RUNNING HEAD: Boundaries of emotion regulation

Pushing (and Pulling) the Boundaries of Emotion Regulation

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Abstract

This commentary addresses Gross's formulation of emotion regulation and its limits. According to his definition, emotion regulation covers a heterogeneous variety of cognitive and behavioral operations, some of which share important features with processes falling outside the specified conceptual domain, leading to possible boundary disputes. Further, Gross's extended process model (EPM) excludes some forms of co-regulation whose investigation may clarify the operation of intrapsychic regulation. EPM helps to distinguish different regulatory targets and functions, but understanding underlying processes may require tighter and more focused distinctions.

Pushing (and Pulling) the Boundaries of Emotion Regulation

- You see me getting upset and try to soften your irritated tone of voice
- I take a deep breath to calm myself
- I flinch as you move closer
- Our eyes meet and we both smile

Emotions matter to us partly because they are about things that matter to us. We may get upset about even trivial remarks if they trigger meaningful associations or tax already depleted resources. Our emotional orientations to things signal their importance to others (and to the self, e.g., Oatley, 1992) and are usually difficult to ignore.

Things that matter activate action as well as emotion. We want to do something about them, maintain or prevent them, bring them closer or push them away. Because our emotions (and those of other people) matter to us, we want to do something about them too. Sometimes, doing something about things that matter affects emotion indirectly. Other times, doing something about things that matter is intended specifically to affect our emotions. Sometimes the things that we do something about are aspects of emotions in the first place.

We also change our emotions in order to change other people's emotions, and change other people's emotions in order to change our own. In some cases, these actions may depend on anticipating emotional consequences. In other cases, they may depend (directly or indirectly) on the emotional consequences we have experienced in the past (e.g., reinforcement learning). Even the limited range of examples presented so far suggests a diversity of interlocking emotional and regulatory processes involving complex interactions within and between people. Which of these activities count as emotion regulation? Where should we draw the boundaries?

James Gross is widely and rightly regarded as the most influential psychologist working in the field of emotion regulation. His enduring contribution is the imposition of order on what might otherwise seem confused or chaotic. His extended process model (EPM) unifies and integrates a diverse range of potentially interrelated and interlocking phenomena. It aims to accommodate regulation that operates implicitly as well as explicitly and that targets other people (extrinsic regulation, in Gross's terminology) as well as the self (intrinsic regulation) at several sequential phases of the emotion episode. Drawing these phenomena together within a common framework not only helps to create alliances between research groups but also achieves theoretical parsimony.

But unification also carries risks of false equivalence; treating different things as if they were the same. We need to focus on the particularities of specific processes as well as commonalities in the abstract principles that they may share. In my view, EPM provides a useful and mainly realistic picture of certain forms of regulatory activity associated with emotions, but can only accommodate other forms by using flexible, abstract, and non-specific explanatory concepts. Indeed, few of the key processes postulated in the model represent single algorithms or implementations (cf. Marr, 1982). Unpacking their many varieties may unsettle the model's integrity, range of application, or both.

Unification involves decisions about what lies outside as well as within the boundaries of a conceptual domain. This brings complementary risks of inappropriate exclusion; treating similar things as if they were different. I will argue that some phenomena that fail to meet Gross's inclusion criteria bear close relations to those that do. Replacing functional distinctions with process-based formulations may yield a better understanding of what is happening in these cases.

In this commentary, I focus on potential problem cases for EPM of both these kinds: phenomena that are more different than their shared membership of the emotion regulation

category might suggest; and phenomena that are more similar to undisputed instances of emotion regulation than their exclusion might lead us to believe. I consider the implications of these problem cases for theorizing emotions and regulatory processes. My main conclusions are that EPM underestimates the regulatory nature of emotions themselves and that it misrepresents the role of interpersonal processes in regulation. In my view, it is wrong to treat interpersonal regulation as "extrinsic" in all cases. More generally, I argue that the domain of emotion regulation is more diverse, ill-defined, and complicated than EPM implies. Its boundaries may need to be pushed and extended in some directions, but pulled or tightened in others

Mapping the Domain

Affect

Gross starts his paper with a set of helpful definitions. At the heart of his formulation of affect is valuation (rather than valence as in his earlier writings, e.g., Gross, 1998). In his view, we feel good or bad as a consequence of our discriminations about what is good or bad for us. "Valuation" clearly covers a wide range of different operations. The valuations behind a toothache or feeling of physical discomfort seem very different from those resulting in a grumpy or enthusiastic mood, or those associated with righteous indignation or guilt about one's excessive anger. Some of this heterogeneity is captured by Scherer's (e.g. 2001; 2013) distinctions between sequential valence-related "stimulus evaluation checks" relating to intrinsic pleasantness, goal conduciveness, and norm compatibility that operate as part of a cyclical appraisal process. Social appraisal theorists also distinguish between appraisals that are based on personal evaluations and those that take into account other people's evaluations (e.g., Campos & Stenberg, 1981; Manstead & Fischer, 2001). Researchers investigating group-based emotions distinguish appraisals based on relevance to social and personal

identity (e.g., Smith 1993). Additional and cross-cutting distinctions are also possible. For certain purposes, it may be useful to emphasize the abstract similarities between all of these different kinds of valuation. However, descriptions and explanations phrased solely in terms of such a generic concept are unlikely to be complete.

As with Lazarus's (1991) appraisal theory, the danger here is that core explanatory concepts are extended to cover such a wide range of processes that they cease to have any unified meaning (see Parkinson, 2001b; Scarantino, 2010). For Lazarus (1984), appraisal could refer to anything from "a primitive evaluative perception" to "a highly differentiated symbolic process" (p. 124). For Gross, valuation is an even broader concept. Quoting Elliot (2006), he postulates "multiple levels of valence-based evaluative mechanisms, ranging from rudimentary spinal cord reflexes … to subcortical affective computions [*sic*] … to our vaunted cortical processes" (p. 113). Adopting such a loose and wide-ranging formulation, Gross can plausibly define affect in terms of its dependence on valuation (p. xx), just as Lazarus (1984) earlier argued that all emotions result from the valuation process of appraisal. Similarly, valuation as a generic abstract concept provides a notional link between different levels and varieties of regulatory process, lending integrity to a model that might otherwise seem fragile or fractured. However, theoretical traction may require closer attention to the specific processes that determine different varieties of valuation (see Leventhal & Scherer, 1987, for similar arguments concerning debates about affective primacy).

Gross (this issue) seeks to clarify his concept of valuation by reference to underlying "representations": "valuation involves the juxtaposition of a representation of the world with a representation of a desired state of the world (a goal or target state)" (p. xx). But do the representations of the world and of the desired state of the world that apply when tasting something sweet or recoiling from someone's angry expression really share important similarities with those that characterise our moral disapproval of someone else's socially

inappropriate emotions in anything but name? Are two separate representations really activated and compared even for the most basic of valuations? Again, unless the key concept of representation is more tightly specified, its role in explaining observed phenomena remains correspondingly limited.

Emotion

For Gross, emotion is a particular variety of affect and hence similarly based on valuation (in this case, the particular variety of valuation known as "appraisal"). Acknowledging the difficulty of formulating a more specific definition of emotion given current theoretical controversies, Gross focuses on points of general agreement in the literature. In particular, his "modal model" sees emotions as appraisal-determined patterns of loosely coupled response components that unfold over time in a consistent temporal sequence. According to this model, an emotion starts with a situation or event, which is attended to, before an appraisal leads to the output of responses such as experiential, autonomic, or expressive changes. This sequential process then reruns cyclically in response to any induced environmental changes. Regulatory operations can target any stage during each cycle, and the consequences of regulation depend on which stage is targeted.

The modal model has a somewhat ambiguous status across Gross's published output. Here, it is presented as consensual and therefore likely to capture important truths about how emotion unfolds. However, in earlier publications, the same modal model is critiqued because it misrepresents important aspects of emotional life and therefore needs revision. For example, Barrett, Ochsner, and Gross (2007) argued that "the modal model privileges a relatively limited number of emotions, leaving large gaps in our understanding of the full spectrum of emotional phenomena in need of explanation" (p. 183).

I share these previously expressed reservations about the general applicability of the modal model across all kinds of emotion. Its main limitation is that it tends to frame emotions as passive reactions to appraisals rather than active relational activity (e.g., Frijda, 1986). Although Gross is careful to acknowledge that emotions operate on the environment and evolve in real time in response to the changes that they induce, the dynamic feedback loops implied by such an acknowledgement are not well captured by the stage-based modal model. One consequence is that the intrinsically regulatory properties of emotions themselves is downplayed in EPM (e.g., Campos, Walle, Dahl, & Main, 2011; Kappas, 2011). In a later section, I will consider further the implications of emotion's dynamic attunement to the responsive social environment.

Emotion Regulation

For Gross, "[t]he defining feature of emotion regulation is the *activation of a goal to influence the emotion trajectory*" (Gross, this issue, emphasis in original, p. xx). Later in the paper, he is more specific: "Emotion regulation occurs when one valuation system (which I refer to as a second-level valuation system) takes another valuation system (one that is generating emotion, which I refer to as a first-level valuation system) as a target and evaluates it either negatively or positively, activating action impulses that are intended to modify the activity in the first-level valuation system" (p. xx). For emotion regulation to occur, then, the person needs to register (at some level) the presence of the emotion (in other words, the first-level valuation system as a whole), and not just the component of emotion at which regulation is targeted. Thus avoiding or seeking out a situation, modifying it in some way, thinking about it differently, or working on facial and bodily reactions only count as emotion regulation if they are intended to change the course of the emotional episode.[1]

Why does Gross distinguish emotion-directed operations from those that are not specifically targeted at the emotion itself? One reason is to avoid the implication that almost everything a person does could count as emotion regulation in some shape or form (see p. xx). From this perspective it might seem important to demarcate emotion regulation from other related psychological functions. However, does the resulting distinction have any implications beyond these stipulative and semantic ones? Are the *processes* underlying situation selection, situation modification, reappraisal, or response modulation substantively different if they are motivated by non-emotional rather than emotional considerations?

Consider the classic research by Lazarus's research group (e.g., Lazarus & Alfert, 1964), where participants were instructed to appraise the emotional events depicted in stressful films in different ways. For example, Lazarus, Opton, Nomikos, and Rankin (1965) told some viewers to pay attention to indications that a gruesome industrial accident involving severed fingers was actually staged rather than real. Research using these and similar procedures was one of the key inspirations for the idea of reappraisal which later became central to research into emotion regulation. However, by Gross's definition, participants in these studies were not engaging in emotion regulation because no goal to influence the emotion trajectory was activated (except perhaps in the mind of the researchers who gave the instructions), and no second-level (regulatory) valuation system targeted a first-level (emotional) valuation system. Participants were thinking about things in the way that the experimenters had told them to, not regulating their emotions. And yet the process whereby their emotions changed was practically identical to what Gross subsequently formulated as the antecedent-focused regulatory strategy of reappraisal.

Another example concerns the sensitivity of facial displays to the nature of potential audiences (e.g., Fridlund, 1994; Parkinson, 2005). In this regard, Ekman (1972) argued that children acquire cultural display rules about when and to whom it is appropriate to show

certain kinds of expression during socialization. For example, he describes a study conducted by Friesen, where Japanese students showed fewer indications of negative emotion than did US students when talking with an authority figure about an unpleasant film that they were watching. Ekman argued that this cultural difference reflected a Japanese display rule not to show negative feelings in front of a superior. According to this explanation, Japanese participants were clearly engaging in a process that Gross would define as emotion regulation. They engaged in expressive suppression because of the relation of the suppressed expression to a socially inappropriate emotion.

But how do people first learn to follow such a display rule? It seems likely that caregivers respond to socially inappropriate expressions with nonverbal feedback indicating their disapproval long before a child acquires a conceptual representation of the disapproved emotion and its relation to the expression (e.g., Gergely & Watson, 1999; Holodynski & Friedlmeier, 2006). At this stage, then, it seems a stretch to see any expressive suppression as "emotion regulation" as defined here, since the child is adjusting his or her emotional behavior to a caregiver's negative reinforcement and not making any intrapsychic valuation of the emotion system. Even in adult life, interactants attune their expressive conduct to ongoing feedback from others in real time without explicitly registering its emotional implications. At what phase of development, or what degree of articulation does this interpersonally regulatory activity start to qualify as genuine emotion regulation? And is there a tipping point where the nature of the process changes to match the definitional difference?

The more general issue identified by these two examples concerns Gross's motivation for excluding operations that participants perform on emotion-related processes or phases (situations, cognitions about those situations, or internal and expressive responses) from the domain of emotion regulation simply because the emotion as a whole was not registered or

targeted. Gross argues that emotion regulation depends on registering and evaluating the emotion, constituted as a system. This allows him to draw semantic boundaries around a conceptual domain. But does that conceptual domain reflect empirical similarities between the underlying processes? Processes falling outside the domain seem to be very similar to those that are inside it (inappropriate exclusion). We would need to push the conceptual boundaries outward to accommodate them.

Correspondingly, processes clearly located inside the domain seem to be very different from each other despite their supposed dependence on abstractly defined processes such as "valuation" (false equivalence). For example, what makes reappraisal directly comparable to expressive suppression? Does their comparability depend on the goals behind their implementation or the processes that underlie their operation? In cases where these processes are distinctive, we would need to pull the conceptual boundaries inwards in order to maintain the coherence of the conceptual domain. Under these circumstances, the viability of the defined category as a basis for explanation seems to be questionable.

Implicit Emotion Regulation

In the previous section, I suggested that some examples of reappraisal and expressive suppression do not require an emotion-targeted goal and therefore fail to qualify as emotion regulation by Gross's definition. But how can I be sure that no emotion-targeted goal was present in these potential problem cases? Given that EPM is intended to cover implicit as well as explicit regulation, it should also apply in circumstances where regulatory goals are activated automatically and without the regulator's awareness. The empirical challenge lies in establishing whether or not implicit regulation genuinely involves the activation of an emotion-targeted goal, in circumstances where participants are unaware of the goal.

The solution involves demonstrating that the putative regulatory behavior is responsive and attuned to intrinsically emotional factors. However, this raises the additional problem that most factors related to emotion can also relate to other non-emotional functions (see footnote 1). How then can we tell that the content of an unconscious goal relates to the emotion system as a whole rather than one of its components?

Gross presents the example of "when one quickly turns away from upsetting material" (p. xx) to illustrate emotion regulation operating outside of conscious awareness. Presumably, what makes this count as emotion regulation is that a goal to influence the emotion trajectory was activated at some level. But does this claim amount to anything further than the observation that the person apparently disliked looking at the material?

How does the postulation of an implicit and evanescent emotion-targeted goal clarify the basic "valuation process" operating in this situation? Does turning away genuinely involve the "juxtaposition of a representation of the world with a representation of a desired state of the world (a goal or target state)"? If so, are the juxtaposed representations really representations of the emotion system and of the desired state of that emotion system (at the second level constituting emotion regulation) rather than of what is happening and what is desired (at the first level constituting emotion)? An affirmative answer implies that perception of the "upsetting material" activates an implicit association with its anticipated emotional consequences, leading to the automatic selection of an appropriate strategy targeted at attention at this material. Is this really what happens when people reflexively divert their gaze from something nasty?

Hierarchical Control Systems

Some of Gross's most interesting theoretical work concerns the parallels between the operations performed by emotion regulation and by emotion itself. According to Gross, both

processes depend on a valuation process and both are goal-directed. Emotion regulation involves valuation of phases of the emotion process in relation to the goal of influencing the emotion trajectory. Gross's view of a hierarchical, dynamic control system is an important advance over previous distinctions between passive emotions and active executive regulatory processes (as critiqued by Kappas, 2011, *inter alia*). However, in my view, EPM still does not fully acknowledge the active relational nature of emotions themselves, especially when those emotions emerge in ongoing social interactions.

One of Gross's own examples of how emotion regulation relates to an unfolding interpersonal situation involves witnessing your children misbehaving at an elderly relative's home. Gross points out that the first-level goal of the anger is to narrow the gap between the world as it is (misbehaving children) and the world as the angry person would like it to be (well-behaved children). Presumably this gap is narrowed successfully if the children register their parent's anger (or respond more directly to its components) and consequently alter their behaviour. At the second level, however, the angry father negatively values his own angry response because it conflicts with the goal of not showing anger towards his children. This initiates regulation of the anger or its expression.

In this example, the goals of emotion and regulation are directly in conflict. The anger is intended to alter the children's anger-inducing behaviour, but the regulatory attempt undermines that goal by dampening the angry expressions that might otherwise serve the interpersonal influence function. Conflicts of motives such as this are relatively common, and certainly worthy of investigation. However, what is missing from this account is an analysis of how the children's behavior regulates the parent's anger, how the parent's anger regulates the children's emotional orientation, and more generally how the children's and parent's emotions constitute a reciprocally regulatory system (co-regulation). Some of these

social aspects of emotion regulation are not easily integrated within an intrapsychic cybernetic system of the kind that features in EPM.

One way of investigating the reciprocally regulatory functions of emotion is to explore what happens when the interpersonal system is disrupted or breaks down. For instance, Parkinson (2001a) found that one of the factors contributing to anger while driving is the relative lack of direct interpersonal feedback that the other driver has registered your disapproval. When interacting face-to-face rather than from separate vehicles, people adjust their behaviour and expression in real time in response to early indications of irritation. A slight narrowing of another's eyes may deflect you from your current line of action. Because these processes operate reciprocally rather than unidirectionally, with each person simultaneously oriented and attuned to the other's responses, the regulatory system can be seen as interpersonally distributed rather than individually localized (*coregulation*, Fogel et al, 1992). In other words, the interpersonal aspects of emotion regulation are not always "extrinsic" as implied by Gross's terminology.

According to the relation-alignment approach (e.g., Parkinson, 2008; Parkinson, Fischer, & Manstead, 2005), then, when emotions emerge in social interactions they serve as mutual adjustments or operations on actors' orientations to events. From this perspective, the original function of the emotion is to modify other people's relations to what is happening (Parkinson, 2001a). For example, anger serves to alter someone else's goal-blocking behaviour or to recruit allies to one's other-blaming orientation. In this view, an angry orientation is closely attuned to other people's simultaneously unfolding orientations. The intensity or direction of my anger adjusts in real time to counter or match the dynamic interpersonal feedback provided by other people's responses. At some level, there is certainly regulation of situation, attention, appraisal, and/or expression. However, this

regulatory activity is built into an interpersonal emotion system rather than being a separate higher-level process.

Prototypical Emotion Regulation

The examples presented in this commentary suggest that the conceptual boundaries around emotion regulation are not well defined, and need to be pushed and pulled into shape after additional theoretical and empirical work. However, there are still occasions when people engage in processes that correspond closely with those specified in EPM. Sometimes, we do register our emotion and want to change it, regardless of whether it is already serving regulatory functions on the environment. I may indeed notice that my anger has reached an intensity that is culturally or practically inappropriate, and take deliberate steps to calm myself down. You may well notice that I am calm about something that you think I should be more anxious about, and try to direct my attention to that thing's worrying aspects (Parkinson & Simons, 2012). In both cases, regulation may operate in a goal-directed fashion, shaped by second-level valuations of first-level emotion systems.

These second-level valuations may even constitute appraisals leading to emotions about emotions (meta-emotions). You may be worried about your anger (intrapersonal meta-emotion) or about my worry (interpersonal meta-emotion, see Parkinson & Simons, 2012). Investigating these regulatory phenomena is clearly theoretically interesting as well as practically important.

However, should we treat these explicit hierarchically controlled processes as the paradigm or prototype for all forms of emotion regulation? In my view, they are secondary phenomena that are derived from more basic, primary processes of relation alignment. We learn to regulate explicitly over the course of socialization because of our prior experiences of others' responses to our unregistered emotions. Although this explicit regulation

subsequently becomes automatic, this does not mean that all kinds of implicit emotion regulation are modelled on explicit cybernetic and individualised hierarchical systems.

In my view, a full understanding of emotion and regulation requires closer attention to what is similar and what is different about the processes underlying the phenomena mapped out by Gross's useful but as yet provisional categories. Although we may need to redraw some of the boundaries, it is clear that the territory mapped out by the target article provides fertile ground for further exploration.

Footnote

1. On page xx, Gross (this issue) explicitly defines the emotion-regulation strategies of situation selection, situation modification, and attention deployment in terms of their dependence on an emotion-targeted goal. Interestingly, he does not specify cognitive change or response modulation in these same conditional terms. This may reflect an assumption that the cognitions (e.g., appraisals) and responses (e.g., facial expressions, experiences, autonomic responses) targeted by regulatory attempts are *intrinsically* emotional. If so, any attempt to regulate them is by definition already an emotion-regulation attempt. However, the autonomic responses, facial movements, and at least some aspects of the appraisals that may constitute regulatory targets may also occur in non-emotional situations. For example, our hearts beat faster after physical exercise, our brows often furrow when we are concentrating, and we may hold someone personally accountable for a positive or negative act without reacting emotionally to what they have done. Correspondingly, we may take a deep breath, relax facial muscles, or try to distance ourselves psychologically from an event for reasons other than emotional reasons. Even if the emotion-related processes and components genuinely were intrinsically emotional, operations performed on them separately need not activate any representation of the emotion syndrome (or system) as a whole.

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