual mathematical performance was interfered with less by the intensity of emotional stimuli relative to performing subtract 2s. This result indicates that the more effortful subtract 7s option indeed resulted in a stronger disengagement from emotional processing relative to subtracting 2s.

In a complementary fashion we wished to show that the engagement/disengagement dimension is central within the reappraisal category. Although, reappraisal is generally considered to be an engagement strategy (Gross & Thompson, 2007; Sheppes & Gross, 2011), there is also a considerable variation in this broad regulation category (Ochsner et al., 2004; McRae, Ciesielski, & Gross, 2012). Specifically, in a classic situation-focused reappraisal engagement with emotional processing is central in order to reinterpret the meaning of ongoing events. However, other forms of reappraisal such as reality challenge involve a disengagement element where emotional consequences are simply not considered and the basic authenticity of the event is being questioned. In a regulation choice study we showed that whereas participants preferred to engage via situation focused reappraisal under a low intensity condition, they preferred to disengage via reality challenge reappraisal under a high intensity condition (Sheppes et al., in press).

**Broader Implications**

In the two prior sections, I tried to establish key emotional, cognitive and motivational determinants and underlying mechanisms of emotion regulation choice. In this section I zoom out in order to provide broader implications of emotion regulation
choice. In doing so I concentrate on implications for emotion regulation science, decision making and clinical science.

**Implications for Emotion Regulation**

Emotion regulation choice provides an important extension to the general field of emotion regulation. Previous studies of emotion regulation have almost exclusively focused on the consequences of implementing different emotion regulation strategies (Gross, 2007; Koole, 2009 for reviews). Multiple studies have instructed participants to engage with different emotion regulation strategies and examined the costs and benefits associated with successful implementation. Understanding the consequences of employing different regulation strategies is a crucial and important step towards a basic understanding of the basic elements of emotion regulation strategies. Nevertheless, the emotion regulation choice findings extend this work by illuminating a step that precedes the implementation of emotion regulation. Specifically, when an emotion regulation goal has been activated, individuals need to select a regulation strategy out of all the available options. Our conceptual account has highlighted some emotional, cognitive, and motivational factors that can strongly influence the regulatory choices individuals are inclined to make in any particular context.

Combining the recent knowledge on emotion regulation choice with existing knowledge on the consequences of implementing emotion regulation strategies, leads to important conceptual extensions. For example, individuals' regulatory preferences as indexed by their regulatory choices should be considered when evaluating individuals' ability to implement different strategies. Specifically, initiating a particular strategy may
not only require generation, implementation and maintenance, but may also require overriding a default regulatory preference. To give laboratory and real life analogues, it may be that when participants in the lab or patients in the clinic are asked to engage via reappraisal when dealing with high intensity situations, in addition to generating implementing and maintaining reinterpretation of an emotional situation, they also need to override their strong default preference to disengage via distraction.

**Implications for Decision Making**

Emotion regulation choice is an instance of general choice behavior and as such it is important to place it under the broad umbrella of general decision making. Classic examples of choice behavior involve deciding between different external outcomes in one's environment. For example, in inter-temporal choice paradigms such as temporal discounting (Reynolds, 2006), individuals choose between receiving smaller sooner monetary rewards (e.g., $5 today) and between receiving bigger distant monetary rewards (e.g., $8 tomorrow). Other examples of choice behavior involve deciding between different internal processes to deal with external demands such as in mathematical strategies children choose in order to solve math problems (Siegler, 2005) or the strategies adults choose to solve chess problems (de Groot, 1978). Emotion regulation choice is a special case of decision making because it involves choosing between internal cognitive processes to control one's internal emotional environment.

Although emotion regulation choice appears to be unique in some ways, it shares basic assumptions about strategy choice with other theories. Like classic theories in decision sciences (e.g., Payne, Bettman, & Johnson, 1988, 1993), the emotion regulation
choice account argues that individuals are sensitive to central factors (emotional, cognitive, and motivational factors in the case of emotion regulation choice) when making their regulatory selections. In addition, just like other models highlight the role of learning (e.g., Rieskmap, 2006; Rieskmap & Otto, 2006), in the emotion regulation choice account to some extent regulatory decisions are based on prior knowledge with the consequences of implementing different strategies in different contexts.

**Implications for Clinical Psychology**

Emotion regulation choice also has important clinical implications. Central conceptual accounts argue that psychological well-being requires flexibly adapting emotion regulation strategies to fit with differing situational demands (Gross, 2007; Kashdan & Rottenberg, 2010; Watkins, 2011). The flipside of flexible regulatory choice is a rigid and maladaptive regulation choice which may be related to various forms of psychopathology.

The recent empirical evidence maps emotional, cognitive and motivational determinants of regulation choice in healthy adults and thus deviations from healthy regulatory choice can be used to understand different forms of psychopathology.

Consider first the emotional intensity one is facing. As previously described, healthy individuals prefer to use reappraisal with low intensity emotional situations and distraction with high intensity situations. Regulatory preferences that deviate from the flexible regulation choice observed in healthy individuals might be related to different psychopathologies. Specifically, deviation from a preference to choose to disengage from very high intensity stimuli is expected from individuals who are prone to develop major
depression. According to the response style theory, rumination involves engaging with strong emotional experiences and repeatedly thinking about their causes and consequences in an abstract and repetitive way (e.g., Nolen-Hoeksema, 1991; Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008 for reviews). Rumination has been proven to be related to onset maintenance and relapse of depression, whereas depressed individuals that prefer to use positive distractions when dealing with strong emotional experiences show better prognosis (e.g., Nolen-Hoeksema & Morrow, 1991, 1993). Emotion regulation choice is likely to be an important target in the context of depression, because empirical studies have showed that depressed individuals are able to effectively implement distraction when instructed to (e.g., Joormann & Siemer, 2004; Joormann, Siemer & Gotlib, 2007), but that that they hold a favorable view of rumination by believing that it helps understanding better the reasons for depressed mood. Nevertheless, an over generalized preference to engage with emotional contents may also depend on impaired ability to shift attention away from negative contents (e.g., Joormann & Gotlib, 2008).

A second type of deviation from the healthy regulatory choice patterns involves diverging from engaging with low emotional intensity stimuli. Common to several anxiety disorders is a tendency to over-generalize a disengagement or avoidance regulatory response (see Campbell-Sills & Barlow, 2007; Foa & Kozak, 1986 for reviews). Avoidance usually starts in response to high intensity emotional stimuli, but over time, it ends up spilling over to seemingly low intensity stimuli. As pointed in our conceptual model, while disengagement strategies are helpful in providing short term relief, they are maladaptive in the long run and can perpetuate anxiety and fears.
The cognitive factor highlighted is the ease with which a regulation strategy is generated. Specifically, aiding the generation process resulted in increased reappraisal choice. These results are relevant for many cognitive behavioral therapies where patients are encouraged to reappraise strong emotional events (e.g., Campbell Sills & Barlow, 2007). While the final objective is to have patients generate their own regulation strategies, therapists should be mindful that their patients might need aid in generating alternative ways to think about upsetting events, until patients can gradually build their skill. Complimentary, one can expect that with continued practice in reappraisal an improved generation process can aid patients to choose it more frequently.

The motivational factor highlighted the goals individuals have when choosing to regulate their emotions. It was shown that when participants expect to encounter emotional events repeatedly they increase reappraisal choice which offers long term benefits. The ability to override regulatory preferences that offer short term relief (i.e., distraction) in favor of regulatory preferences that offer long term benefits (i.e., reappraisal) is likely to require self control, and impairments in self control ability have been linked to various psychopathologies including addictions, and eating disorders such as bulimia (see Heatherton & Baumeister, 1991; Vohs & Baumeister, 2011 for comprehensive reviews).

**Future Directions**

Despite promising preliminary results and clear broad implications, emotion regulation choice has only began to develop. In closing I wish to point out several potential future research directions.
First, to date the influence of only one emotional (emotional intensity), one cognitive (generation of a strategy), and one motivational (short versus long term goals) determinants of emotion regulation choice were examined. While these factors appear important, future studies should evaluate the influence of the many additional factors that are likely to influence regulatory preference. To give just one example, the availability of cognitive resources is likely to influence individuals’ regulatory choices. Specifically, a temporary state of self-control resource depletion (e.g., Baumeister, Vohs, & Tice, 2007; Muraven & Baumeister, 2000) is likely to lead individuals to prefer strategies like distraction that provide short term relief. Therefore, studying how various novel factors affect regulatory choice is an important future research direction.

Second, while distraction and reappraisal are considered classic disengagement and engagement strategies (Parkinson & Totterdell, 1999), and while they are widely used in everyday life, studies of choices between other emotion regulation strategies are urgently needed. In everyday life, individuals choose from many more regulatory options that should be studied in future studies. Several promising avenues involve allowing people to choose from regulatory options that are considered less adaptive in certain contexts (e.g., suppression and rumination). Another option involves investigating how individuals switch their regulatory choices when dealing with dynamic and prolonged emotional events that constitute many of our daily experiences (see Aldao & Nolen Hoeksema, in press for a related discussion). Relatedly, a crucial test of the applicability of the emotion regulation choice paradigm and its supporting findings, should involve studying regulatory choices in daily emotional experiences, such as when patients wait to receive potentially stressful news in medical settings, or when clients face a stimulus they
feel anxious about. Although, distraction and reappraisal are widely used in real life situations, it remains unclear whether we would observe somewhat similar preferences when individuals spontaneously choose between regulatory options in daily emotional situations.

Third, the goals of the present study were to generally characterize the influence of different factors on emotion regulatory choice. Nevertheless, it is quite clear that studying individual differences in emotion regulation choice is crucial. Recent relevant studies have shown that individual differences in the ability to modify emotions are tightly linked to long term adaptation (e.g., Bonanno, Papa, Lalande, Westphal, &Coifman, 2004; Westphal, Seivert, & Bonanno, 2010). Therefore, future studies should evaluate how multiple individual differences can moderate the influence of central factors on emotion regulation choice. One promising venue, which was mentioned in the clinical implications, involves studying impairments in regulatory preferences among individuals with mood, anxiety and personality disorders whose psychopathology revolves around emotion dysregulation.

Fourth, according to the emotion regulation choice account healthy individuals are sensitive to central costs and benefits of different regulation strategies when trying to choose between regulatory options and in general these individuals showed adaptive regulatory choice profiles. Nevertheless, multiple demonstrations in general decision making studies have showed important limitations in human reasoning (e.g., Tversky and Kahneman, 1974), and therefore future studies should investigate situations where individuals' regulatory choices would not necessarily lead them to the best outcome. In a related vein, while conscious regulation strategies have been a major focus in the field of
emotion regulation, and while they are an integral part of many cognitive behavioral therapies targeting emotion dysregulation (e.g., Linehan, 1993), many emotion regulation choices are likely to be determined implicitly and without deliberate control.

Finally, until now emotion regulation choice has been investigated separately from studies on the consequences of implementing regulation strategies. Future studies should make stronger connections between the developing studies on emotion regulation choice and the well-established studies on the consequences of regulation implementation. For example, studies should evaluate whether the effectiveness of implementing a given strategy is moderated by an ability to override default regulatory choice preferences. At the same time, future studies in emotion regulation choice should utilize multiple levels of analysis that combine the concurrent assessment of the effectiveness of a chosen regulatory strategy.
Author Note

This chapter draws upon and updates previous reviews by Sheppes & Gross (2011, 2012) and upon two recent empirical manuscripts (Sheppes et al., 2011; Sheppes et al., in press). The writing of this chapter was supported by the Israel Science Foundation (grant No. 1393/12).
References


