INTRODUCTION TO VOLUME II

Theories of Specific Emotions, a Master Table of Case Studies, and Some Key Challenges

Andrea Scarantino

Volume I of this collection aimed to introduce you to what we know about emotion as a superordinate category. It covered the history of emotion theory over 25 centuries, the main contemporary theories of emotions in philosophy, psychology, neuroscience, and sociology, and some of the core elements out of which theories of emotions are built. We are now in a good position to tackle other pieces of the emotion puzzle, organized under two main headings:

- Contemporary theories of 35 specific emotions: Amae, Amusement, Anger, Awe, Compassion, Contempt, Depression, Desire, Disgust, Interpersonal Dislike, Embarrassment, Empathy, Enthusiasm/Excitement, Envy, Fear, Gratitude, Guilt, Happiness/Subjective Well-Being, Hate, Hope, Interest, Jealousy, Love, Lust/Sexual Desire, Pain, Pleasure, Pride, Regret, Sadness, Saudade, Schadenfreude, Shame, Stress, Surprise, Sympathy (Volume II, Part IV)
- Major theoretical challenges currently facing emotion theory in philosophy and in the affective sciences, pertaining to their special elicitors, relations with other elements of mental architecture, presence in infants/animal/groups, and normative dimensions (Volume II, Part V)

I will now explain the rationale for the two parts of Volume II, give you an overview of the contents of the chapters contained within, and hint at some of the insights about emotion theory that Volume II aspires to provide.

Part IV: Nature and Functions of 35 Specific Emotions

I often find myself stuck while working through a puzzle in emotion theory due to lack of detailed knowledge about prototypical emotions such as *anger*, *guilt*, *disgust*, *shame*, *jealousy*, *happiness*, *sadness*, *love*, and so on. The problem is magnified as soon as I move to less prototypical emotions such as *amusement*, *contempt*, *hate*, *awe*, *gratitude*, *surprise*, *regret*, *hope*, and *sympathy*, let alone culturally specific emotions like *amae*, *saudade*, or *Schadenfreude*.

The questions I generally ask, but cannot easily find answers for, are: How can this emotion be defined? What do we know about its expressive, behavioral, and neurophysiological underpinnings? What are its evolutionary and/or cultural functions? What are its main impact areas with respect to health, well-being, economic choices, and social dynamics? In some cases, my puzzlement is more radical. When contemplating *desire*, *interest*, *interpersonal dislike*, *lust*,

DOI: 10.4324/9781003469018-1

pain, *pleasure*, *stress*, and other affective states, I wonder: Are these really emotions? If so, in what respects do they differ from other affective states which seem to be emotions in a more straightforward sense?

Part IV aims to answer these sorts of foundational questions with respect to 35 candidate emotions in total. It will offer students and researchers what was not available before: a single bibliographic resource to consult to get some clarity on the nature and functions of a full roster of discrete emotions. In some cases, chapters deal with multiple emotions which are thematically related, whereas in other cases they focus on a single emotion. What was the criterion of inclusion? Primarily, having been considered an emotion at some stage in the history of emotion theory by a significant group of emotion theorists, and having been the target of a sizable scholarly literature over the past 40 years or so. I am now persuaded that a strong case can be made that all 35 candidate emotions covered in Part IV ought to qualify as emotions at least relative to some theoretical purposes. If you remain unconvinced, the chapters will offer you plenty of alternative characterizations.

The master table that follows is my attempt to summarize the accounts of emotions discussed in chapters 28-49 under three headings: working definitions, bodily underpinnings, and functions. These short summaries are to be understood as invitations to read the chapters and see relations among the emotions they discuss, rather than as definitive statements (some may not be fully endorsed by the chapter's authors).

As you canvass this summative table, I would like to point your attention to several features that strike me as noteworthy:

1 Working definitions of emotions can be formulated by relying on just three components: the appraisal component, the feeling component, and the action tendency component. I do not think this is by chance. Part I of this collection reveals that emotions have historically been understood as distinctive ways to appraise the world, distinctive conscious experiences, and distinctive sources/manifestations of behavioral changes. Once these three core attractors in the project of defining emotions are combined, a maximally broad definition of emotions emerges. This working definition would likely be too broad for some theoretical purposes, but it offers a preliminary criterion of inclusion for the set of items to be philosophically or scientifically explained. Although different theories tend to privilege appraisals, experiences, or action tendencies in their definitions of emotions, they all play important roles in explaining the full suite of emotional phenomena we distinguish in folk psychology.
2 Several folk psychological emotion categories capture a multiplicity of types of emotions which fall under the same lexical banner, but demand importantly different theoretical treatments. For example, pride includes authentic pride and hubristic pride; disgust includes pathogen, sexual, and moral disgust; envy includes benign envy and malicious envy; empathy includes basic and re-enactive empathy; fear includes pre-encounter, post-encounter, and circa-strike fear; and so on. This indicates that we should think of folk psychological emotion categories as starting points rather than end points for theoretical analysis. If a theoretician is interested in articulating generalizations about emotions pertaining to their bodily underpinnings, computational and information processing capacities, and proximate or distal functions, it may be necessary to split folk emotion categories into more homogeneous subcategories. There is just too much heterogeneity within folk emotion categories to allow for generalizations at the implementational, algorithmic, and computational levels to be true of all folk category members (Marr 1982; Scarantino 2012).
3 Not all emotions can be expressed through the body in the same way, although all emotions can in principle be expressed verbally. For example, some emotions arguably cannot be expressed at all through facial and postural movements (e.g. envy, guilt), some emotions

can be expressed only through multimodal bodily movements (e.g. pride, shame, embarrassment) and a handful of emotions can be expressed through facial movements (e.g. anger, disgust, fear). Several chapters in Part IV emphasize the importance of vocal and tactile expressions of emotions, which have so far been neglected in comparison with expressions through facial movements.

4 All emotions appear associated with action tendencies of some sort. In some cases, the tendencies involve primarily mental actions (e.g. regret, *saudade*), but in most cases they involve both mental and bodily actions (e.g. anger, fear). The specific actions associated with emotions manifest great diversity, which is reflected in the presence of multiple action tendencies for various emotions. In some cases, authors have provided an overarching action tendency which aims to cover all actions that can be associated with the emotion, no matter how diverse. This tells us that action tendencies can be described at different levels of abstraction. Furthermore, the more abstract the level of description, the easier it is to associate a single action tendency with each emotion. At the same time, the more abstract the level of description, the more variable are the manifestations of the tendency, and consequently the less informative the ascription of the tendency is.

5 Several emotions manifest typical neural, physiological and expressive markers, but such markers rarely if ever manifest a one-to-one correspondence with folk psychological emotion categories. There do not seem to be any brain areas, neural circuits, autonomic changes or expressive changes activated always and only when a certain emotion type occurs. In fact, all bodily markers of emotions manifest massive context-dependent variability. This is not surprising if we keep in mind that the same folk psychological emotion category may encompass importantly different subtypes of emotions (e.g. re-enactment sympathy vs. basic sympathy, authentic pride vs hubristic pride). Furthermore, instances of the same emotion type can vary greatly in terms of their intensity and metabolic demands in different contexts, which is bound to result in partially different neurophysiological and expressive profiles contingently on which specific stimuli elicit the emotion in each context.

6 Several emotions have mixed experiential valence, in the sense that they can involve feelings of both pleasure and pain. In some cases, the emotion is painful or pleasurable depending on whether it achieves its distinctive goal. For example, lust is unpleasant if no sexual release is available, and pleasant otherwise; love is unpleasant if unreciprocated, and pleasant otherwise. In cases like those of awe, *saudade* or hubristic pride, the valence remains mixed for as long as one experiences them – these emotions feel both pleasant and unpleasant intrinsically, rather than depending on how things go. In yet other cases, the valence of the emotion is disputed, as some consider it exclusively pleasant or unpleasant, whereas others consider it mixed (e.g. surprise, hope).

7 Emotions have important biological and cultural functions (depression is the lonely exception among the emotions discussed in Part IV), but they can all become dysfunctional in some circumstances. The functions of emotions run the gamut from protecting the body envelope (from tissue damage, e.g. pain; from danger, e.g. fear; from contamination, e.g. disgust), improving decision-making and goal achievement (e.g. desire, enthusiasm, interest, hope, regret, stress, surprise, sadness, anger), fostering skills development (e.g. amusement, interest, happiness), improving communal living and interpersonal relations (e.g. guilt, shame, regret, sympathy, empathy, gratitude), creating and upholding systems of norms (e.g. guilt, anger, disgust, embarrassment), moving within status/positional hierarchies (e.g. envy, pride, jealousy), contributing directly to well-being (e.g. amusement, pleasure, hope), and successfully procreating and caring for the offspring (e.g. lust, disgust, love, compassion). Given the variety of functions emotions serve, it is hard to deny that they are essential tools for survival, reproduction, and flourishing in a complex social world.

Table 0.1 Working definitions, bodily underpinnings, and basic functions of 35 emotions

AMAE (Boiger, Uchida, and de Almeida, Chapter 49)		
Definition: • An emotional response to making or receiving a request that is inappropriate yet likely to be indulged in the context of a relationship of mutual dependency between amae-taker and amae-giver, with pleasant feelings of being needed (amae-giver) or taken care of (amae-taker), and readiness to enjoy and reaffirm a mutually close relationship	**Expressions:** • Not discussed **Action tendencies:** • Amae-taker: snuggling, clinging, acting helpless, acting playful, acting childish • Amae-giver: indulging the request **Neurophysiology:** • Not discussed	**Functions:** • Formation and maintenance of a mutually reciprocal interdependent relationship with another person
AMUSEMENT (Hofmann and Ruch, Chapter 28)		
Definition: • An emotional response to what is appraised as humorous, involving feelings of pleasure, relation, and excitation, and associated with smiling and laughter depending on intensity and personality	**Expressions:** • Facial expressions consisting of smiling at lower intensity of amusement and laughing at higher intensity of amusement **Action tendencies:** • Getting close to those amusement is shared with • Laughter is commonly accompanied by initial forced exhalation, followed by a more or less sustained sequence of repeated expirations, with upward and downward shoulder movement, trunk bending or head bouncing **Neurophysiology:** • Laughter also goes along with increased electrodermal and cardiovascular arousal, and increased energy expenditure • Differential neural activity found in correspondence with the "understanding" component of amusement in the left temporo–occipitoparietal junction and prefrontal cortex, in correspondence with the "experiential" part of amusement in regions of the medial thalamus, amygdala, hypothalamus, and in correspondence with the "expressive" part of amusement in supplementary motor areas	**Functions:** • Fostering non-serious play situations in which adult behavior can be trained • Fostering positive, non-conflictual and community-building interactions with conspecifics through emotional contagion, strengthening of in-group bonds, and facilitating communication • Contributing directly to well-being through pleasant experiences, suppression of negative emotions, broadening of attention, reducing perception of stress and pain

(*Continued*)

Table 0.1 (Continued)

ANGER (Roseman, Chapter 29)		
Definition: • An emotional response to appraising that another person's behavior is inconsistent with our goals or preferences, when we perceive that our control potential is relatively high, involving unpleasant feelings including heat and explosiveness, with readiness for aggression against that person	**Expressions:** • Face with lowered, drawn together, furrowed brows; staring or narrowed eyes; and tightened, pressed-together, or funneled lips, with possible baring of teeth • Stance with head bent back, arms forward with hands up; or fast movement with arms thrust forcefully downward • Loud, fast vocalizations, with rising pitch **Action tendencies:** • Readiness for aggression, often manifest in verbal attacks and shouting, aimed at hurting another person in some way, changing their behavior, getting revenge, or correcting injustice **Neurophysiology:** • Increased facial skin temperature, diastolic blood pressure, total peripheral resistance, vasodilation in active muscles • Initiated by neural activity in the medial/basal amygdala and other components of the Salience Network projecting to the medial hypothalamus and periaqueductal gray and modulated by the ventromedial prefrontal cortex (assessing potential rewards of aggression) and the orbitofrontal cortex (assessing potential punishments).	**Functions:** • Forcing another person to change their potential or actual behavior • Deterring or terminating harm or unwanted outcomes they would cause
AWE (Stellar and Gordon, Chapter 30)		
Definition: • An emotional response to the appraisal of something vast and challenging of the emoter's worldview, involving feelings of smallness of mixed valence, and associated with ambivalent readiness to approach/avoid and humble oneself	**Expressions:** • Facial expressions consisting of raised inner eyebrows, widened eyes, an open, slightly drop-jawed mouth, a slight forward jutting of the head, and visible inhalation • Nonverbal vocal expressions of awe (e.g. in English, *whaa*, *wow*, or *whoa*) **Action tendencies:** • Prosocial behavior, resource sharing in economic games, volunteering time, helping behavior, explanation-seeking, and creativity **Neurophysiology:** • Goosebumps (although it may often be only self-reported) • Evidence of both sympathetic and parasympathetic activity, possibly because some experiences of awe are appraised as more threatening than others • Trait-like tendency to experience awe has been linked to regional gray matter volume (rGMV) in the anterior cingulate cortex (ACC), middle/posterior cingulate cortex (MCC/PCC), and middle temporal gyrus (MTG)	**Functions:** • Promoting information-seeking and slow information processing so that an individual can revise the worldview that has failed to adequately accommodate what has been encountered • Promoting submissiveness when felt in response to powerful leaders of the group, which may motivate a voluntary relinquishing of power necessary for a coordinated, cohesive, and stable group to emerge • Promoting cognitions that support reduced focus on one's own needs and greater focus on the needs of others with the resulting prosocial behaviors

(*Continued*)

Table 0.1 (Continued)

COMPASSION (Stellar and Gordon, Chapter 30)		
Definition: • An emotional response to the appraisal of having high coping potential with respect to the suffering of someone relevant and worthy, involving feelings of concern and resonance which are mixed in valence, and associated with readiness to help and understand the sufferer	**Expressions:** • Distinctive vocalizations (e.g. the *aww* sound) and distinctive touch (e.g. patting and stroking motions) **Action tendencies:** • Attentional attunement to the other and prosocial behaviors aimed at the reduction of suffering such as generosity, helping, and sharing **Neurophysiology:** • Physiological changes such as heart rate deceleration, activation of the parasympathetic nervous system via the vagus nerve, and a slowing of respiration • Neural activity found in correspondence with the "understanding what another is experiencing" component of compassion in the dorsal medial prefrontal cortex (dmPFC), posterior cingulate cortex (PCC), and temporoparietal junction • Differential neural activity in periaqueductal gray (PAG), anterior insula (AI), anterior cingulate cortex (ACC), and inferior frontal gyrus (IFG) associated with watching others experience pain and prosocial motivation	**Functions:** • Promoting parental care for vulnerable offspring • Promoting cooperation among non-kin, building up mutually reciprocal relationships
CONTEMPT (Fischer, Chapter 31)		
Definition: • An emotional response to the appraisal of a person as inherently unworthy, involving feelings of being superior, and associated with readiness to exclude the target	**Expressions:** • Facial expressions of tightening and raising of one lip corner (unilateral lip curl), rolling eyes while looking upward • Nonverbal vocalizations such as "tsss", and "pfff" **Action tendencies:** • Behaviors of derogating, showing no respect for, ignoring, keeping at bay **Neurophysiology:** • No physiological or neurological markers found to date	**Functions:** • Promoting social distancing from target appraised as intrinsically unworthy through exclusion

(*Continued*)

Table 0.1 (Continued)

DEPRESSION (Gadassi-Polack, Siemer, and Joormann, Chapter 46)		
Definition: • An emotional response to negatively biased appraisals of the self and the world, involving recurrent feelings of sadness, emptiness, and hopelessness and/or feelings of diminished interest in all activities jointly with other symptoms of disruption of daily activities, and associated with readiness to ruminate on the problems	**Expressions:** • No distinctive facial expressions (although sad moods as a symptom of depression can have facial expressions) **Action tendencies:** • Increased ruminative cognitive activity, generally blunted emotional responses, and reduced engagement **Neurophysiology:** • Physiological profile characterized by blunted reactivity in measures of heart rate, skin conductance, respiration, heart rate variability, and blood pressure • Greater rostral ACC activity when successfully inhibiting attention to negative stimuli compared to healthy subjects (more effort needed to ignore negative stimuli) • Hyperactivity of the amygdala when processing negative stimuli relative to healthy subjects (more intense and long-lasting response to negative stimuli) • Decreased nucleus accumbens and PFC activity relative to healthy subjects during anticipation or following presentation of positive stimuli (impaired ability to preserve positive mood following a reward through top-down control)	**Functions:** • Majority view: depression is highly harmful • Minority view: depression may promote helpful analytic activity and taking time off new endeavors
DESIRE (Schroeder, Chapter 32)		
Definition: • An emotional response prompted by representing a state of the world as rewarding, involving feelings of anticipated reward and urge to get it, and readiness to seek/bring about the rewarding state of the world	**Expressions:** • Not discussed **Action tendencies:** • Foraging for rewards, anticipating rewards, striving to get rewards, thinking about rewards **Neurophysiology:** • SEEKING/brain reward/wanting system, which includes nucleus accumbens, ventral tegmental areas, lateral hypothalamus, and mesolimbic and mesocortical outputs and relies primarily on dopamine as its main neurotransmitter	**Functions:** • Determining which states of affairs count as rewards and which count as punishments • Providing end-setting input to the action system • Providing evaluative input to the system producing feelings of pleasure and displeasure
DISGUST (Tybur, Chapter 33)		
Definition: • An emotional response to what is appraised as pathogenic, as an inappropriate sexual partner, or as a moral violation, involving feelings of literal or figurative contamination, with motivations to avoid proximity and contact and to expel	**Expressions:** • Levator labii muscle activation, which causes wrinkled nose and raised lip **Action tendencies:** • Avoidant behaviors with respect to foods (e.g. expulsion), sexual partners (avoidance) and norm violators (e.g. gossiping) • Can co-occur with nausea and an impulse to vomit **Neurophysiology:** • Potentially differential activation of the basal ganglia and interior insula	**Functions:** • Avoiding contact with infection-causing microorganisms • Rejecting low-quality or low-compatibility sexual partners • Prompting and coordinating condemnation of moral norm violators

(*Continued*)

Table 0.1 (Continued)

INTERPERSONAL DISLIKE (Roseman, Chapter 29)		
Definition: • An emotional response to appraising that another person's behavior or trait is inconsistent with our goals or preferences, when we perceive that our control potential is low, involving unpleasant feelings including coldness toward that person with readiness for distancing from them	**Expressions:** • Decreased eye contact, turning away from and positioning oneself further away from the disliked person **Action tendencies:** • Decreasing contact, communication, and interaction with the disliked person • Withdrawal behaviors **Neurophysiology:** • Neural activity in the brain's medial prefrontal cortex, and ventral and superior-polar anterior temporal lobes, combined with feeling tone contributed by the insula, amygdala, and other components of the Saliene Network	**Functions:** • Moving away from other people to diminish the impact of the motive-inconsistency they produce when it would be difficult or impossible to change them or their behavior
EMBARASSMENT (Parrott, Chapter 37)		
Definition: • An emotional response to the appraisal of oneself as awkward, incompetent, or the target of negative evaluation by others, involving painful feelings of being flustered, and associated with appeasing behaviors aimed at mitigating social costs	**Expressions:** • Multimodal expression of embarrassment consisting of lowered gaze, turning away of the head, an inhibited smile, postural shrinkage, and touching the face with a hand **Action tendencies:** • Behaviors like directing visual attention to others to probe their reactions, stuttering, fumbling, fiddling **Neurophysiology:** • Physiological changes like blushing and sweating • No availability of evidence of neural differentiation of embarrassment, but evidence that it involves widespread neural activity in brain areas involved in representations of self, social rules, others' mental states (e.g. frontal and temporal lobes), social distress (e.g. anterior cingulate cortex), interpreting others' emotions (e.g. amygdalae), empathizing (e.g. insular cortex)	**Functions:** • Appeasing others and mitigating the costs of social mistakes

(*Continued*)

Table 0.1 (Continued)

EMPATHY (Stueber, Chapter 34)		
Definition: • An emotional response to appraising some person P as having emotion X, involving vicarious feelings similar to X or congruent to P's situation (while maintaining a clear distinction between self and other), and associated with X's action readiness	**Expressions:** • No distinctive expressions of empathy because empathy can lead to experiencing a number of different emotions (as well as mental states other than emotions on some notions of empathy) **Action tendencies:** • No distinctive action tendencies of empathy, because empathy can lead to experiencing a number of different emotions (as well as mental states other than emotions on some notions of empathy) **Neurophysiology:** • Basic empathy, a.k.a. neural resonance, involves different brain areas depending on the state being mirrored (e.g. the mirroring of motor acts involves premotor, inferior frontal, and inferior parietal cortex; the mirroring of pain involves somatosensory cortex, anterior insula cortex, and anterior cingulate cortex) • Reenactment empathy, a.k.a. mental state attribution, involves the temporal poles, the temporoparietal junction, posterior cingulate cortex, and medial prefrontal cortex	**Functions:** • Enabling understanding of other minds • Enabling social cohesion and cooperation when empathy fosters prosocial behavior (it does not always do so)
ENTHUSIASM/EXCITEMENT (Milona, Threadgill, and Gable, Chapter 39)		
Definition: • An emotional response prompted by an anticipated or immediate reward involving pleasant feelings of anticipation and eagerness, with strong motivation and high readiness to act	**Expressions:** • Facial expression consisting of smiling **Action tendencies:** • Behaviors like seeking rewards, selecting goal pursuits, maintaining goal pursuits, narrowing attentional scope, relying on quick heuristic decision-making **Neurophysiology:** • Differential neural activity in pleasure and reward networks, which include nucleus accumbens (NAc) and the ventral tegmental area (VTA), with evidence of dopaminergic activation in the lateral hypothalamic corridor that connects the NAc and the VTA • Greater relative left frontal cortical asymmetrical activity	**Functions:** • Promoting goal achievement

(*Continued*)

Table 0.1 (Continued)

ENVY (Kristjánsson, Chapter 35)		
Definition: • An emotional response to appraising another person as a rival for some object, person, advantage, or quality the envied person has, involving unpleasant feelings of inferiority, and associated with readiness to reduce the gap with the rival	**Expressions:** • No evidence of distinct expressions **Action tendencies:** • Behaviors constituting "leveling up" (acquiring what the rival has, often described as the tendency characteristic of benign envy) or "leveling down" (taking away what the rival has, often described as the tendency characteristic of malicious envy) **Neurophysiology:** • No evidence for neural markers, but evidence that envy involves activation of neural markers for social reward and social pain • Evidence that regional homogeneity in the interior/middle frontal gyrus and dorsomedial prefrontal cortex positively predicts dispositional envy	**Functions:** • Fosters motivation to improve one's relative circumstances
FEAR (Orederu, Lennon, Vervliet, and Schiller, Chapter 36)		
Definition: • An emotional response to the appraisal of danger, involving unpleasant feelings of low control and associated with a tendency to avoid the danger	**Expressions:** • Facial expressions involving raised upper eyelids, jaw dropped open, lips stretched horizontally, eyebrows raised and pulled together, postural changes (e.g. freezing), and vocal changes (e.g. high pitched and strained vocal tone). **Action tendencies:** • Increased vigilance • Defensive behaviors tailored to threat imminence (e.g. in rats, pre-encounter fear involves caution when foraging for food, increased meal size, walking close to walls; post-encounter fear involves freezing, reduced sensitivity to pain, and potentiated startle reflex; circa strike fear involves fight or flight behaviors) **Neurophysiology:** • Quickened breathing and increased heart rate, eyes dilation, piloerection, sweating • Subregions of the amygdala, bed nucleus of the stria terminalis (BNST), hypothalamus, and brainstem work together to generate responses to threats	**Functions:** • Detecting and avoiding dangers

(*Continued*)

Table 0.1 (Continued)

GRATITUDE (Stellar and Gordon, Chapter 30)		
Definition: • An emotional response to the appraisal of a received benefit, involving pleasant feelings of appreciation and thankfulness, and associated with readiness to connect more closely with the benefactor	**Expressions:** • Not discussed **Action tendencies:** • Altruistic behaviors, reciprocating behaviors **Neurophysiology:** • Inconclusive evidence on physiological changes, possibly because gratitude does not lead to immediate action patterns • Differential neural activity found in Agenesis of the Corpus Callosum (ACC) and medial prefrontal cortex (mPFC) in response to experiences and expressions of gratitude • Structural variations found in the left cerebellum, right middle occipital gyrus (MOG), and temporoparietal junction (TPJ) in association with trait gratitude	**Functions:** • Coordinating responses to the beneficial acts of others • Reinforcing reciprocity among non-kin • Increasing altruism within a group, making that group more cooperative and cohesive
GUILT (Parrott, Chapter 37)		
Definition: • An emotional response to the appraisal of oneself as a blameworthy agent, involving painful feelings of being morally stained, and associated with reparatory behaviors aimed at changing one's self-conception as a wrongdoer and restoring the damaged relationship	**Expressions:** • No evidence of distinctive facial or postural expressions, but guilt can be expressed verbally either by direct avowal (e.g. "I feel guilty") or by declarations which express guilt without reporting it directly ("I apologize for what I did") **Action tendencies:** • Making amends for one's blameworthy behavior by confessing, apologizing, making restitution, seeking forgiveness, self-punishing **Neurophysiology:** • No evidence of neural differentiation of guilt, but evidence that it involves widespread neural activity in brain areas involved in representations of self, social rules, others' mental states (e.g. frontal and temporal lobes), social distress (e.g. anterior cingulate cortex), interpreting others' emotions (e.g. amygdalae), empathizing (e.g. insular cortex)	**Functions:** • Repairing relationships threatened by harm done
HAPPINESS/SUBJECTIVE WELL-BEING (Diener and Sim, Chapter 38)		
Definition: • A person's evaluation of his or her life in terms of satisfaction judgments and emotional responses, with high subjective well-being being associated with high life satisfaction, satisfaction with various life domains, frequent positive affect, and infrequent negative affect	**Expressions:** • Because subjective well-being is not a uniquely affective phenomenon (it has a cognitive component consisting of judgments of satisfaction), because its affective component reflects the frequency of different positive emotions and different negative emotions over a 4-week period, and because subjects' subjective well-being ranges from high to low, there will not be typical bodily changes associated with subjective well-being as such • There will be typical bodily changes associated with individual positive and negative discrete emotions experienced during the 4-week time period	**Functions:** • High life satisfaction and positive affect balance foster social relationships and improve health outcomes

(*Continued*)

Table 0.1 (Continued)

HATE (Fischer, Chapter 31)		
Definition: • An emotional response to the appraisal of a person as inherently bad, involving unpleasant feelings of lacking control over the target, and associated with readiness to eliminate the target	**Expressions:** • No evidence of distinctive bodily expressions **Action tendencies:** • Violent attacks, killing, torturing, ostracizing, hate speech, humiliating, fantasizing about revenge **Neurophysiology:** • No evidence of distinctive neurophysiological changes	**Functions:** • Promoting social distancing from a target appraised as intrinsically bad through elimination
HOPE (Milona, Threadgill, and Gable, Chapter 39)		
Definition: • An emotional response to appraising a future outcome as both positive and uncertain, involving pleasant feelings of yearning for that outcome, with some readiness to promote such outcome or just to endure	**Expressions:** • No evidence of distinctive bodily expressions **Action tendencies:** • Increasing effort, performing difficult tasks better, coping with challenges, searching for solutions to problems, daydreaming, fantasizing about the future **Neurophysiology:** • Tentative evidence of neural activity associated with thoughts of control of desirable outcomes (prelimbic region of the ventromedial prefrontal cortex [vmPFC])	**Functions:** • Promoting goal achievement • Facilitating positive emotions and staving off negative emotions
INTEREST (Thoman and Leal, Chapter 40)		
Definition: • An emotional response to the appraisal of a stimulus as novel but ultimately understandable, involving pleasant feelings of engagement and absorption, and readiness to explore, learn, and sustain engagement	**Expressions:** • Facial expressions involving widening of the eyelids, greater eyeball exposure, fewer glances away, lip parting, and postural expressions involving more head stillness, fewer lateral head turns and faster hand movements (when working on an interesting task) **Action tendencies:** • Approaching, exploring, learning about, maintaining engagement, focusing attention, persisting **Neurophysiology:** • Increased pupil dilation and decreased heart rate • Activation in the lateral hypothalamus (LH) and also the medial forebrain bundle (MFB), which runs from the ventral midbrain, to the nucleus accumbens, to the medial frontal cortex and anterior insula	**Functions:** • Promoting exploration of the environment • Acquiring learning opportunities • Developing new skills

(*Continued*)

Table 0.1 (Continued)

JEALOUSY (Kristjánsson, Chapter 35)		
Definition: • An emotional response to appraising a rival as being favored by a third party, involving unpleasant feelings of hostility, and a readiness to prevent the preferential treatment from continuing	**Expressions:** • No evidence of distinctive bodily expressions **Action tendencies:** • Behaviors intended to prevent the third party from favoring the rival, ranging from vigilance to violence **Neurophysiology:** • Some evidence that the experience of romantic jealousy is correlated with greater left frontal cortical activity toward the sexually desired partner.	**Functions:** • Rectifying the situation that sees the rival as favored • Protecting one's valued relationships
LOVE (Hatfield and Carter, Chapter 41)		
Definition: • An emotional response to the appraisal of someone as desirable (sexually and otherwise), involving positive or negative feelings of longing for union (depending on reciprocation) and associated with a tendency to be with and benefit the target of one's love	**Expressions:** • Not discussed **Action tendencies:** • Spending time with the loved one, touching and being touched, making the other happy • Idealizing the loved one, thinking about the loved one continuously **Neurophysiology:** • Differential brain activity in the medial insula, the anterior cingulate cortex, the caudate nucleus, the putamen (all bilaterally), plus the ventral tegmental area (most of the regions activated during the experience of romantic love were also active under the influence of opiates or cocaine) • Release of vasopressin and oxytocin appears instrumental to pair bonding in some species (e.g. prairie voles, possibly humans)	**Functions:** • Establishment of pair bonds • Engagement in sexual activity directed toward procreation • Engagement in behaviors that improve health and well-being
LUST/SEXUAL DESIRE (Toates, Chapter 42)		
Definition: • An emotional response to the sensory or imaginative encounter with an attractive other, involving feelings of being drawn of mixed valence (depending on availability of release), and readiness to engage in behaviors aimed at sexual rewards	**Expressions:** • Not discussed **Action tendencies:** • Approaching (e.g. through coming close, talking, etc.), seeking sexual contact (e.g. through caressing, touching, kissing, voyeurism, etc.), seeking orgasm (e.g. through intercourse, masturbation, etc.), focusing attention **Neurophysiology:** • Blood flow to genitals, erection in males, vaginal lubrication in females • Amygdala involved in assessing the emotional salience of erotic stimuli, hypothalamus involved in producing sex hormones like androgens (e.g. testosterone) and estrogens, which play an important role in both sexual maturation and the elicitation of lust • Sexual arousal involves activation of the sympathetic branch of the autonomic nervous system (ANS), leading to elevated heart rate, adrenalin secretion, and blood pressure	**Functions:** • Facilitating sexual reproduction • Contributing directly to well-being through pleasant experiences

(*Continued*)

Table 0.1 (Continued)

PAIN (Aydede, Chapter 43)		
Definition: • A sensory and affective response to the appraisal of actual or potential damage, involving unpleasant feelings, and associated with readiness to block damaging agent and seek relief	**Expressions:** • Facial expression involving lowered eyebrows, eyes squeezed, nose wrinkled, upper lip raised, and opening of the mouth **Action tendencies:** • Behaviors aimed at prioritizing avoidance of tissue damage and rehabilitation from it **Neurophysiology:** • Brain circuits for the sensory-discriminative component of pain: proprietary (nociceptive) sensory modality encoding various sensory qualities, intensity, bodily location, and temporal characteristics of noxious stimuli • Brain circuits for the affective-motivational component of pain: brain structures such as the midbrain and limbic system structures, basal ganglia, as well as parts of insular, prefrontal, and cingulate cortices.	**Functions:** • Avoiding tissue damage • Recovering from tissue damage
PLEASURE (Aydede, Chapter 43)		
Definition: • A sensory and affective response to the appraisal of actual or potential reward, involving pleasant feelings, and associated with readiness to seek what produces pleasure	**Expressions:** • Facial expressions of "liking" involve lip licking and rhythmic tongue protrusions, facial expressions of "disliking" involve gapes and headshakes **Action tendencies:** • Seeking what is liked **Neurophysiology:** • Brain circuits for liking: groups of "hotspots" that are functionally connected to each other and are to be found in the rostrodorsal quadrant of the medial shell of NAc and the posterior part of ventral pallidum (VP) as well as in the parabrachial nucleus • Brain circuits for wanting: mesocorticolimbic dopaminergic system, with dopamine neurons projecting from the midbrain to the "limbic" portion of the brain (nucleus accumbens, parts of striatum, amygdala, and prefrontal neocortex)	**Functions:** • Liking: Attributing and sustaining incentive salience to environmental stimuli • Wanting: motivating action aimed at achieving what is wanted

(*Continued*)

Table 0.1 (Continued)

PRIDE (Tracy, Weidman, and Mercadante, Chapter 44)		
Definition: • (Authentic pride) An emotional response to success appraised as due to internal and, often, unstable and controllable causes such as effort, involving pleasant feelings of accomplishment, confidence, fulfillment, and associated with readiness to strive for status enhancement though prestige-seeking behaviors • (Hubristic pride) An emotional response to success appraised as due to internal and, often, stable and uncontrollable causes such as ability, involving feelings of arrogance, conceit, and smugness of mixed valence, associated with readiness to strive for status enhancement though dominance-seeking behaviors	**Expressions:** • Facial and postural expressions involve a slight upward head tilt, small smile, expanded chest, and arms extended out from the body – either akimbo with hands on hips or raised above the head with hands in fists **Action tendencies:** • Perseverance, altruistic behavior toward others, competence-indicating behaviors (authentic pride) • Antisocial behaviors like petty crimes, aggression, and lying and cheating to get ahead (hubristic pride) **Neurophysiology:** • Generic pride is associated with the activation of numerous brain regions, including multiple regions of the medial prefrontal cortex (mPFC), precuneus, posterior cingulate cortex (PCC), caudate, septum, orbital frontal cortex (OFC), right posterior superior temporal sulcus (pSTS), and superior temporal gyrus (STG) • Authentic trait pride is positively associated with greater bilateral activation in superior temporal gyrus (implicated in self-recognition and autobiographical memory), and hubristic trait pride is positively associated with greater activation in the left orbitofrontal cortex (involved in low well-being and affective disorders) and lower activation in activation in the posterior cingulate cortex (involved in goal-directed cognition and reward monitoring)	**Functions:** • Promotes social rank enhancement
REGRET (Zeelenberg, Chapter 45)		
Definition: • An emotional response to the appraisal of having played a role in the occurrence of a bad outcome, involving unpleasant feelings of self-blame and leading to readiness to undo/repair the decision	**Expressions:** • Preliminary evidence of facial expression involving lip pressing and downward head movement **Action tendencies:** • Preparing to undo the mistaken choice or repair it in some other way • Mentally kicking oneself for the mistake, ruminating about it **Neurophysiology:** • Increased activity in the OFC (medial region), and possibly the ACC (dorsal anterior cingulate cortex) and the hippocampus.	**Functions:** • Promotes undoing the negative consequences brought about by one's decision • Promotes forms of reparation for the harm done • Promotes remembering the negative consequences and avoiding them in future decision-making

(*Continued*)

Table 0.1 (Continued)

SADNESS (Gadassi-Polack, Siemer, and Joormann, Chapter 46)		
Definition: • An emotional response to the appraisal of low coping potential with respect to an obstructed goal of high importance, involving unpleasant feelings of loss, and associated with readiness to disengage from physical interactions with the world plus readiness for increased self-reflection	**Expressions:** • Facial expression involving a frown, eyebrows lifted in the center of the forehead, upper eyelids drooped, lip corners pulled down, downward glare • Vocal expressions involving infrequent, slower, and lower-pitched speech with mumbled articulation and darker timbre **Action tendencies:** • Slow and lethargic movements, reduced engagement with the world, diminished interest, social withdrawal **Neurophysiology:** • Consistent activation in the medial frontal gyrus and the head of the caudate, and the subgenual anterior cingulate cortex (ACC) • Reduced physiological activity, with some evidence that sadness is characterized by increased heart rate, decreased heart-rate variability, and increases in respiration variability	**Functions:** • Disengagement from unattainable goals • Increased accuracy in cognition • Recruitment of help in interpersonal relationships
SAUDADE (Boiger, Uchida, and de Almeida, Chapter 49)		
Definition: • An emotional response to the appraisal of something pleasurable being currently distant in space or time but possibly available again in the future, involving feelings of longing with mixed valence, and associated with readiness to be closer to what is currently distant	**Expressions:** • Not discussed **Action tendencies:** • Longing for reunion, trying to establish contact often (e.g. by phone with the person one longs for), crying, sighing for, dreaming about **Neurophysiology:** • Not discussed	**Functions:** • Persisting in the face of adversity • Maintaining symbolic affective closeness to that which is currently not available • Broadening-and-building resources
SCHADENFREUDE (Boiger, Uchida, and de Almeida, Chapter 49)		
Definition: • An emotional response to the appraisal of some limited harm happening to someone who deserves it (often someone higher in status), involving pleasurable feelings at the misfortune witnessed and associated with readiness to express pleasure	**Expressions:** • Not discussed **Action tendencies:** • Laughing, giggling, pointing at, smiling **Neurophysiology:** • Not discussed	**Functions:** • Regulating status hierarchies by offering correctives to claims of higher status

(*Continued*)

Table 0.1 (Continued)

SHAME (Parrott, Chapter 37)		
Definition: • An emotional response to the appraisal of enduring aspects of the self as defective, involving painful feelings of being unworthy, and associated with avoiding public exposure of one's defective self or attempts to repair one's reputation and relationships	**Expressions:** • Multimodal expression of shame consisting of head tilted down, face covered, shoulders slumped, and chest narrowed **Action tendencies:** • Hiding, withdrawing, escaping, internalizing blame, but also prosocial behaviors to rehabilitate one's image and making efforts at self-improvement **Neurophysiology:** • No availability of neural differentiation of shame, but evidence that it involves widespread neural activity in brain areas involved in representations of self, social rules, others' mental states (e.g. frontal and temporal lobes), social distress (e.g. anterior cingulate cortex), interpreting others' emotions (e.g. amygdalae), and empathizing (e.g. insular cortex)	**Functions:** • Repairing relationships threatened by flawed self • Promoting improvement of flawed self • Limiting damage to one's reputation and self-image (by hiding)
STRESS (Juster and Lupien, Chapter 47)		
Definition: • An emotional and biobehavioral response to the appraisal of situations that are novel, unpredictable, threating to the ego, and where one feels low sense of control, with the stress response consisting of the activation of the sympathetic-adrenal-medullary (SAM) axis and the *hypothalamic-pituitary-adrenal* (HPA) axis, whose release of (respectively) *catecholamines* and *glucocorticoids* lead to energy mobilization and increased vigilance in the short run but allostatic load (wear and tear) in the long run under conditions of chronic stress	**Expressions:** • Not discussed **Action tendencies:** • Fight-or-flight responses, problem-focused or emotion-focused coping responses, focusing of attention, disruptive thinking **Neurophysiology:** • Increased heart rate and blood pressure, piloerection, tightening of blood vessels, increased muscular strength, decreased digestive activity, release of endorphins (acute phase of stress), enlarged adrenals and thyroid, stand-by of pituitary gland (resistance phase), exhaustion of corticoids (exhaustion phase) • The sympathetic-adrenal-medullary (SAM) axis releases catecholamines and the *hypothalamic-pituitary-adrenal* (HPA) axis releases corticotropin-releasing hormone (CRH) and adrenocorticotropin (ACTH) from the pituitary gland, leading to the joint release of stress hormones – the SAM axis-derived *catecholamines* (adrenalin and noradrelin) and HPA axis-derived *glucocorticoids* (corticosterone in animals and cortisol in humans)	**Functions:** • Promotes coping with stressors that threaten to exceed our resources (but can lead to "wear and tear" if stress becomes chronic)

(*Continued*)

Table 0.1 (Continued)

SURPRISE (Horstmann and Schützwohl, Chapter 48)		
Definition: • An emotional response to the appraisal of a discrepancy between an eliciting event and one's expectations, involving feelings of unexpectedness (of disputed valence), and associated with interruption of current activities, refocusing of attention, cognitive updates of expectations, and orienting and expressive behaviors	**Expressions:** • Facial expression involving eyebrow raising, eye widening, and mouth opening/jaw drop **Action tendencies:** • Interrupting ongoing activities, orienting toward the novel stimulus, refocusing attention on surprising event, revising expectations, orienting toward the stimulus **Neurophysiology:** • Temporary increase in skin conductance (indicating increased sweat-gland activity) deceleration of heart rate, pupil dilation • Neural changes not discussed	**Functions:** • Detecting and coping with unexpected events
SYMPATHY (Stueber, Chapter 34)		
Definition: • An emotional response to the appraisal of someone being undeservedly in a distressful situation (with distress ranging from minimal to maximal), involving feelings of caring and concern, and associated with readiness to help the other person	**Expressions:** • No distinctive facial expressions, but distinctive non-verbal vocalizations (e.g. the *aww* sound) and touch (e.g. patting and stroking motions), **Action tendencies:** • Attentional attunement to the other and prosocial behaviors aimed at the reduction of suffering such as generosity, helping, and sharing **Neurophysiology:** • Heart rate deceleration, activation of the parasympathetic nervous system via the vagus nerve, slowing of respiration • Differential neural activity in regions involved in responses to experienced or observed pain (anterior cingulate and bilateral anterior insula), regions involved in emotion processing and detection of emotional cues (basal ganglia and thalamus), regions involved in attention and prosocial motivation (bilateral inferior frontal gyri) and regions involved in mammalian nurturance (periaqueductal gray)	**Functions:** • Promoting parental care for vulnerable offspring • Promoting cooperation among non-kin, building up mutually reciprocal relationships

Part V: Major Challenges Facing Emotion Theory

The task of Part V is to introduce 13 challenges contemporary emotion theorists are currently facing in a variety of disciplines. The challenges selected do not capture all that is contentious in the field, but I consider them especially significant – making progress on one or more of these challenges would be a major step forward for the field. The first subsection of Part V – *Special Elicitors of Emotions* – tackles two especially puzzling elicitors which have attracted attention since Ancient Greece. There is an air of paradox about the fact that

instrumental music like Albinoni's Adagio and fictional characters like Anna Karenina have the power to elicit intense emotions. Why do we get sad when we hear sounds seemingly unattached to any ecologically significant stimuli? And how could be possibly empathize with Anna Karenina when we know she is merely a figment of Tolstoy's imagination? The first two chapters of Part V investigate the mechanisms through which music and fiction elicit emotions, explaining both what is puzzling about these elicitors and how we could solve the paradoxes they raise.

In **Chapter 50: How Does Music Elicit Emotions?**, Robina Day and William Forde Thompson outline various psychological theories about how and why instrumental music brings about emotional responses. After having summarized the historical debate on emotions and music from Ancient Greece to Darwin, Day and Thompson focus on five topics which have been the target of sustained theoretical investigation. First, they discuss whether music is associated with specific emotional qualities such as sadness, joy, and fear, which is what we commonly assume in folk psychology, or whether music can only be emotional in a more general way. Second, they explore the relation between the emotions expressed by the music and the emotions experienced by the music consumer, which often differ. Third, they investigate the specific musical properties that carry emotional information, such as tempo, loudness, timbre, dissonance, rhythm, melodic contour, and mode. Fourth, they survey the possible psychological mechanisms that may account for our emotional responses to music, including expectancy, brain stem reflex, rhythmic entrainment, evaluative conditioning, emotional contagion, visual imagery, episodic memory, and aesthetic judgment. Fifth, Day and Thompson consider whether people from all cultures respond to music in the same way, exploring the role of cultural differences in shaping emotional perception and emotional experience.

In **Chapter 51: How Does Fiction Elicit Emotions?**, Florian Cova and Stacie Friend address the *paradox of fiction*, which emerges because emotions directed at events appraised as fictional (in novels, films, plays, video games, etc.) seem insensitive, unlike garden-variety emotions, to the belief that such events are made up. Cova and Friend distinguish the paradox of fiction from several other paradoxes with which it should not be confused, such as the paradox of negative emotions (why do we enjoy fiction that makes us sad or afraid?), the paradox of suspense (how can we feel suspense upon reading already-familiar fiction?) and the puzzle of discrepant affect (Why do we emotionally react to fictional events in a different way than we would to the very same events in real life?). They argue that there are fundamentally three ways to address the paradox of fiction: rejecting the view that we do not believe that fictional characters exist, rejecting the view that genuine emotions require belief in the existence of their objects, and rejecting the view that the emotions we feel toward fictional objects are genuine emotions. Each proposal comes with costs and benefits, which are carefully discussed and assessed. Cova and Friend then discuss empirical evidence pertaining to four potential differences between ordinary emotions and fictional emotions: phenomenological differences, differences in elicitors (inputs), differences in motivation (outputs), and differences in interactions with other mental states. They conclude by discussing whether fictional emotions are subject to the same norms of fittingness, justification, and coherence as garden-variety emotions.

The objective of the second subsection of Part V – *Emotions and their Relations to Other Elements of Mental Architecture* – is to bring the focus of analysis on how emotions interact with, and differ from, other parts or functions or faculties of the mind. The topics covered include how emotions impact decision making, how emotions can be regulated, how emotions differ from moods, and how emotions relate to the self. As you go through the chapters, it will

become apparent that emotions do not work in isolation from other elements of mental architecture, but are instead highly integrated with them, and have profound effects on all aspects of our mental life.

In **Chapter 52: How Do Emotions Affect Decision Making?**, Jennifer Lerner, Charles Dorison, and Joowon Klusowski analyze the impact of emotions on decision making in economics and psychology. They first point out how the rational choice model in economics and the cognitivist revolution in psychology both contributed to excluding emotions from the decision process. This all changed in the early 1980s thanks to landmark papers by Zajonc, Schwarz, and Clore and by Johnson and Tversky, as well as neuroscientific advances on the neural underpinnings of decision making. Lerner, Dorison, and Klusowski draw a distinction between several affective constructs used in judgment and decision making (JDM) research, including affect (integral, incidental, and anticipatory affect), moods, immediate emotion, and affective traits. They then contrast valence-based models of decision making (e.g. affect-as-information and affect priming models) and emotion-specific models of decision making (e.g. appraisal tendency framework model), trying to unveil the discoveries to which they have led as well as some of their limitations. Lerner, Dorison, and Klusowski conclude by describing the integrative emotion-imbued choice model of decision making, which aims to capture the impact on decision making of valence and emotions at the same time.

In **Chapter 53: How Can Emotions Be Regulated?**, Andero Uusberg, Helen Uusberg, and James Gross examine the relation between emotion and regulation, understood as the ability to change emotion in a desired direction. They articulate the Extended Process Model of emotion regulation, which starts from the assumption that emotion regulation is an example of a *valuation system* – a negative feedback control loop which transfers value from a goal to an emotion based on the predicted efficacy of emotion to satisfy an overarching goal in a given situation. The target of regulation can be the intensity, duration, frequency, or type of emotion, and the strategies to regulate emotions include directly altering emotion-eliciting situations (situation selection and modification), re-allocating cognitive resources between emotionally relevant and irrelevant aspects of a situation (attentional deployment), modifying the interpretation of the motivational meaning of a situation (cognitive change), and directly influencing emotional responses such as subjective feelings, physiological states, and behavioral expressions (response modulation). A corollary of this framework is an understanding of emotion dysregulation as suboptimal functioning in four distinctive phases of regulation: identifying the emotion to be modified and the goal of modification, selecting a regulation strategy, implementing a regulation tactic to fulfill a strategy-specific modification, and monitoring the efficacy of regulation and flexibly calibrating it in the context of goal pursuit.

In **Chapter 54: What Is the Difference between a Mood and an Emotion?**, Carolyn Price begins by introducing five features potentially distinctive of moods: long duration, low intensity, non-specificity of causes, pervasiveness of psychological effects, and objectlessness. She introduces and evaluates five families of theories of moods, considering how each accommodates, revises or rejects the five alleged features of moods. Some theories deny that there is a sharp distinction between moods and emotions, understanding moods as generalized or low-intensity forms of emotion with broad objects (e.g. Solomon, Goldie, and DeLancey). Other theories take moods to be non-intentional, free-floating affects (e.g. Clore, Russell). Yet other theories take moods to be temporary psychological dispositions (e.g. Lormand, Siemer, Sizer),

rather than occurrent episodes like emotions. Another class of theories is inspired by the phenomenological tradition, which tries to understand moods in terms of how they structure conscious experience (e.g. Heidegger, Ratcliffe). Finally, Price considers functional accounts of moods, which identify moods in terms of their role in cognitive architecture, with various proposals concerning what the defining functions of moods might be (e.g. Prinz, Price, Tappolet, Wong, Thayer).

In **Chapter 55: How Are Emotions and the Self Related?**, Mauro Rossi and Christine Tappolet explore the relation between emotions and the self, which are intuitively connected because we emote about things which matter to who we are, i.e. our selves, and because who we are depends in crucial part on how we emote. A central obstacle in exploring the relation between emotions and the self is that both concepts are polysemous – they refer to several different things. Rossi and Tappolet distinguish between at least four kinds of affective states: occurrent emotions, emotional dispositions, sentiments, and moods. They then consider three theories of the self: one associated with numeral identity, one associated with qualitative identity, and one associated with self-concepts. They proceed to consider various senses in which occurrent emotions may depend on the self, and an important sense in which the qualitative self constitutively depends on emotional dispositions.

Whereas it is commonly accepted that neurotypical adult humans can have all kinds of emotions, it is more controversial whether it is appropriate to ascribe emotions to infants, animals, and groups, and what specific emotions can be ascribed at different stages of development (for infants), at different positions on the phylogenetic tree (for animals) and at different levels of group cohesion (for groups). The objective of the third subsection of Part V – *Emotions in Children, Animals, and Groups* – is to clarify the circumstances under which specific emotions can be ascribed to pre-linguistic creatures, non-linguistic creatures, and groups of people. Since infants, animals, and groups lack some of the faculties adult humans have, trying to figure out what entities can have emotions forces us to ask which ingredients of emotions are truly indispensable, what differences there may be between cognitive pre-requisites for different emotions, and what emotions are uniquely available to neurotypical adult humans.

In **Chapter 56: How Do Emotions Develop in Children?**, Linda Camras considers the developmental psychology of emotions, starting from Bridges's pioneering proposal in the 1930s that emotions develop through a process of differentiation from initial states of excitement and distress. Camras considers five families of theories of emotional development: (a) Izard's Differential Emotions Theory, which proposes that basic emotions develop according to a biologically driven timetable, (b) Campos's functionalist account, with its emphasis on the environment and social referencing, (c) Lewis's cognition-focused account, which ties development to cognitive milestones such the emergence of self-awareness, (d) Holodynski's sociocultural theory, which focuses on the socializing role of caregivers in shaping culturally appropriate emotions, (e) Barrett's constructivist approach, which emphasizes the development of conceptual mastery as a driver of emotional experience. Camras concludes by exploring how her own dynamical differentiation and integration model could provide a framework for understanding emotional development across infancy and childhood.

In **Chapter 57: Do Animals Have Emotions?**, Elizabeth Paul, Vikki Neville, and Michael Mendl examine six ways of conceptualizing emotions in animals, exploring their different degrees of phylogenetic inclusivity. Anderson and Adolphs propose that emotions are central motives states and focus on the "emotion primitives" ascribable even to invertebrates. Rolls

understands emotions as states elicited by reinforcers and punishers, and proposes that all animals capable of instrumental learning can have emotions. Panksepp thinks of emotions as solutions to evolutionarily recurrent problems and ties them to subcortical neural circuits conserved across most vertebrates. Désiré and colleagues have attempted to extend appraisal theories of emotions to animals by experimentally manipulating stimulus characteristics to search for their impacts on emotional responses. Barrett in her early work suggested that core affect is present in animals, but not conceptual acts of the sort required for genuine emotions, whereas Bliss-Moreau has suggested that some primitive conceptual resources are available down the phylogenetic tree. Finally, Mendl and Paul have combined the reinforcement theory definition of animal emotions with the dimensional focus on core affect, seeking to characterize how animals use affect to make decisions in the wild.

In **Chapter 58: Can Groups Have Collective Emotions?**, Mikko Salmela distinguishes between theories which understand collective emotions in terms of convergence in emotional responding across individuals (qualitative identity theories) and theories which understand collective emotions in terms of a multiplicity of individuals having one and the same emotion (numerical identity theories). Salmela proposes that qualitative identity theories come in many varieties – some understand collective emotions as arising from an aggregate of similar emotions of individual members (e.g. Barsade and Gibson), some assume that collective emotions require the prior identification with a group by individuals (e.g. Mackie and Smith), some demand that there are dynamical interactions between the emotions of group members (e.g. Goldenberg et al.), some presuppose the existence of shared concerns among group members (e.g. Salmela, Helm), and some require that collective emotions are felt together as a group (e.g. Sánchez Guerrero, Leon et al.). Numerical identity theories posit a collective subject of some kind, and they come in many varieties – some take the collective subject to be a plural subject identified by a joint commitment to an emotion (e.g. Gilbert), some take the collective subject to be a complex computational system whose subsystems realize distinct components of emotion (e.g. Huebner), some presuppose the extended mind approach and give a central role to mutual affect regulation (e.g. Krueger) and some posit the existence of a phenomenal collective subject (e.g. Schmid).

The last subsection of Part V – *Normative Aspects of Emotions* – deals with our assessment of emotions relative to normative standards of appropriateness, functionality, morality, and epistemic value. As emphasized in the introduction to Part I (Volume I), investigations into the normative side of emotions have historically shaped our understanding of what emotions are. These investigations continue to play a central role in contemporary debates. As the chapters you are about to read reveal, emotions hold the key to understanding how we try to influence one another through judgments of appropriateness, how dysfunctional emotions underlie most mental disorders, how emotions play a role in instituting moral norms and affecting moral judgments, and how emotions influence how we come to know and understand the world around us.

In **Chapter 59: What Makes an Emotion Appropriate or Inappropriate to Its Object?**, Justin D'Arms tackles the question of what makes emotions fitting to their particular objects, a question with implications for debates on the intentionality of emotions, on the relation between emotions and values and on emotion regulation. Examples of fitting emotions include being angry at an insult, or being afraid of a deadly predator. D'Arms argues that we often regulate our emotions to achieve fittingness, a fact that the psychology of emotion regulation

has tended to ignore by focusing exclusively on hedonic and instrumental motives for regulation. D'Arms compares and contrasts five influential approaches to fittingness, according to which an emotion is fitting when it involves a true belief (cognitivist approach), when it involves an accurate perception (perceptualist approach), when it satisfies its function (teleomantic approach), when it involves an attitude of felt action readiness which is correctly taken (attitudinal approach), or when it is merited in light of its essentially contestable standard of fittingness (sentimentalist approach).

In **Chapter 60: When and How Do Emotions Become Dysfunctional?**, Katherine Dixon-Gordon and Lauren Haliczer consider how emotions can fail us in some circumstances despite being adaptive in many other circumstances. They point out how most mental disorders discussed in the DSM-V involve an emotional deficit of some sort. Dixon-Gordon and Haliczer propose a general framework for understanding emotional deficits that distinguishes four *domains of dysfunction*: emotional abnormalities can occur in the *magnitude* of emotions (e.g. emotions may reveal excesses or deficits in emotional intensity, valence, duration, or frequency), in the *type* of emotion (e.g. emotions may be unfitting to the circumstances), in the *connections* among the constituent components of emotions (e.g. emotional experiences may not be properly reflected in expressions), and in the ability of emoters to *regulate* their emotions (e.g. an emotion may be expressed in the wrong way). Finally, Dixon-Gordon and Haliczer explain how emotions are targeted in psychotherapeutic settings, highlighting some of the techniques for emotion modification available in psychodynamic, experiential, cognitive-behavioral, and mindfulness-based approaches.

In **Chapter 61: What Roles Do Emotions Play in Morality?**, Antti Kauppinen reviews how emotions have contributed to the emergence of altruistic behaviors and to the emergence of moral agency. Kauppinen considers various sources of evidence that psychological altruism toward both kin and non-kin may be motivated by emotions, ranging from parental love toward offspring, to sympathy between parties in a reciprocal exchange, to anger toward unreciprocating partners. In all these cases, the emotions bypass the exclusive consideration of future benefits for oneself, offering a mechanism for making psychological altruism possible. Kauppinen focuses also on moral agency, which is related to our ability to be governed by moral norms. He argues that emotions have played an instrumental role in making normative guidance possible. Kauppinen also considers the role emotions play in the causation of moral judgments, and assesses Haidt's social intuitionism and Greene's analysis of trolley problems. Finally, Kauppinen discusses how emotions could possibly constitute moral judgments and affect the degree to which moral judgments are justified.

In **Chapter 62: Can Emotions Provide Knowledge, Justification, or Understanding?**, Julien Deonna and Fabrice Teroni introduce us to the main epistemological roles emotions play, focusing in turn on justification, knowledge, and understanding. On an externalist notion of justification, the justification of the value judgments elicited by emotions is due to the emotions being reliable signs of values, whereas on an internalist notion, it is due to the emotions being experiences of values. In both cases, justified value judgments qualify as knowledge when true. After outlining a proposal for integrating externalist and internalist approaches, Deonna and Teroni turn to the question of what makes emotions justified in light of their cognitive bases. They distinguish the view that values must be apprehended prior to the elicitation of the emotion (e.g. fear of a dog is justified as a result of the emoter first apprehending a dog as a threat) from the view that emoters must only be aware of the natural properties instantiating the relevant values

(e.g. fear of a dog is justified as a result of the emoter detecting the dog's sharp teeth and aggressive behavior). Finally, Deonna and Teroni consider how emotions can be conducive to our understanding of values, either by playing an instrumental role with respect to understanding *why* something has a given value, or by playing a constitutive role with respect to understanding *what we mean* when we make value judgments.

References

Marr, D. (1982). *Vision*. New York, W.H. Freeman.
Scarantino, A. (2012). "How to Define Emotions Scientifically". *Emotion Review*, *4*(4), 358–368.