Effective Emotional Regulation: Bridging Cognitive Science and Buddhist Perspective

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Abstract

Emotions are an important part of human experience and how individuals regulate them denotes the level of personal happiness. The study of this regulation processes have been made from different traditions, that have used different tools to understand and explain them. In this article we approach the emotional regulation processes from two different perspectives: Tibetan Buddhist and Cognitive Psychology. We describe the understanding of emotional regulation processes from both traditions, trying to get the concepts as close as we can, so that at the end we will be able to propose a guideline model for the development of educational programs for the training of emotional regulation abilities.

Keywords: emotional regulation; emotional awareness; Tibetan buddhism; cognitive psychology.

Resumen *Regulación emocional efectiva: cómo conectar la perspectiva budista con las ciencias cognitivas*

Las emociones son una parte importante de la experiencia humana y cómo los individuos las regulan denota el nivel de felicidad personal. El estudio de estos procesos regulativos ha sido llevado a cabo por diferentes tradiciones, que han utilizado distintas herramientas para comprenderlos y explicarlos. En este artículo nos acercamos a los procesos de regulación emocional a partir de dos perspectivas diferentes: el budismo tibetano y la psicología cognitiva. Se describe la concepción de los procesos de regulación emocional de ambas tradiciones, analizando los conceptos tan de cerca como sea posible, para así proponer un modelo de referencia para el desarrollo de programas educativos para la formación de las habilidades de regulación emocional.

Palabras clave: regulación emocional; conciencia emocional; budismo tibetano; psicología cognitiva.

Introduction

Emotions are part of the rich world of human experience, and play an important role in communication, interpersonal relationships, working relationships and personal satisfaction. Emotions can shape human experiences into positive (satisfactory) or negative (painful), unfolding a wide array of responses that can develop in various forms of Psychopathology, social difficulties and physical illness (Gross, 2007). Therefore, understanding how humans regulate their emotions is an important aspect of sciences aimed at humans' well being.

The Psychological study of how humans regulate emotions has a long history (Gross & Thompson, 2007; Ochsner & Gross, 2005). However the psychological explanation of the processes and dynamics of emotional regulation is not the only one that has being developed by human civilization. In this article we are going to describe a proposal that has gained weight in recent years, not only because the scientific study of the methods practiced by this tradition has brought out results that show improvement in mechanisms related to cognitive control and emotional regulation, but also has proved been helpful in the development of a balanced and healthy emotional life (Anderson, Lau, Segal & Bishop, 2007; Goleman, 2003; Jha, krompinger & Baime, 2007; Kim et al., 2009; Antoine Lutz, Greischar, Rawlings, Ricard & Davidson, 2004; Antoine Lutz, Slagter, Dunne & Davidson, 2008; Semple, Lee & Miller, 2006; Tang et al., 2007).

The aim of this article is to describe, compare, and contrast the psychological perspective (Cognitive Science) and the Buddhist perspective (Tibetan) of emotional regulation. We begin by making an account of the different perspectives that Cognitive Science uses to conceptualize emotional regulation mechanisms, specifically focusing on the processes of cognitive control and emotional regulation (attention control and cognitive change), showing empirical data obtained by cognitive neuroscience research. Then we describe the Tibetan Buddhist Philosophical Perspective presented from the teachings of the Kagyu School. Finally we present a background proposal for the development of educational programs that aim to train the development of emotional regulation mechanisms.

Western Perspective: Cognitive Science and Emotional Regulation.
Understanding Emotions from Cognitive Science

The Western scientific perspective of emotion has been conceived mostly from a functionalist perspective emphasizing the important role emotions play as they ready necessary behavioral responses, tune decision making, enhance memory for important events, and facilitate interpersonal interactions (Gross & Thompson, 2007). In this way, emotions are conceived as episodic, relatively short-lived psycho-physiological reaction patterns that result from evaluation of a stimulus concerning its relevance for the organism (Kanske, 2008).

Gross and Thompson (2007) describe the core features of emotions as: a) arising when an individual attends to a situation and sees it as relevant to his or her goals; b) being multifaceted, whole-body phenomena that involve loosely coupled changes in the domains of subjective experience, behavior, and central and peripheral physiology*;* c) possessing an imperative quality: they can interrupt what we are doing and force themselves on our awareness.

According to Ochsner and Gross (2005) the processes that generate emotions are characterized by a response valence to external stimuli and/or internal representations that a) involve changes across multiple response systems, ii) are distinct from moods, in that they always have identifiable objects or triggers, iii) can either be unlearned responses to stimuli with intrinsic affective properties, or learned responses to stimuli that acquire emotional value, iv) can involve multiple appraisal processes that asses the significance of stimuli to a current goal, and v) depend on different neural systems.

Considering the descriptions above, we can pinpoint the evaluation of the emotional cue as one of the principal features of emotion generation processes. From this subjective stimuli-evaluation, a series of psycho-physiological responses unfold, ending in the subsequent behavioral response. Thus from the internal representation or evaluation of a given situation a series of psycho-physiological processes unfold the emotional experience. Understanding these processes is important for understanding the dynamic of the emotional regulation strategies and mechanisms.

Emotion Regulation

Emotion Regulation involves the manipulation of subjective and physiological experience of emotions (Green & Malhi, 2006; Gross, 2007; Gross & Thompson, 2007; Ochsner & Gross, 2005). There have been different descriptions and models aimed to explain the emotional regulation process. The one to which we are going to refer in this article is the model proposed by Gross and John (2003). The process model of emotional regulation begins from the premise that specific regulation strategies can be differentiated along the timeline of the unfolding emotional response (Gross & John, 2003; Ochsner & Gross, 2005, 2008). This conception holds that an emotion begins with an evaluation of emotional cues, which triggers a coordinated set of

response tendencies that involve experiential, behavioral, and the physiological system (Gross & John, 2003; Gross & Thompson, 2007; Kanske, 2008). Gross and John (2003) state: «because emotion unfolds over time, emotion regulation strategies can be distinguished in terms of when they have their primary impact on the emotion-generative process».

From this view, two different emotional regulation strategies unfold, known as *antecedent-focus* and *response-focus* (Gross & John, 2003; Gross & Thompson, 2007; Ochsner & Gross, 2005, 2008). Antecedent-focus strategies refers to what we do before the emotion response becomes fully activated and have an effect in our behavioral, mental, and physiological response; while response-focus strategies refers to what we do once an emotion is already underway and the response tendencies have already been activated (Gross & John, 2003). Oschner and Gross (2005) also make a distinction between behavioral and cognitive strategies. Behavioral regulation of negative emotions may limit expressive action but not damped unpleasant experience, worsens memory, and increases the sympathetic nervous system, whereas cognitive regulation neutralize negative experience without impairing memory and might decrease physiological arousal (Goldin, McRae, Ramel & Gross, 2008; Gross, 2007; Mauss, Cook, Cheng & Gross, 2007; Ochsner & Gross, 2005).

Because behavioral strategies focus on the regulation of behavioral expressive outcomes it can be considered a form of response-focus strategies. One example of response-focus/behavioral strategies is the so called Expressive Suppression, a form of response modulation that involves inhibition of ongoing emotion-expressive behavior (Goldin et al., 2008; Gross & John, 2003; Gross & Thompson, 2007).

On the other hand, because cognitive strategies focus on neutralizing the generation of the emotional experience, they can be considered as an antecedent-focus strategy (Green & Malhi, 2006; Gross, 2007; Gross & John, 2003; Hajcak & Nieuwenhuis, 2006; Ochsner & Gross, 2005, 2008). In this section of the article we are going to focus on two of the main researched cognitive strategies, that is, attentional control and cognitive reappraisal.

Attention and Regulation

The ability of individuals to develop a coherent goal directed behavior is one of the key features of human behavior. This behavior is dependent on a series of cognitive processes that enables the individual to maintain the goal target even when faced with a series of distracting stimuli. This capacity requires the ability to select, detect and inhibit the distracting stimuli, and at the same time, orient and keep the mind focused on the current goal. All this abilities are studied within the construct of attention.

There have been many theoretical proposals about the attention process. One of the major contributions for the development of a coherent-empirical attention theory was made by Norman and Shallice (1986) in the Supervisory Attentional Mechanism. In this proposal they explain how the Super-

visory Attentional Mechanism acts as a control-selection mechanism that helps the individual to select the best response when facing with novel situations that do not fit the automatic response schemas (Norman & Shallice, 1986). From this proposal developed the idea of the Executive Function Mechanisms, later developed into the Executive Control of Attention or Executive Function, in which it is described as being in charge of monitoring and controlling the processing of information in a top-down dynamic (Blair & Razza, 2007; Kanske, 2008; Norman & Shallice, 1986; Rueda, Posner & Rothbart, 2005).

At the moment, one of the most popular models concerning attention is the neurocognitive model of Michael Posner (Kanske, 2008; Posner & Rothbart, 2005; Rueda et al., 2005; Shimamura, 2000). This model proposes that Attention is related to three different brain networks. The Alert network, or alerting, is in charge of changes in the attentional states and describes the state of wakefulness or arousal of an organism; the orienting network, or orienting of attention, refers to the mechanisms that select information for further processing; and the Executive Attention network (discussed in this article) is in charge of the regulation of information and emotion processing (Posner, Rueda & Kanske, 2007; Rueda et al., 2005).

Executive Systems and Regulation Processes

The Executive Function model proposes that the executive system modulates lower level schemas according with individual intentions (Fernandez-Duque, Baird & Posner, 2000b). The Schemas are the basic unit of action and thought that can be activated by exogenous (automatic process) and endogenous (executive system) factors. When these schemas are used in habitual actions, they are activated automatically and they contain well-established and learned action sequences. However, when the subject faces novel situations a different system must be activated. This is the Supervisory Attentional System (Norman & Shallice, 1986), and is necessary when the situation needs a more careful elaborate response. This system has the same functions as the Executive Attention network in Posner´s neurocognitive model of attention (Kanske, 2008; Norman & Shallice, 1986; Posner & Rothbart, 2005; Posner et al., 2007; Rueda et al., 2005).

This Executive system (Executive attention, Executive Function) uses a group of control processes that help regulate the information processing. Rueda, Posner & Rothbar (2005) list these processes as Conscious detection, inhibition and conflict resolution.

Conscious Detection: The executive attention network serves the function of bringing an object to consciousness. Conscious detection plays a special role in selecting a target stimulus from among alternatives and engages attention in a way that resists interference by other signals.

Inhibition: The inhibition function has been related to the orienting attention and the executive attention network, therefore essential for selection and

control. Inhibition is also required for withholding responses that, although prompted by current stimulation, might not be appropriate.

Conflict Resolution: Monitoring and resolving conflict between incompatible responses also requires voluntary and attentive control of action. Conflict resolution requires the selection of a dominant object, in the presence of a competing dominant object or response.

This process has been extensively studied in Cognitive Sciences. Several paradigms have been developed with the main principle being the presentation of stimuli with more than one dimension, a task that is relevant and the other task(s) irrelevant. These dimensions can elicit the same action tendency (congruent condition) or they can elicit different actions associated to different stimulus dimensions (incongruent condition). The three most common paradigms used for this are the so called Stroop task, the flanker task and the Simon task (Davies, Segalowitz, Dywan & Pailing, 2001; Falkenstein, Hoormann, Christ & Hohnsbein, 2000; Green & Malhi, 2006; Kanske, 2008; Posner et al., 2007; Rueda et al., 2005; Ullsperger & von Cramon, 2004).

Executive Attention as an emotional regulatory process

The evidence that Attention plays an important role in the regulatory processes comes from different Psychological research traditions. Gross and Thompson (2007) describes how attentional resources are used as an emotional regulatory process with the Attentional Deployment regulatory strategies. This concept refers to the way subjects direct their attention in order to influence their emotions, and it's part of the antecedent focus regulation strategies. Attentional Deployment can take many forms, including physical withdrawal of attention, internal redirection of attention, distraction and concentration (Gross & Thompson, 2007).

From the developmental perspective the ability to control and regulate the emotional states plays an important role in socialization and personality development in children. There has been several studies that show a relationship between the self-regulation capacity and the maturation of the different attentional networks (Rueda et al., 2005). It has been noted that from the first years infants experiment a transition between attentional selection processes guided by external stimuli (exogenous control) into an attentional selection controlled more by the child (endogenous control); from a regulatory perspective, this transition is made from an exogenous regulation (mostly directed by the parents or the context) to an endogenous regulation (characterized by more autonomy and independence). This transition is supported by the maturation of the attentional networks, that reach the peak of maturation between 4 and 7 years (Lozano, Salinas & Carnicero, 2004; Rueda et al., 2005).Evidence of the relation between emotional regulation and attention has been found in studies based on temperament. From this perspective, self-regulation is related to the construct Effortful Control, is evaluated with temperament scales, and includes the abilities of attentional shift and focus, inhibitory con-

trol, perceptual sensitivity and low intensity pleasure (Rueda et al., 2005). Effortful control allows individuals to regulate their conduct in dependence upon current and future goals.

Executive attention has been also linked to academic achievement and social status. A research made by Checa, Rodríguez and Rueda (2008) shows that executive attention scores where related with better academic achievement in general and more consistently in mathematics. They also found a correlation between the executive attention scores and Effortful control as reported by parents and a positive correlation between these scores and social appreciation made by children peers. They conclude: «these results show that emphasizing the mediating role of self-regulatory processes also offers a guidance for designing interventions and educational programs to improve school readiness by enhancing cognitive and temperamental control systems» (Checa, Rodrigues-Bailón & Rueda, 2008).

Neural Correlates of Executive Attention

In the last decade there has been a growing body of data obtained by combining this task with the methods of neuro-imaging used by the Cognitive Neuroscience research. This information helps to better understand the neural correlates of executive attention. In this way we can get a better picture of the dynamics and the interrelations between the different regulation processes, and their dimension (cognitive or emotional).

Studies made using neuroimaging techniques on patients with cerebral lesions have shown the existence of a series of frontal structures implicated in executive process. One of the most important structures that has been implicated in conflict detection and resolution is a subcortical structure called the Anterior Cingulate Cortex (ACC) (Kanske, 2008; Luu, Tucker, Derryberry, Reed & Poulse, 2003; Posner & Rothbart, 2005; Posner et al., 2007; Rueda et al., 2005). The consistent activation of this region in several studies using conflict tasks suggests that it plays an important role in the processing of conflict.

Most studies that started to relate this brain area with executive functions were made mostly with non-emotional stimulus. In recent years there has been a growing interest in studying how the brain behaves in the presence of emotional stimuli, by using a modified version of the tasks described above. The main modification was the usage of emotional stimuli to see the difference and similitude of the processing of emotional and cognitive information.

Kanske (2008) made a series of studies using this modification in several tasks to see if emotion affects attentional control. In line with other studies, this study shows that responses requiring executive control of attention were facilitated by emotional stimuli, independent of the emotional valence of the stimuli (positive or negative).

Why does emotion facilitate response in conflict tasks? This is a question that can be answered by looking at the findings of the neural correlates of conflict resolution in the presence of emotional stimuli. Kanske (2008) stud-

ies found that there was an activation of the dorsal part of the ACC in presence of conflict, in accordance with previous research. However, when the analysis was made with the stimuli having an emotional valence, results show that the ventral part of the ACC was sensitive to conflict only in the presence of emotional stimuli. Kanske proposes that this effect can be explained by the connections held between the ventral ACC and the Amygdala, a brain structure specialized in rapid detection of emotional valence from different types of stimuli (Gross, 2007; Kanske, 2008). The ventral ACC seems to integrate emotional relevance information with the current goals set in a task, yielding activation when reaction to an emotional stimulus requires attentional control because of present goal-conflicting activations (Gross, 2007; Kanske, 2008).

The data presented above provides us with empirical evidence about the interaction between Executive Attention and emotional information, and can help us understand how Executive Attention is important for emotional regulation.

Plasticity and Attention training

The role of experience in brain development cannot be neglected. The concept of brain plasticity helps us understand how experiences can shape brain dynamics (Bavelier & Neville, 2002). Examples of brain plasticity come from studies of how training increases performance in attentional tasks in children and adults.

Several studies made with attention Process training have shown results of improvement in executive attention tasks. They also has proven successful in training attention abilities in children with ADHD (Rueda, et al., 2005). These results have been supported by findings from cognitive neuroscience where different studies have found electrophysiological changes in infant brains associated with an increase in the performance of the control mechanisms (Berger, Tzur & Posner, 2006; Lozano et al., 2004; Posner & Rothbart, 2005; Rueda et al., 2005).

Evidence from the effectiveness of training in attentional mechanisms comes not only from training with the Attention Processing Training (APT), but we can also find studies that address the influence of non-traditional training like meditation. Several studies have shown that meditation can improves the efficiency of the attentional networks, improve emotional self-regulation processes, modify the dynamics of the brain functioning, provide emotional well-being and psychological as well as physiological health (Anderson et al., 2007; Chambers, Lo & Allen, 2008; Goleman, 2003; Jha et al., 2007; Kim et al., 2009; Antoine Lutz et al., 2004; Antoine Lutz et al., 2008).

Cognitive Reappraisal

Another of the antecedent focus emotional regulation strategies that has been widely studied is the so-called Cognitive Reappraisal. This strategy targets the cognitions associated with the emotional-eliciting stimulus and involves a cognitive transformation of the emotional experience in order to reduce the

negative effect (Deveney & Pizzagalli, 2008; Goldin et al., 2008; Gross & John, 2003; Ochsner & Gross, 2005, 2008).

Green and Malhi (2006) divide the strategies of cognitive reappraisal into a) those that reinterpret emotional aspects of the stimuli as neutral or more positive (situation-focus) and b) those that accept the affective significance of the stimulus as it is but attempt to deny its personal relevance through a process of detachment (self-focus).

In order to understand better the work of appraisal strategies, it is important to see the neural mechanism that underlies this process. In this way, it is easier to see the main components of this Regulatory Strategy.

Neural mechanisms of Cognitive Reappraisal

Data obtained by cognitive neuroscience studies with healthy individuals using cognitive strategies to regulate emotion has supported the role of several cortical regions. This data supports the inhibitory role of lateral and dorsal regions of the prefrontal cortex (PFC), and the dorsal section of the anterior cingulated cortex (dACC) in modulating neural activity in emotional appraisal systems (Green & Malhi, 2006; Ochsner & Gross, 2005, 2008).

In a review about neural mechanism of cognitive control of emotion, Green and Malhi (2006) describe how studies with cognitive reappraisal have yielded increased activation of prefrontal regions including the orbitofrontal cortex (OPFC), dorsolateral prefrontal cortex (DLPFC), lateral prefrontal cortex (LPFC) and medial prefrontal cortex (MPFC), accompanied by a decrease of activation of subcortical regions involved in the codification and labeling of emotional salient stimuli (i.e. Amygdala). The implication of prefrontal regions in the cognitive regulation of emotional episodes is considered to be important for actively generating and maintaining alternative ways of thinking (active interpretation) about the emotional stimuli, and involves processes like working memory and selective attention (Green & Malhi, 2006).

It is thought that the medial prefrontal cortex serves as the direct link between prefrontal cortex regions and the emotional generation systems, due to the lack of direct connections between the dorsal/lateral prefrontal cortex and the amygdale (Green & Malhi, 2006).

Besides these regions, there has been data that show activity in the dorsal anterior cingulated cortex (dACC), and has been related to the monitoring of interference between top-down reappraisals and bottom-up evaluations of the stimulus that continue generating the emotional response (Green & Malhi, 2006).

When comparing the two reappraisal strategies, that is the self-focus and situation-focus reappraisal, subtle differences can be observed in the way they recruit different neural mechanisms. Self-focus reappraisal differentially recruit the medial prefrontal cortex (MPFC) which is related to manipulation of internal information, whereas situation-focus reappraisal differentially recruit regions of the lateral prefrontal cortex (LPFC) which is related to manipulation of external information (Green & Malhi, 2006).

Cognitive Reappraisal is a strategy dependent on emotional information manipulation that rely on prefrontal and cingulated systems of attention, response selection and inhibition, working memory, language, mental-state attribution and autonomic control (Green & Malhi, 2006; Ochsner & Gross, 2008). Thus, for cognitive reappraisal to be effective the individual needs the ability to manipulate information (that may rely on control mechanisms) and to have information that enables a more effective reappraisal process (emotional knowledge).

Cognitive Reappraisal and Emotional Intelligence

Emotional intelligence refers to the interrelated skills that allow any individual to perceive, understand, use, and regulate emotional episodes in an efficient and adaptive manner (Mayer & Salovey, 1997; Wranik, Barrett & Salovey, 2007). Wranik, Barret and Salovey (2007) stated that emotional intelligence skills are related to functional effective behaviors, the quality of social interactions, perceived quality of social relationships and job related variables such as leadership potential. Mayer and Salovey (1997) propose that emotional intelligence includes four major skill-branch sets that allow this functional effective behavior. These branches are (Wranik et al., 2007):

Perception of Emotion: Refers to the ability to accurately perceive emotional episodes in others and in one self. Most people can perceive emotional episodes in others by viewing a set of facial behaviors, vocal cues or bodily movements.

Using emotion-related information to facilitate thought and make better decisions. This set of skills involve the ability to use emotional information to focus attention on important information in the environment, resolve control dilemmas, guide momentary judgment, and predict future behavior and outcomes.

The capacity to understand what emotions are and how they work (Emotion Knowledge): This skill encompasses language and propositional thought and reflects the capacity to analyze emotions, appreciate their probable trends over time, and understand their outcome.

Managing emotion in self and others: This includes the ability to maintain awareness of emotion-related events, even when they are unpleasant, as well as the ability to solve emotion-laden problems effectively.

As it was discussed earlier, the ability to manipulate emotional information is one of the core features of cognitive reappraisal strategies. This links the cognitive reappraisal strategies, with the third skill of emotional intelligence, that is, Emotional Knowledge.

Cognitive Reappraisal and Emotional Knowledge

Emotional Knowledge refers to the ability of the individual to understand what emotions are, how they work, how to regulate them and how they can

be useful (Mayer & Salovey, 1997; Wranik et al., 2007). Wranik, Barret and Salovey (2007) argue that, «Although all four branches of emotional intelligence skills are important, it may be that skills for understanding emotion are at the heart of intelligent regulation, influencing the other branches and acting as a driving force».

In addition, individual differences in the knowledge of emotion expression and emotion situations are related to positive social behaviors such as empathy, prosocial behavior, and peer status in children; at the same time, there appears to be a reciprocal relationship between social competence and verbal skills (Wranik et al., 2007).

Emotional knowledge is a storage as components and the complexity of it can be assessed by examining the underlying components such as the cognitive appraisal process (Wranik et al., 2007). Appraisal refers to the way an individual interprets a specific event, thus determining the way this event will influence and reflect the experience of emotion (Gross, 2007; Ochsner & Gross, 2005; Wranik et al., 2007). According to Wranik, Barret and Salovey (2007), appraisal reflects the conceptual knowledge an individual has about the self, the context, and emotions in general. It also reflects which situations and events an individual considers relevant dependent on current goals, motivation, personality and specific skills regarding changing the situation; and can occur very rapidly, at conscious and unconscious levels. (Wranik et al., 2007).

Moreover, intelligent emotion regulation will be related to underlying appraisal processes, conceptual knowledge about specific evaluations and emotions, and the functional utility of different regulation strategies for personal and social goals (Norman & Shallice, 1986; Wranik et al., 2007). Thus, Wranik, Barret and Salovey (2007) stated: «the more elaborate the knowledge about emotion, categories and underlying appraisal processes, the more likely the individual will learn to quickly reappraise a situation on specific evaluative criteria before an emotion episode becomes problematic or else to recover by focusing on those appraisals and elements of an event or the self may matter most for emotional episode».

Summary

From a Cognitive Science perspective emotions are conceived as episodic, relatively short-lived psycho physiological reaction patterns that result from evaluation of a stimulus concerning its relevance for the organism. This response has implications in several fields of life including physical and mental health, as well as social interactions. Thus the way that people regulate these experiences is important to develop a productive healthy life. Emotion Regulation involves the manipulation of subjective and physiological experience of emotions.

Emotion regulation is an ability that encompasses a series of mechanisms that humans use in order to regulate the negative impact of an emotion. This

process can be divided into antecedent focus and response focus strategies, being antecedent-focus the one that brings more beneficial results. From the antecedent focus strategies, the article focused on the attention deployment and cognitive change.

Attention is a process that enables individuals to develop a coherent goal directed behavior. This capacity requires the ability to select, detect and inhibit the distracting stimuli, and at the same time, orient and keep the mind focused on the current goal. Attention is also considered an Executive system (Executive attention, Executive Function), and it uses a group of control processes that help regulate information processing. These processes are: Conscious detection, inhibition and conflict resolution. Another concept that relates attention to self-regulation is the concept of Effortful control which allows individuals to regulate their conduct in dependence upon current and future goals.

Another antecedent focus strategy is the Cognitive Reappraisal, which involves a cognitive transformation of the emotional experience in order to reduce the negative effect. Its main focus is to manipulate the appraisal that the subject has about the emotional experience. This Reappraisal can be situation-focus (manipulating the situational cues) or self-focus (detaching oneself of the experience). Because reappraisal aims to modify the initial interpretation of an event, it requires information manipulation. This is why reappraisal is dependent on neural structures associated to working memory, language, selective attention and cognitive control. An important component of reappraisal is emotional knowledge which helps the individual to understand what emotions are, how they work, how to regulate them, and how they can be useful.

This was the Western perspective of Emotional Regulation, presented from the Cognitive Science field. Now we're going to present the Oriental perspective presented from the Tibetan Buddhist philosophy and discipline.

Buddhist Perspective

All Buddhist schools of tenets agree that the source of all afflictive emotions, such as desire, anger, pride, ignorance, doubt, and afflicted views,[1] which bind

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1. The *Treasury of Manifest Knowledge*, a classic text attributed to the sixth century Indian scholar Vasubhandu that forms the foundation for much of the branch of Buddhist Psychology traditionally called *Awareness and Knowledge* (Tibetan: blo rigs), describe the above list as the root afflictive emotions. They are defined as: (1) desire: a mental factor that perceives a phenomenon as «pleasant from the point of view of its own entity and thereupon seeks it», (2) anger: «intention to harm», (3) pride: «a puffing up of the mind», (4) ignorance: «absence of knowledge... with respect to the status of phenomena», (5) doubt: «two-pointedness of mind», and (6) afflicted views (perceiving oneself as permanent, etc). (Hopkins, 1996, pp. 256-261) The same text also lists the secondary afflictions as (1) belligerence, (2) resentment, (3) concealment, (4) spite, (5) jealousy, (6) miserliness, (7) deceit, (8) dissimulation, (9) haughtiness, (10) harmfulness, (11) non-shame, (12) non-embarrassment, (13) lethargy, (14) excitement, (15) non-faith, (16) laziness, (17) non-conscientiousness, (18) forgetfulness, (19) non-introspection, (20) and distraction.

beings in a round of uncontrolled birth, aging, sickness, and death, is founded on the misperception of the nature of persons and other phenomena. (Geshe Lhundup Sopa, Hopkins, Bstan-pa'i Nyi-ma & Dkon-mchog Jigs-med Dbang-po, 1989: 111) Buddhist doctrine asserts that we experience suffering on a daily basis because we relate to persons and phenomena through such afflictive emotions that distort our perception of reality.

Taking anger as an example, when we get angry our perception gets distorted. The process of distortion evolves in a sequence of three steps: (1) first we focus only on the negative qualities (inappropriate attention) of the person or phenomena, (2) then we exaggerate the negative qualities of the person or phenomena, and (3) finally we superimpose negative qualities to the person or phenomena. The worse superimposition is the perception of such person or phenomena as a source of suffering in itself—an inherent threat that needs to be destroyed or cast away as far away as possible. From there, we become intent on harming such person or phenomena. Not only does suffering arise when the afflictive emotion is present[2] but also by acting out this afflictive emotion (harming others) we nullify previous merit (with an instant of anger ending relationships that we nurtured for years)[3] and we create the causes for future suffering (when we experience a result similar to the cause getting harmed ourselves in the future).[4]

Nevertheless, this misperception is not endemic to the mind. Through the development of a wisdom that penetrates the reality of persons and phenomena, this misperception can be eradicated to achieve a state of liberation from all afflictive emotions, and hence a liberation from suffering.

Cultivation of Wisdom

Gampopa (Tibetan: sgam po pa bsod nams rin chen, 1079-1153), a physician-monk founder of the Dakpo Kagyu order of Tibetan Buddhism, describes three paths for the cultivation of wisdom: (Bkra-shis Rnam-rgyal, 1986: 111).

Concerning the application of inference on the path, one ascertains the absence of innate nature (Tibetan: rang bzhin) of all things by examining through deductive formula that negates one or many self-entities of individuals. And then, one meditates with the certainty that [intrinsic reality] is not anything but the void of self-nature.

2. On this Shantideva, an eight century Indian monk renowned for his advice about how to transcend anger, writes: «The mind does not find peace, nor does it enjoy pleasure and joy, nor does it find sleep or fortitude when the thorn of hatred dwells in the heart». (Shantideva, 1997: 61)
3. On this Shantideva says: An instance of «anger destroys all the good conduct, such as generosity and worshipping the Sugatas, that has been acquired over thousands of eons. There is no vice like hatred, and there is no austerity like patience. Therefore, one should earnestly cultivate patience in various ways». (Shantideva, 1997: 61)
4. On this point Shantideva claims: «Why did I previously act in such a way that now I am harmed by others? All are subject to their actions. Who am I to alter this?» (Shantideva, 1997: 69)

Regarding the application of spiritual blessing on the path, one seeks to gain control over the nervous system and the internal energies through meditational visualizations of the form of a tutelary deity (Tibetan: yi dam).

The path of direct awakening through open reality is the mahāmudrā of inmost purity.

These paths can be correlated to exoteric Buddhism (Sanskrit: sūtra), esoteric Buddhism (Sanskrit: tantra) and the Great Seal (Sanskrit: mahāmudrā). From this classification scheme, it is clear that Gampopa considered the Great Seal to be beyond esoteric Buddhism, «a separate path and independent of the sūtras and tantras» (Bkra-shis Rnam-rgyal, 1986: 112).

Path of Inference

In the application of inference on the path, one analytically searches «for phenomena that have been assumed to exist», an inherently (Tibetan: rang bzhin) existent person, but «cannot be found» (Newland, 1992: 2). In order to precisely recognize the object of negation, an appearance of an inherently existent person, one can recall in a meditational setting an emotionally charged situation where one held «tightly, in the center of the heart» a sense of 'I' such as when «one is being accused, even falsely» (Geshe Lhundup Sopa et al., 1989: 95-96; Hopkins, 1996: 44). One then explores, if such an inherently existent person exists, i.e. if the person really exists as tangibly and solidly as one feels such situations, how would such a person relate to her basis of designation—the parts that constitute her.

In the simplest analysis, if a person inherently exists, (1) she must either be one with her parts or (2) inherently different from her parts. The meditator has to reflect exhaustively until she is convinced that she has taken into account all possibilities (two in the simplest analysis). [5] In its simpler form, the parts that constitute a person are mind and body. In the traditional analysis, the person is mentally divided into the five psychophysical aggregates, the main components that constitute a person: forms (body and what it encounters), feelings (pleasure, pain, and neutrality), discriminations (apprehension of signs and designation of expressions differentiating the features), compositional factors (all mental factors other than feelings and discriminations), and consciousness (the mind where mental appearances take place and

5. One can also flesh out the posibilities further. In the fivefold analysis, suggested by Nāgārjuna, the second century Indian monk scholar who was one of the first advocates of such negating reasonings, in his *Treatise on the Middle Way* adds three possibilities by breaking down the previous two: (1) a person is not one with her parts, (2), a person is not inherently different from her parts, (3) a person is not in her parts, (4) the parts are not in the person, and (5) the person does not possess her parts. See (Hopkins, 1987: 212) Chandrakīrti, a seventh century Indian monk famous for elucidating Nāgārjuna's thought, in his *Supplement to (Nāgarjuna's) 'Treatise on the Middle Way'* suggests a sevenfold analysis breaking down into further detail the two main possibilities adding: (6) a person is not the mere collection of her parts and is not (7) the shape of her parts. See (Hopkins, 1987: 221) The apophatic procedure is the same for a twofold, fivefold and sevenfold analysis.

that engages with such appearances through the mental factors) (Hopkins, 1996: 239-243). By the application of inference leading to *reductio ad absurdum*, one would eliminate logically each possibility. For instance, to logically arrive at the conclusion that it is senseless for (1) the person to be one with her parts, one would follow a line of reasoning such as: «The I is not the aggregates because just as the aggregates are many, so the selves would be many, or just as the I is one, so the aggregates would be one» (Hopkins, 1996: 48). It is clear from this sample reasoning why Gampopa describes it as a «deductive formula that negates one or many self-entities of individuals». To logically arrive at the conclusion that it is senseless for (2) the person to be inherently different from her parts, one would follow a line of reasoning such as «The I is not a separate entity from the aggregates because if it were, the I would be apprehendable apart from the aggregates just as the character of form is apprehendable separate from the character of consciousness. But it is not» (Hopkins, 1996: 49). When one has systematically negated all possible ways of existence of the inherently existent person, one concludes that such inherently existent person, a person that exists as tangibly and solidly as it felt in the emotionally charged situation, does not exist.

Through applying reasonings one would eliminate logically each possibility and realize that a pointable person cannot be found. In the culmination of this practice, the meditator «perceives an utter vacuity that is the absence of such an I, and... sustains this space-like realization» (Hopkins, 1996: 66). Here, with the emptiness of the person as his object of meditation being explicitly cognized, one familiarizes the mind up to the point that the inferential realization becomes a direct realization of emptiness, where emptiness is cognized directly (not through the medium of a conceptual consciousness) by the wisdom consciousness. Notice that the meditator goes through a withdrawal process starting extrovertively (observing appearances, specifically the mistaken appearance of an inherently existent person) and ending in an introvertive state (where there are no longer any appearances of phenomena, only the emptiness of inherent existence of the phenomenon).

The same procedure can be applied to other elements of the emotionally charged situation, here exemplified by the false accusation. The above analysis dealt with the sense of the offended person existing more tangibly than how she really exists. The reasonings can also be applied to the offender: leading one to recognize that she is not inherently evil or ill-willed, there are many aspects to her, she is a product of causes and conditions, etc. And can be applied to the offense or accusation: it is also a product of causes and conditions in which I participated, (how did I contribute to this situation?) the words can be broken into mere sounds that are not inherently painful, they hurt because of the way I am interpreting them, etc. Reassessing the situation in such a manner allows the individual to develop a less personal, impartial, and balanced view of the situation.

It is important to emphasize that what is to be negated is inherently existing phenomena. Dependently arising phenomena do exist: imputed in

dependence upon its parts, which are termed its basis of designation. Phenomena are not mere imputations since they do perform functions and are subject to the laws of cause and effect. As a safeguard against falling into the nihilistic extreme that phenomena itself is what is to be negated, the meditation on emptiness is combined with the meditation on dependent arising where one recognizes that phenomena are dependent upon its parts, causes and conditions and mental imputations. It is also worth noting that the parts, causes, conditions, and mental imputations do not exist inherently either because they themselves can again be mentally broken into parts. From this perspective even the analysis of dependent arising, the safeguard to the extreme of nihilism is profoundly apophatic. The deconstructive method of taking the parts of a phenomenon and investigating in turn its parts can be taken infinitely and the meditator would never reach a directionally partless unit of matter or a temporally partless unit of consciousness that *does* inherently exist because even the smallest particle can still be mentally divided. The ontological implication of this world-view is that there are no constituents of reality that exist in themselves independently that make up the compounded phenomena with which we interact. The sense that *something* does inherently exist «out there» is a mere illusion.

Path of Spiritual Blessing

The path of spiritual blessings is a highly ritualized set of practices where the practitioner provokes the collapse of coarser minds, which give rise to subtler states of minds through working with visions, vibrations, heat, and fluids within the body. It was worth mentioning that such techniques are present within Buddhism but elaborating on them here would go well beyond the scope of this article.

The Great Seal

Gampopa presents the Great Seal tradition as Yoga of Co-emergence,[6] a method that explores not how phenomena *do not* exist (like the path of inference), but how phenomena *do* exist. The yogin is to realize two types of co-emergence: (1) the co-emergence of the mind and (2) co-emergence of appearances. In the practices related to the co-emergence of the mind the yogin gradually brings his attention inward, to the mind itself. By contemplating the essence of the mind as lucid, free from elaborations, and non-dual, the yogin realizes that the mind itself (Tibetan: sems nyid) is actually the Body of

6. Gampopa borrows the term «co-emergence» (Tibetan: lhan cig skyes sbyor, Sanskrit: sahaja) from the esoteric treatises and the Songs (Sanskrit: doha) of Saraha, one of the most famous Indian tantric adepts (Tibetan: grub thob, Sanksrit: siddha) according to Tibetan sources. On this, Broido writes: «If anything in Buddhism is ever invented by anybody sGam-po-pa was the inventor of the lhan-cig skyes-sbyor (sahajayoga) system of mahāmudrā». (Broido, 1987: 30)

Attributes (chos sku, dharmakāya) of a Buddha. In the practices related to the co-emergence of appearances, the yogin attends to how the various appearances arise in the mind. By contemplating that the essence of appearances (snang, including both 'external' appearances such as things and 'internal' appearances such as thoughts) is the mind of clear light (Tibetan: 'od gsal, here synonymous with Body of Attributes), the yogin realizes that appearances are radiations of the Body of Attributes (Tibetan: chos sku'i 'od) (Bkra-shis Rnam-rgyal, 1986: 222-223). Janet Gyatso explains the second as follows: (Gyatso, 1999: 127).

Mahāmudrā meditators are to accept and incorporate all states within the orbit of practice. Nothing that arises in meditation is to be rejected but rather is to be «realized» as having as its basic nature the same nature as that of the enlightened mind.

In the world-view developed through these techniques, unlike the path of inference, the ontological implication is that there *are* constituents of reality that exist in themselves independently that make up the compounded phenomena we interact with: the mind of clear light, the primordial wisdom we all possess that is constantly expressing itself radiating outwards. The sense of separation between the perceiver and the perceived appearances is the illusion here. Notice also that in the path of Great Seal, the yogi is combining two complementary techniques to access the nature of reality: introvertive techniques (looking inwards at the mind in the co-emergence of the mind) and extrovertive techniques (looking outwards at appearances in the co-emergence of appearances).

Foundation of Wisdom

Padma Karpo, the systematizer of the Drukpa Kagyu Order of Tibetan Buddhism (a sub-order of the Dakpo Kagyu order), emphasizes that in order to train in the cultivation of wisdom, the meditator should first train in higher ethics and higher thought (meditative stabilization).[7] Due to the practice of the six-limbed higher ethics,[8] one would thoroughly complete the *aggregate*

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7. (rgyal sras zhi ba lha & po, 2002: 294) Translation is mine.
8. The six branches of pure ethics come up in the extensive commentary on the *Discourse Unravelling the Profound Thought of the Nobles* (Tibetan: 'phags pa dgongs pa zab mo nges par'grel pa'i mdo, Sanskrit: ārya-saṁdhi-nirmocana-sūtra; quoted from bstan 'gyur mdo sde ti pa sha 88 na las btus) as:
    Abiding in Pure Ethics
    Restraining oneself with the vow of individual liberation
    Marvelous religious observance
    Marvelous scope of activity
    Viewing as frightening even the slightest of wrong-doings
    Training by completely adopting even the basis of training
    This is consistent with the *Discourse on Training* (Pali: Sikkha-Sutta; Anguttara Nikaya, 3.88) which describes the training in heightened virtue as:
    Being virtuous.

of ethics.[9] Then pacifying distraction, one would obtain higher thought. By thoroughly purifying it, one would obtain the *aggregate of meditative stabilization.*[10] Through abiding in meditative stabilization, wisdom is found. Then, having the courage to destroy all afflictions is called '*aggregate of wisdom*'.[11] Whoever destroys afflictions is liberated. Since this liberation depends on what is to be abandoned, it mostly is the *aggregate of complete liberation.*[12] Then, since the vision of primordial wisdom depends on what is to be realized, it mostly is called the *aggregate of vision of primordial wisdom of complete liberation.*[13] For this reason, higher ethics is taught before. Then engaging in the higher thought is taught and subsequently, exalted wisdom. Such is the order.

The three-fold path described here by Padma Karpo: higher ethics, higher thought (or higher meditative stabilization), and higher wisdom is a standard list known as the *three higher trainings.* Padma Karpo describes a Buddha (the ultimate goal of the Great Vehicle teachings of Buddhism, a brand of Buddhism that emphasizes altruism) as a composite of five aggregates. Even though they share the same name as the constituents of an ordinary person, they refer to something entirely different. The first three aggregates (ethics, meditative stabilization, and wisdom) correspond to the Buddha's embodi-

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        Dwelling restrained in accordance with the vow of individual liberation (Pali: Patimokkha)
        Consummate in his behavior
        Consummate in his sphere of activity
        Training himself having undertaken the training rules
        Seeing danger in the slightest fault
        Source: http://www.accesstoinsight.org/tipitaka/an/an03/an03.088.than.html

9. The description of aggregate of ethics of Mipham Rinpoche, a great 19th century Tibetan scholar is: «The buddha's appearance as form-bodies [rupa-kaya] are unlike the form of an ordinary sentient being. Rather, their simultaneous appearances, like reflections, result from immeasurable causes of undefiling merit [and appear] to those to be tamed throughout the realms in the ten directions. This very function of discarding while gathering an immensity of virtuous qualities should be understood as the undefiling 'aggregate of discipline'». (Jamgön Mipham Rinpoche, 2008: 159)
10. Mipham's description of the aggregate of meditative stabilization: «Similarly, the 'aggregate of concentration' is to be free from various kinds of sensations, while remaining forever unmoved from dharmadhatu». (Jamgön Mipham Rinpoche, 2008: 159)
11. Mipham's description of the aggregate of wisdom: «The 'aggregate of discriminating knowledge' is, while being free from various kinds of perceptions ('du shes), to cognize without conceptual thinking, effortlessly and spontaneously (lhun grub), all attributes of things as they are and whatever may exist». (Jamgön Mipham Rinpoche, 2008: 159)
12. Mipham's description of the aggregate of complete liberation: «The 'aggregate of liberation' is the complete subsiding of all the activities of outer and inner formations ('du byed), due to having discarded the two obscurations along with their tendencies (bag chags)». (Jamgön Mipham Rinpoche, 2008: 160)
13. Mipham's description of the aggregate of perception of primordial wisdom of complete liberation: «The 'aggregate of perceiving the wisdom of liberation' means to see or to perceive, by means of individual self-cognizance (rang rig), the wisdom that is, itself, the nature of liberation from the attributes of the aggregate characterized by the eight collections of consciousness». (Jamgön Mipham Rinpoche, 2008: 160)

ment of the three higher trainings. The third aggregate of wisdom would seem to roughly correspond with the wisdom attained in the path of inference: the understanding of conventional phenomena. The fourth aggregate (complete liberation) describes the state of a Buddha as being free from the obstructions of afflictive emotions, i.e. liberation from suffering, *and* free from the obstructions to omniscience. The fifth aggregate would seem to roughly correspond with the kind of wisdom attained in the path of blessings and the Great Seal: self-cognition, primordial wisdom knowing itself.

The three higher trainings are attributed to the Buddha himself. In his Discourse on the Three Trainings (Sanskrit: Śikṣātraya-sūtra, Tibetan: bslab pa gsum gyi mdo) he says:[14]

> Monks, these are ethics. This is meditative stabilization. This is wisdom. When one becomes accustomed to ethics, one will abide in meditative stabilization. When one becomes accustomed to meditative stabilization, one will attain wisdom. When one becomes accustomed to wisdom, exactly the very pure mind becomes liberated from desire, anger, and delusion. In that way, the superior hearer whose exactly very pure mind has become liberated, exhausts his/her contaminations. He adheres to pure behavior. He performs activities. He knows no other existence.

Higher Meditative Stabilization

H.H. the Dalai Lama describes the necessity of meditative stabilization for wisdom in this way (Bstan-'dzin Rgya-mtsho & Hopkins, 2002: 22-23):

In order for the wisdom of special insight to remove impediments to proper understanding, and to remove faulty mental states at their very roots, we need concentrated meditation, a state of complete single-mindedness in which all internal distractions have been removed. Otherwise the mind is too fractured. Without such one-pointed concentrated meditation, wisdom was no force, just as the flame of a candle in a breeze does not give off much illumination. Therefore, concentrated meditation must precede wisdom.

In Gampopa's presentation, the cultivation of a one-pointed concentration is developed in the first of the four yogas of the Great Seal (Tibetan: phyag rgya chen po'i rnal 'byor bzhi), a set of four complementary practices for the gradual realization of the co-emergence of the mind and co-emergence of appearances.[15] Trashi Namgyel (Tibetan: bkra shis rnam rgyal), a 16th

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14. Kangyur (Tibetan: bka' 'gyur), volume 73. Translation is mine. Consulted editions of the Kangyur: lha sa, sde dge par phud, snar thang, stog pho brang, and urga.
15. Some Tibetan masters considered the four yogas of the Great Seal as «originating from the personal experience of sGam-po-pa». Others have said that these are found in the tantric treatises, and what Gampopa did was compose a clear elucidation on each of the four yogas. (Bkra-shis Rnam-rgyal, 1986, pp. 357-358) Be it as it may, «the earliest, rather concise but nonetheless systematic, statements concerning» them were made by Gampopa. (Guenther, 1992: 1)

century Tibetan master, quotes Gampopa's synthesis (Bkra-shis Rnam-rgyal, 1986: 358-359):

(1) A lucid (Tibetan: gsal), unceasing (Tibetan: ma 'gag pa), momentary awareness (Tibetan: shes pa)
    Is the one-pointed stage of yoga (Tibetan: rtse gcig, Sanskrit: ekāgrata).
(2) Understanding the essential state of that awareness
    As non-arising (Tibetan: skye med) [emptiness],
    Which transcends conceptual modes of reality and unreality,
    Is the nondiscriminatory yoga (Tibetan: spros bral, Sanskrit: niṣprapañca).
(3) Understanding diverse appearances (Tibetan: snang ba) as being one
    From the standpoint of their intrinsic nature (Tibetan: ngo bo)
    Is the one-flavor yoga (Tibetan: ro gcig, Sanskrit: ekarasa).
(4) An unceasing realization of the union
    Of appearance (Tibetan: snang) and its intrinsic emptiness (Tibetan: stong)
    Is the great equipoise of the nonmeditation yoga (Tibetan: sgom med).

In the *yoga of one-pointedness* (Tibetan: rtse gcig), one gradually moves the attention inwards. One first anchors one's mindfulness on a support, which may be external (such as a pebble or an image of the Buddha), bodily (such as a recitation of sacred syllables or the breath), or internal (such as a mental image). One then switches the focus of his attention to the observer itself instead of the object of observation. Eventually one would be able to have the attention fully rest on the mind itself without the anchor of an object of observation. In the *yoga of freedom from elaborations* (Tibetan: spros bral) one examines by means of analogies the mind's *structure* (does it have form like a stone?), *luminosity* (does it have a color like white or black?), *basis* and *support* (does it rest in a particular part of the body?), *identity* (is it empty like space?), and *mode* (is it like the flame of a butter lamp? inborn lucidity without light or color?). Eventually one will perceive the mind in its natural simplicity: incorporeal, formless, colorless, or without dwelling or support, empty of any identity, and unaffected by concepts. At this point the process of discrimination will cease and a mere self-cognizing non-conceptual awareness will arise. The first two yogas would correspond to the co-emergence of the mind. Notice also that the yoga of freedom from elaborations is an apophatic approach (via negations) to the self-cognizing primordial wisdom.

In the yoga of one taste (Tibetan: ro gcig) one allows appearances to arise in the mind. Performing a similar analysis as before one will examine the structure, basis, support, identity, and mode of manifestation of the appearances. Eventually one will ascertain all phenomena to be of one taste with respect to the appearance and mind being undifferentiated (Tibetan: dbyer med). Through repeated familiarization with this ascertainment, one attains the yoga of non-meditation (Tibetan: sgom med) where all phenomena will be spontaneously or effortlessly (without the need for the cultivation of that experience) perceived as emptiness, as exalted wisdom. The third and fourth

yogas would correspond to the co-emergence of appearances. Notice that the yoga of one taste and the yoga of non-meditation are a cataphatic approach (via affirmations) to the self-cognizing primordial wisdom. Hence, unlike the path of inference, which is a thoroughly apophatic access to the nature of reality, the practice of the four yogas accesses the nature of reality through both apophatic and cataphatic complimentary techniques.[16]

Higher Ethics

The training in higher ethics consists of the cultivation of generosity, ethics, and patience (Sgam po pa, 1998: 179). The *Discourse Unravelling the Thought of the Nobles* (Sanskrit: ārya-saṁdhi-nirmocana-sūtra), a classic Indian treatise, succinctly summarizes each of these in terms of three aspects. Generosity consists of 1) giving material things, 2) giving doctrine (teaching others the means to the release of suffering), and 3) granting fearlessness (making others feel safe). Ethics consists of 1) overcoming non-virtue (restraining oneself from harming others), 2) engaging in virtue (developing an altruistic intention, protecting others), and 3) engaging in the welfare of beings (helping others dispel suffering and attain happiness). Patience consists of 1) patience that endures injury (learning how to cope in a constructive manner with situations when one gets harmed), 2) patience of not being intimidated by suffering (learning how to cope in a constructive manner with suffering), and 3) patience in discerning the doctrine (not giving up in the path despite obstacles) (Powers, 1995: 245).

An important component of the training of ethics is that it provides the necessary conditions for spiritual development, such as a conducive environment to practice. Equally important, also through practice of ethics one trains in certain mental factors that later become essential for the cultivation of mental stabilization. In Gampopa's explanations of the ethics of engaging in virtue, when quoting the classic Indian treatise of *Stages of the Bodhisattva* (Sanskrit: bodhisattva-bhumi), he cites that among the virtues to be accumulated are «sustaining introspection (Tibetan: shes bzhin); recollecting (Tibetan: dran pa) the bodhisattva's trainings; protecting the bodhisattva's trainings with vigilant awareness (Tibetan: bag yod)» (Sgam po pa, 1998: 199). Introspection refers to watching one's engagement in physical, mental, verbal deeds (Hopkins, 1996: 266). Mindfulness (Tibetan: dran pa) is «non-forgetfulness» (Hopkins, 1996: 247). Conscientiousness is what «keeps the mind from coming under the influence of afflictions» and «causes the achievement of virtue while abiding in effort» (Hopkins, 1996: 252).

Shantideva, the great 9th century Indian master, raises the importance of these three mental factors: introspection, mindfulness, and conscientiousness

16. I will develop the theme of contrasting the religious experience of the path of inference and the Great Seal in my translation and study of Padma Karpo's *Conquerer's Treasury* as part of my dissertation.

to the level of the indispensable mental factors that form the basis of ethics.[17] With mindfulness one remembers what physical, verbal, and mental actions are to be adopted and rejected. With introspection one is observing ones physical, verbal, and mental actions in order not to engage inadvertently in destructive behavior. Conscientiousness is what stops us from engaging in destructive behavior that we know (through mindfulness) that is destructive and we know we are about to do it (through introspection); i.e. it acts as an antidote to attitudes such as «who cares, nobody will notice anyway».

These three mental factors later become indispensable in the cultivation of meditative stabilization. In the meditational setting, mindfulness reminds us about the object of observation when we have lost it due to forgetfulness. Through introspection we notice when laxity and excitement (the two main obstacles of calm abiding) has arisen, and through conscientiousness we apply the proper antidotes. H.H. the Dalai Lama describes the necessity of ethics for concentration meditation in this way (Bstan-'dzin Rgya-mtsho & Hopkins, 2002: 23):

Single-minded meditation involves removing subtle internal distractions such as the mind's being either too relaxed or too tight. To do so we must first stop external distractions through training in morality of maintaining mindfulness and conscientiousness with regard to physical and verbal activities— being constantly aware of what you are doing with your body and your speech. Without overcoming these obvious distractions, it is impossible to overcome subtler distractions. Since it is through sustaining mindfulness that you achieve a calm abiding of the mind, the practice of morality must precede the practice of concentrated meditation.

Summary

According to the Buddhist position, beings suffer because of the arising of afflictive emotions, which distort the apprehension of oneself and its surroundings. With this distorted perception comes a faulty interaction with oneself and others and an engagement in destructive behavior. It is possible to correct our mistaken perception of reality and achieve a state of cessation of suffering. The path to the achievement of this state of well-being starts with the training in higher ethics. Here the practitioner creates a safe and conducive social environment, and trains in mental skills such as mindfulness, introspection, and conscientiousness. The practitioner then utilizes these skills in the training in higher meditative stabilization to understand how the mind operates and

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17. In Shantideva's treatise *Engaging in the Bodhisattva Behavior* (Sanskrit: bodhisattva-carya-vatara), he devotes a whole chapter to conscientiousness (chapter 4, Teachings on Conscientiousness), which includes a section on mindfulness (verses 23-34). See (Shantideva, 1997: 39-46). He then devotes the next whole chapter to introspection (chapter 5, Guarding Introspection). See (Shantideva, 1997: 47-60). According to Padma Karpo, Chapter 5 is where most of Shantideva's explanation on Ethics is, even if the title of the chapter does not include the word «ethics». See (rgyal sras zhi ba lha & po, 2002: 239-240).

to cultivate power states of mental stability, attention, and concentration. Finally, in the training in higher wisdom, through the application of various techniques, he directs the finely tuned concentration to the cognitive process to deconstruct mistaken views of reality. This then gives rise to a correct view, which allows for a balanced, unbiased, and healthy interaction with oneself and others.

Framework for Educational Programs focus on Self Regulation

Having presented an overview of the cognitive science and Buddhist perspective on the «emotional regulation» process and constituents, we will now describe a proposal for a conceptual framework for the development of educational programs that has the training in emotional regulation abilities as the main objective.

First of all it is important to answer to the question 'why' to use the Buddhist perspective as a guideline framework for the educational programs developed through cognitive science.

To answer this question, first we most notice that Buddhism is a tradition of contemplative practices that aims at the liberation of suffering, and thus, throughout its 2,600 years of existence has put emphasis on the study of the mind and phenomena. As various Lamas (Buddhist masters of meditation) and scholars of Buddhism stated, Buddhist teachings and methods can be compared with the western scientific method in the way that there is no teaching or statement that has to be taken as a fundamental truth. Instead, Buddha himself motivated his students to question, analyze and test his statements. If the result of this «experiments» invalidated a teaching, then it should be discarded (Goleman, 2003; Nydhal, 2003). With this «scientific» approach Buddhist philosophy and psychology has been developed with a logic that can resemble the actual scientific theory. One of the most important differences between actual psychological theory and Buddhist theory is that Buddhist theory was developed in a soteriological context, whereas cognitive psychology has as a main objective the explanation of the dynamic of mental processes. This practical emphasis of Buddhist theory allows neuroscientific studies of Buddhist meditational techniques, by means of scientific experimental methodologies, that can show empirical results of the benefits proposed by Buddhist theory.

Second, Buddhism not just proposes a theory of how to get rid of suffering, but it gives the methodology necessary to achieve this aim. This methodology can have different expressions, from monastic (that can be seen mostly in Asian countries) and lay approaches to Buddhist practice in traditionally Buddhist societies (Indian, Tibetan, Japanesse, etc) to the contemporary adaptation of the Buddhism in western countries (Europe, America). All these different practices have shown beneficial results for the practitioners, demonstrated by various studies from the medical, clinical-psychology, and neuroscientific perspectives (Anderson et al., 2007; Goleman, 2003; Jha et al., 2007;

Anotine Lutz, Brefczynski-Lewis, Johnstone & Davidson, 2008; Antoine Lutz et al., 2004; Semple et al., 2006).

Third, by understanding the different approaches that these two perspectives use to study mental phenomena we can understand and complement them. Occidental Cognitive Psychology uses a «external approach», in the sense that the study is focused mainly on the dynamics of information processing. By means of a methodology and experimental tasks specifically designed to capture mental processes reflected in behavioral results (mostly reaction times, eye movement, etc) and technology able to measure brain activity dependent on certain mental processes (EEG, fMRI, PET, etc), cognitive psychology aims to understand how the brain and mind are able to perceive, interpret, process and develop a behavioral response. At the same time, it has «specialized» in different fields aiding in the study of certain processes. With this approach the development of Psychology has made substantial steps and is able to explain in great detail the dynamics of mental processes and mental pathologies. From the knowledge obtained with this perspective it has developed numerous efficient treatments and interventions that aim to help overcome several psychological problems (i.e. Educational Disorders, Psychopatologies, neurpsichological conditions, etc).

The Buddhist methodology uses an «internal approach» that aims to understand the way in which mental representation, objects and processes interact to create an experience of suffering or liberation and enlightenment. By means of meditative contemplation and introspective observation Buddhist masters obtain the knowledge of how the interplay of these various aspects interacts to develop this kind of experiences. From a traditional scientific approach this has not been taken as a rigid scientific methodology because of its «subjectivity». But, since cognitive theories have begun to study appraisal processes, and the importance of the first person data (Antoine Lutz, Lachaux, Martinerie & Varela, 2002), it has been noticed that the use of introspective techniques to study mental processes cannot be neglected. Buddhist meditative training, that develops powerful concentration and insight, and the emphasis placed on wisdom helps practitioners to develop a more «objective» observation of mental phenomena (Goleman, 2003). Aside from this, as mentioned above, meditators have to use this powerful concentrated state of mind, to be able to focus on mind processes and objects to be able to realize the absence of inherent existence of themselves. With this focus, experimented meditators are able to abstract themselves from subjective thoughts and feelings, and are able to observe mind in itself. At the same time, this perspective denotes the interdependent dynamics of all mental processes, allowing us to understand the interaction between mental phenomena.

By combining these two sources of knowledge and experimental approaches, the understanding of mind processes and dynamics would gain explicative power, more direct understanding of the theory-experience relationship and more effective intervention approaches. The former is the aim of the present framework.

Starting point: metacognition

One of the theoretical constructs that can help to bind both perspectives is the concept of Metacognition. Metacognition is a broad term that encompasses aspects of knowledge and Regulation of cognitive activity, and is made up by two fundamental processes: metacognitive control and metacognitive knowledge (Fernandez-Duque, Baird & Posner, 2000a; Fernandez-Duque et al., 2000b; Shimamura, 2000). This includes bottom-up processes, also called «cognitive monitoring» (i.e. error detection, stimuli monitoring, etc), as well as top-down processes, also known as «cognitive control» (conflict resolution, error correction, inhibitory control, strategy planification, etc).

Metacognitive Control refers to the ability to control and regulate the cognitive processes (Fernandez-Duque et al., 2000b; Flavell, 1999). Metacognitive control involves four aspects of Executive control, which are: selecting, maintaining, updating and rerouting (Shimamura, 2000). Selecting refers to the ability to focus attention to stimulus events or activation in working memory representations. Maintaining refers to the ability to keep active information in working memory. Updating refers to the ability to modulate and rearrange activity in working memory, and Rerouting refers to the ability to switch from one cognitive process or response set to another. These mechanisms enable a top-down modulation of cognitive processes. Thus metacognitive control is thought to share some of the same features with the Executive Control (Fernandez-Duque et al., 2000b; Shimamura, 2000).

Metacognitive Knowledge is conceived as the knowledge the individual has about the existence and functioning of the mind and mental states (Flavell, 1999). Being aware of one's own mental processes provides individuals with better abilities for error detection and correction. This monitoring and awareness of responses and processing is crucial for a coherent and successful behavior.

When we understand how these processes interact, the interdependence of both processes is evident. If control mechanisms (selecting, maintaining, updating and rerouting) are supported by a poor metacognitive knowledge, then it would not be clear which information is to be selected, what part of the selected information is needed for the task (maintaining), what other information is required (updating) and finally what part of the information is to be discarded (rerouting). The same applies for metacognitive Knowledge (monitoring and awareness) supported by poor metacognive control mechanisms.

In terms of emotional regulation strategies, Metacognitive control can be related to attentional control and metacognitive knowledge to cognitive re-appraisal. Metacognitive control has a more clear relation with attentional control because both are Executive control functions. But why consider cognitive re-appraisal a form of Metacognitive Knowledge? As was mentioned above, cognitive re-appraisal involves a cognitive transformation of the emotional experience in order to reduce the negative effect (Deveney & Pizzagalli, 2008; Goldin et al., 2008; Gross & John, 2003; Ochsner & Gross, 2005, 2008). This strategy requires, in order to be antecedent focus, the monitoring

and awareness of emotional eliciting stimuli or event even before the emotional experience is developed. By monitoring stimuli perception and becoming aware of stimulus and/or events that may elicit negative emotional responses, the individual can use the cognitive control mechanisms to modulate the information processing in order to regulate the emotional response. Thus, metacognitive knowledge can be related to the emotional intelligence branch of «emotional knowledge».

Educational Framework proposal

Using the metacognitive framework for understanding the interdependence of mechanisms of control (Metacognitive Control), knowledge about the mind and mental states (Metacognitive Knowledge), the importance of the relationship between this processes for emotional regulation, and by using the Buddhist presentation of the «Three higher trainings» (mentioned above), we present a theoretical proposal as a framework for educational programs that aims to train self regulation abilities.

It is difficult to make a direct comparison between what Buddhism presents in the «Three higher Trainings» and what cognitive psychology presents as metacognition mechanisms for emotional regulation. This is because both traditions have a different starting point, ontological premises, and a different way to approach human mental experience. Nevertheless, as mentioned above, by putting both presentations in perspective and using the concepts presented by each tradition to explain certain ideas, we can make some approximations that may help to demark a comprehensible framework for developed emotional regulation educational programs.

Wisdom and Metacognitive Knowledge

The first approximation that can be done is between the concepts of metacognitive Knowledge and the Buddhist concept of Wisdom. Understanding that wisdom is the knowledge and experience the meditator develops regarding the existence of his own experience and mind (as empty of inherent existence), the meditator needs some kind of Metacognitive Knowledge that helps him to understand and realize this knowledge. In this sense, and focusing on the Path of Inference for the cultivation of Wisdom, the meditator must have access to information and teachings on the various approaches and logical lines of reasoning used to access this wisdom.

While wisdom refers to the final outcome, the training to achieve it requires knowledge about the mind, mental states and phenomena. In this sense, we can say that the training of the cultivation of Wisdom has as a fundamental element metacognitive Knowledge.

While the Buddhist concept of wisdom refers to the final goal of training, the cognitive concept of metacognitive knowledge refers to the information that the individuals needs in order to get to know their own experience. From the perspective of cognitive science, this information is necessary in

order for the individual to become aware of the cognitive and emotional processes that are being developed so it can trigger the necessary control mechanisms to modulate the emotional experience. Hence information is essential, in both perspectives, for an effective emotional regulation.

Meditative Stabilization and Metacognitive control

The next approximation that can be observed is between metacognitive control and meditative stabilization. As we describe above, metacognitive control refers the mechanisms that top-down modulate the cognitive process of information; whereas meditative stabilization can be understood as the pacifying of distraction necessary for the development of wisdom. Both concepts denote the idea of mental control and focusing the mind, but as in the approximation between wisdom and metacognitive knowledge, the goal of these to models are different.

While one model refers to the «pure» cognitive control process (metacognitive control), the other refers to an aggregate necessary for the cultivation of wisdom (meditative stabilization). The model of Metacognitive Control pinpoint to the cognitive processes of executive attention, while the model of Meditative Stabilization denotes the development of a mental tool that focuses on the realization of wisdom. In this way, meditative techniques used by Buddhism are practices aimed for the realization of certain «Metacognitive Knowledge» that supports the development of wisdom, hence better self-regulation skills.

From a Buddhist perspective, the interaction between practices aimed at the development of wisdom and mental control are fundamental, whereas from the cognitive psychology perspective, the interdependence between metacognitive knowledge and executive control is starting to be studied, but have not been applied to interventions aimed at the development of self-regulation skills in an educational context.

By using the approximations presented above, we can delineate a first part of the conceptual framework for the educational program, that is, the development of a program that includes a socio-emotional educational course (that provides the necessary information) and a training in the executive control abilities (training on attention and concentration). But what about the first training in the Buddhist perspective, that is, the training on Ethics?

The training in Ethics and Conduct

The training of Ethics can be a guideline of what to aim, as behavioral rules, in a classroom context. Taking into account the different types of trainings in ethics, the conduct can be guided to act as a support for the development of emotional regulation techniques.

First, using the Training on restraining for harming others and the training in benefiting others, the children can be guided to develop pro social behavior that strengthens the inhibitory processes of control, by presenting external stimuli that acts as an exogenous form of regulation of behavior.

Ethics is developed on the foundation of introspection, mindfulness and consciousness. By emphasizing in these three aspects, the conduct becomes a strong support for metacognitive control and metacognitive knowledge. Introspection strengthens the ability of monitoring which is needed for detecting potential negative emotional eliciting situations. Mindfulness, the ability of becoming aware, and conscientiousness helps strengthen emotional knowledge, by increasing the ability of individuals to know and understand their own mental processes and emotional experiences.

The training in ethics can be translated into a tool that helps bridge exogenous regulation of behavior and endogenous control. This jump is not done just by means of ethics training, but is supported by the other two trainings.

As have been expounded above, an educational program that integrates training of metacognitive control, the transmission of information that aims to strength metacognitive Knowledge (theory of mind, emotional knowledge, self-knowledge) and the behavioral rules that aim at strengthening the training on ethics, theoretically, can have more beneficial results than programs that focus on one of this abilities.

The knowledge about the mind, emotions and social life, aids in knowing what is beneficial and what is harmful and negative. Combining this knowledge with efficient mental control mechanisms the ability of self-regulation becomes stronger. These abilities combined with an ethics training can help develop better pro-social behavior.

An educational program that includes these three trainings, would be able to provide children with the necessary information, training experience and rules of conduct that support an effective development of emotional regulation abilities.

The organization of programs using this scheme has been proven throughout history in Buddhist training programs for almost 2,600 years, and in every Buddhist culture there have been individuals that achieved what Buddhism proposes as a goal (liberation and enlightment). Moreover, the neuroscientific, medical and psychological studies on the benefits of Buddhist training have shown beneficial effects in the emotional states and cognitive processing abilities. Then, why not have the system of the three higher trainings as a guideline for the development of more efficient educational programs for training emotional regulation abilities?

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