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Introducing the Emotions-Affect Systems Elicitation (EASEL-3) Index: A New Tool for Measuring Affect Regulation Systems' Activation

Ana Margarida Pinto[1,2] | Claúdia Figueiredo[3,4] | Rinie Geenen[5,6] | Paula Castilho[1] | José A. P. da Silva[2,7,8] | on behalf of the EASEL-3 research group

The EASEL-3 research group members are the following:

Australia: Eric M.J. Morris (La Trobe University, School of Psychology & Public Health, Melbourne).

Belgium: Marie-Anne Vanderhasselt (Ghent University, Faculty of Medicine and Health Sciences, Ghent; ORCID 0000-0002-4045-1055).

Canada: Allison C. Kelly (Department of Psychology, University of Waterloo, Ontario).

Colombia: Iona Naismith (Department of Psychology, University of the Andes, Bogotá; ORCID 0000-0003-3897-783X).

Cyprus: Nuno Ferreira (University of Nicosia, Department of Social Sciences, Nicosia; ORCID 0000-0002-5787-904X).

Germany: Sven Barnow (Heidelberg University, Department of Psychology, Heidelberg), Simon B. Eickhoff (Heinrich-Heine-University, Institute of Systems Neuroscience, Düsseldorf; Research Centre Jülich, Institute of Neuroscience and Medicine, Jülich), Tania Lincoln (Universität Hamburg, Clinical Psychology and Psychotherapy, Faculty of Psychology and Human Movement Science, Hamburg; ORCID 0000-0002-6674-2440).

Israel: Ben Shahar (Hebrew University of Jerusalem, Paul Baerwald School of Social Work and Social Welfare, Jerusalem; ORCID 0000-0003-3913-2863).

Italy: Cristina Ottaviani (Sapienza University of Rome, Department of Psychology, Rome; ORCID orcid.org/0000-0002-5240-4387), Nicola Petrocchi (John Cabot University, Department of Economics and Social Sciences, Rome).

Netherlands: Suzy Johanna Martina Adriana Matthijssen (Utrecht University; Altrecht Academic Anxiety Centre, Utrecht; Enhancing Trauma Treatment Institute, Amsterdam), Henriët van Middendorp (Leiden University, Health, Medical & Neuropsychology, Leiden; ORCID 0000-0003-4575-0895), Matthias J. Wieser (Erasmus University of Rotterdam, Erasmus School of Social and Behavioural Sciences, Rotterdam).

Portugal: Filipa Barros (CINTESIS@RISE, Department of Education and Psychology, University of Aveiro; William James Center for Research, Department of Education and Psychology, University of Aveiro; Department of Education and Psychology, University of Aveiro, Aveiro; ORCID 0000-0003-4195-7805), Sandra C. Soares (William James Center for Research, Department of Education and Psychology, University of Aveiro; Department of Education and Psychology, University of Aveiro, Aveiro; ORCID 0000-0002-0346-7840), Marina Cunha (Miguel Torga Institute of Higher Education, Coimbra; ORCID 0000-0002-5957-1903), Mariana Marques (Coimbra Hospital and University Centre, Coimbra), Maria João Martins (University of Coimbra Medical Services, Coimbra; ORCID 0000-0001-5339-1269), Carlos Carona (ORCID 0000-0002-3605-3513), Diana Ribeiro da Silva (ORCID 0000-0002-3919-627X), Marcela Matos (ORCID 0000-0001-7320-7107), Sérgio A. Carvalho (ORCID 0000-0002-8757-8424) (University of Coimbra, Center for Research in Neuropsychology and Cognitive Behavioural Intervention (CINEICC), Faculty of Psychology and Educational Sciences, Coimbra), Célia Barreto Carvalho (University of the Azores, Department of Psychology, Azores), Serafim Carvalho (Magalhães Lemos Hospital, E.P.E., Oporto), Carla Cunha (University Institute of Maia—ISMAI, Oporto), Ricardo João Teixeira (REACH—Mental Health Clinic, Porto; University of Coimbra, CINEICC; ORCID 0000-0003-3820-1660), Ana Xavier (Portucalense University, Department of Psychology and Education, Oporto), Patrícia Arriaga (ISCTE—University Institute of Lisbon, Department of Social and Organizational Psychology, Lisbon; ORCID 0000-0001-5766-0489).

Spain: Natalio Extremera (University of Málaga, Department of Social Psychology, Faculty of Psychology, Málaga; ORCID 0000-0002-8874-7912).

Sweden: Joana Duarte (Lund University, Department of Psychology, Lund).

United Kingdom: Cristiana Duarte (York St John University, School of Education, Language & Psychology, York; ORCID 0000-0002-6566-273X), Mark Durkin (Leeds Trinity University, School of Psychology and Therapeutic Studies, Faculty of Social and Health Sciences, Leeds), Stephanie Hastings, Michaela Swales (Bangor University, School of Psychology, Bangor; Michaela Swales' ORCID 0000-0002-7603-1546), Chris Irons (Balanced Minds, London), Matthew Pugh (Central and North West London NHS Foundation Trust, London, London), Yasuhiro Kotera (University of Nottingham, School of Health Sciences, Nottingham), Frances A. Maratos (University of Derby, School of Psychology, Derby; ORCID 0000-0001-5738-6491), Kirsten McEwan (University of Derby, College of Health, Psychology and Social Care, Centre for Compassion Research and Training, Derby; ORCID 0000-0002-0945-0521), Jane Vickers (Gloucestershire).

United States of America: Joseph Bardeen (Auburn University, Department of Psychology Auburn, AL; ORCID 0000-0002-4786-109X), Elizabeth L. Davis (University of California, Department of Psychology, Riverside, CA; ORCID 0000-0003-2599-4390), Brandon Gaudiano (Brown University, Department of Psychiatry & Human Behaviour, Warren Alpert Medical School, Providence, RI; ORCID 0000-0002-1843-4910), Mark A. Lumley (Wayne State University, Department of Psychology, Detroit, MI; ORCID 0000-0001-7095-8378), Emily Sandoz (Louisiana Contextual Science Research Group, University of Louisiana, Lafayette, LA; ORCID 0000-0002-1442-7764).

[1]Center for Research in Neuropsychology and Cognitive and Behavioral Intervention (CINEICC), Faculty of Psychology and Educational Sciences, University of Coimbra, Coimbra, Portugal | [2]University Clinic of Rheumatology, Faculty of Medicine, University of Coimbra, Coimbra, Portugal | [3]Centre for Mechanical Technology and Automation (TEMA), University of Aveiro, Aveiro, Portugal | [4]Research Unit on Governance, Competitiveness and Public Policies (GOVCOPP), University of Aveiro, Aveiro, Portugal | [5]Department of Psychology, Utrecht University, Utrecht, the Netherlands | [6]Altrecht Psychosomatic Medicine, Eikenboom, Zeist, the Netherlands | [7]Rheumatology Department, Coimbra Hospital and University Centre, Coimbra, Portugal | [8]Coimbra Institute for Clinical and Biomedical Research (i.CBR), Faculty of Medicine, University of Coimbra, Coimbra, Portugal

Correspondence: Ana Margarida Pinto (anampinto@fpce.uc.pt)

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ABSTRACT

Objective: Although emotions pervade and influence individual and interpersonal functioning and well-being, their nature and taxonomy remain a bone of contention. The 'three-circle' model, comprising three dynamically interacting affect regulation systems (i.e., threat, drive, and soothing), provides a useful framework for aggregating emotions and understanding emotion (dys)regulation while closely supporting therapeutic intervention. Imbalances in the activation and (inter)action of these affect regulation systems have been implicated in a wide range of physical and mental disorders; however, there are currently no tools for quantifying each system's activation. The aim of this study was to develop a novel index of the three affect regulation systems: threat, drive and soothing.

Method: Three independent expert panels, composed of researchers in the 'three-circle' model, researchers in the field of affective science, and clinicians ($N = 70$), estimated the degree of activation of each affect regulation system induced by discrete emotions.

Results: Overall, agreement among experts was high regarding the emotions that mapped primarily onto each affect regulation system and the degree of the corresponding activation. These results constitute the basis for the Emotions-Affect Systems ELicitation Index (EASEL-3) index, which provides a continuous score of the estimated activation of the three systems.

Conclusion and Discussion: Although in need of field testing, the EASEL-3 index may prove valuable in research and clinical settings, opening new avenues on the measurement of the affect regulation systems, their correlates and associated outcomes, helping characterize and compare activation patterns across clinical populations and contexts, and informing the assessment and personalization of interventions.

1 | Introduction

Emotions are a ubiquitous phenomenon in daily life, playing a fundamental role in individual and interpersonal functioning (Al-Shawaf et al. 2016; Dukes et al. 2021; Fischer and Manstead 2016; Izard 2007; Tooby and Cosmides 2008). Emotional states are decisive regulators of fundamental physiological responses from neuroendocrine and autonomic responses to complex immune phenomena and epigenetics (D'Acquisto 2017; Kreibig 2010; Prather 2016). Emotions influence and are influenced by cognitive processes (e.g., learning, decision-making, attention) and are shaped by the sociocultural context in which they unfold (Frevert et al. 2016; Gilbert 2019; Izard 2007; Lively and Weed 2016; Maratos and Pessoa 2019; Tsai and Clobert 2019). Emotions are key drivers underlying human behaviour. This explains why affective processes have been increasingly integrated into diverse research fields and contemporary accounts of human functioning, ranging from social systems to discrete illnesses (Dukes et al. 2021). Emotions deeply affect our physical and mental health (DeSteno et al. 2013; Kubzansky and Winning 2016), and when dysregulated, they constitute a widely recognized transdiagnostic factor for psychopathology (Aldao et al. 2016; Kring and Sloan 2010). Research in emotion and how it is expressed and regulated is thus timely and important (Gross 2015; Gross and Jazaieri 2014; Scherer 2015).

Several theoretical frameworks have been proposed to structure our understanding of emotional dynamics and regulation. Among these, the tripartite model of affect regulation proposed by Gilbert (2005, 2010), commonly referred to as 'three-circle' model (Gilbert 2015b), provides a useful biopsychosocial framework by clustering emotional responses and interactions according to their assumed evolutionary functions and neurobiological substrates (Depue and Morrone-Strupinsky 2005; Gilbert 2005, 2010; Panksepp 2010). Drawing from an extensive range of branches of neuroscience and psychology (Bowlby 1973; Fredrickson 1998; Mikulincer and Shaver 2016; Nesse and Ellsworth 2009), the 'three-circle' model (see Figure 1; Gilbert 2005, 2010, 2015b) posits that emotions revolve around three primary evolutionary functions—defend/protect, pursue/acquire and regulate/connect—having evolved in part to support our biosocial motives (Gilbert 2015a, 2020).

First, the threat system is the body's alarm—programmed to pinpoint, appraise and react as rapidly and effectively as possible to current or anticipated threats (LeDoux 1998). In order to best serve its purpose, this system is easily accessible, functioning, oftentimes, in an unconscious way, and governed by basic defensive heuristics epitomized by a 'better safe than sorry' strategy (Gilbert 1998, 451). When this system is activated, information-processing routines become overly focused and biased towards perceived threat stimuli, giving rise

Summary

- Aggregating emotions into functional systems is a promising approach to this challenging field of study.
- Gilbert's three-circle model—threat, drive, soothing—provides a useful framework for this purpose.
- A novel tool to estimate the activation of each system—the Emotions-Affect Systems ELicitation (EASEL-3) index—is presented.
- This tool may foster both assessments and interventions targeting affect regulation.

to an organized cascade of physiological, cognitive-affective and behavioural responses focused primarily on risk management and safety-seeking, e.g., (im)mobilization tendencies such as freeze-fight-flight (Gilbert 2005, 2009, 2010). This system is typically associated with negative emotions, as these serve (defensive) adaptive responding, with anger, fear/anxiety, disgust and sadness being deemed the 'big' threat-based emotions (Gilbert 1989, 2017, 2020; Panksepp 1998). The threat system is linked to (1) limbic structures (e.g., amygdala) and cognitive-control and salience-processing brain regions (LeDoux 1998; LeDoux and Daw 2018); (2) sympathetic and parasympathetic systems (namely the dorsal parasympathetic complex; Duarte et al. 2015; Porges 2009; Sousa et al. 2021); (3) the stress response system and its actors (Dickerson and Kemeny 2004; LeDoux 1998); and (4) serotonin regulation (Caspi and Moffitt 2006; Muehlhan et al. 2015; Munafò et al. 2008).

Second, the drive system encompasses the satisfaction of biosocial needs and the yearning and striving for immediate and long-term goals and resources that contribute to a sense of well-being and facilitate thriving (Depue and Morrone-Strupinsky 2005; Gilbert 2005, 2010). It is a positively valenced system that features an overall appetitive motivation linked to reward- and goal-oriented behaviours but also to a social-rank mentality and competitive action. Approach behaviours and positive activating emotions, generally marked by high levels of pleasure and arousal (Richardson et al. 2016), such as excitement, vitality and elation, are considered typical of this system. Neurobiological correlates of the drive system include the mesolimbic system (related to incentive salience, i.e., 'wanting'), increased sympathetic activity and dopaminergic action (Berridge and Kringelbach 2008; Depue and Morrone-Strupinsky 2005).

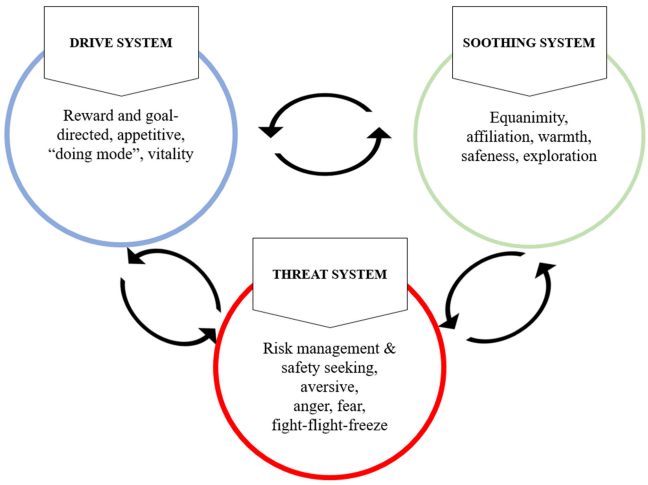

FIGURE 1 | The 'three-circle' model of affect regulation. Adapted from Gilbert (2005).

Third, the soothing-affiliative system is a positive affect regulation system that becomes activated when one is safe and satisfied (Depue and Morrone-Strupinsky 2005). Positive emotional states, commonly characterized by low arousal (e.g., equanimity, warmth; Richardson et al. 2016), safeness-related outputs (e.g., quiescent states, playfulness and exploratory behaviours; Gilbert 1993) and affiliative behaviours (e.g., nurturing, affective touch) are considered distinctive elements of this system. This system is closely related to attachment relationships and its features (Bowlby 1973, 1988) and to a caring mentality (Gilbert 2005, 2015a). The soothing system has been linked to the effects of oxytocin and opioids (Carter 1998; Insel 2010; Rockliff et al. 2008) and the rest-and-digest mode and social engagement response of the parasympathetic nervous system, particularly the vagus nerve (Depue and Morrone-Strupinsky 2005; Porges 2007). Although drive and soothing are both positively valenced systems, the affective outputs that characterize them are qualitatively different physiologically and functionally. The drive system is associated with activating positive emotions that energize and positively reinforce the behaviour and help broaden and build one's resources (Fredrickson and Branigan 2005). On the contrary, the soothing system is characterized by low arousal emotions typically associated with self-regulation and social connection (Gilbert 2020). Of note, polyvagal theory (Porges 2007, 2023) has since been challenged by experts in social and affective neuroscience (Grossman 2023).

The 'three-circle' model emerges as a promising approach to understanding and studying emotions both at the macro and micro levels. The model could enhance insight into the association with, and regulatory impact of, prototypic emotions of the three systems regarding a broad range of biopsychological health-related outcomes. The model provides a useful framework as it organizes and translates the complexity and diversity of emotions into a simple yet comprehensive model. The 'three-circle' model integrates the different properties of emotions, such as valence and arousal (Richardson et al. 2016), dimensionality (e.g., neurobiological, behavioural domains), and motivational features (i.e., defensive, appetitive, biosocial motives). The model is congruent with empirical evidence that same-valence emotions tend to cluster together (Barrett 2006; Posner et al. 2005), couple or blend with each other (Fox et al. 2013; Gilbert 2015a), and that experimentally induced threat and challenge appraisals produce distinguishable physiological and emotional patterns (e.g., Quigley et al. 2002; Trotman et al. 2018).

Development of a measure of the activation of these three systems would be helpful to (a) assist in the experimental measurement of the systems' activation by enabling the characterization and comparison of each system's functioning across different contexts and populations; (b) ascertain how different patterns

of activation relate to different clinical phenotypes within and between disorders, as well as to other processes (e.g., emotional memories, alexithymia, psychological flexibility) and outcomes (e.g., quality of life, values-based action, social connectedness); (c) contribute to the evaluation of the efficacy of interventions and inform the development of personalized interventions specifically designed to target identified dysfunctional patterns; and (d) assess the extent to which modifications in the functioning of the systems operate as a mechanism of change during treatment and whether particular patterns of (co-)activation operate as predictors or moderators of treatment response.

While the 'three-circle' model has gained substantial theoretical and clinical traction, particularly in interventions such as Compassion-Focused Therapy (CFT; Gilbert 2010), its empirical operationalization remains limited. Notably, there is no validated tool that estimates the degree of activation of the three affect regulation systems—threat, drive and soothing—based on emotional input. Existing scales, such as the Positive and Negative Affect Schedule (PANAS; Watson et al. 1988), the Profile of Mood States (POMS; McNair et al. 1971) and the Basic Emotions Scale (Power 2006), assess both positive and negative affect states and have adaptations for both state- and trait-like measurements (for the former two). However, low-arousal positive affect seems to be underrepresented (cf., relaxed on PANAS expanded form; Watson and Clark 1994), and complex emotions (e.g., contempt) intentionally excluded (Power 2006). Other instruments, like the Types of Positive Affect Scale (TPAS; Gilbert, McEwan, Mitra, et al. 2008), and contextual measures of emotional climate, such as the Emotional Climate in Residential Care and the Emotional Climate in Organizations Scales (Albuquerque et al. 2018; Henriques 2019; Santos et al. 2023), address partial aspects of the model (e.g., proneness to experience positive affect rather than differential responding to contexts or stimuli) or are context-specific. As such, there remains a clear need for a generalizable, emotion-based index that reflects the distinct activation patterns of the three regulatory systems proposed in the model.

The aim of our study was to develop a novel instrument to assess the activation of each affect regulation system based on the assessment of emotions. To accomplish our goal, and given the lack of a gold standard instrument, we relied on the judgement of a panel of experts in emotion-related fields. We postulated that such experts would be able to indicate which emotions fitted—to what extent—with each of the three affect regulation systems.

2 | Method

2.1 | Pilot Survey Development

Given the vast number of words for emotional states, the core research team selected a subset of emotions based on the model's theoretical assumptions (Gilbert 2005) and the following criteria: the emotion is discrete, commonly experienced, clearly defined, and easily understood by users from different cultural backgrounds. Based on consensus among the core research team comprising researchers or mental health experts from diverse backgrounds, including traditional CBT and CFT, a preliminary list of 27 emotions was selected from the following: (a) the short version of the PANAS (Thompson 2007); (b) the TPAS (Gilbert, McEwan, Mitra, et al. 2008); and (c) Ekman's seven universal emotions (Ekman and Cordaro 2011).

The survey first collected demographic and professional information. Participants were then asked: "Please imagine that an average, psychologically healthy adult is feeling each of the following emotions at maximum intensity: how much would each of the three affect regulation systems be activated on a scale of 0 (not activated at all) to 10 (highly activated)?". To ensure that all participants (including those less familiar with the 'three-circle' model) similarly conceptualized the affect regulation systems, a brief description of the three systems was provided, accompanied by a reference (Gilbert 2009) for further reading. The rating matrix presented the 27 emotions as rows and the three systems as columns. Panellists were also invited to provide their insights and suggestions on the survey.

2.2 | Pilot Testing of the Survey

A pilot study was conducted among psychology researchers and practitioners to ensure intelligibility (e.g., wording, ambiguity, difficulties in completion) and to determine the need for adaptations in any aspects of the survey. The survey was carried out in English. Participants were recruited among colleagues of the core research team based on their expertise (e.g., scientific publications and/or clinical training and experience in the 'three-circle' model and other emotion (regulation) models). Of the 18 experts invited, 12 participated (83% women; $M_{age} = 38.5 \pm 10.8$ years). Three-quarters were Portuguese; the rest were Dutch. About two-thirds (67.7%) were researchers; the remaining were clinicians. All participants held at least a Master's degree. Participants had, on average, 13.8 ± 10.0 years of professional experience. On a scale from 0 ("*Do not know the model*") to 10 ("*I master the concepts*"), participants reported a mean of 6.3 (SD = 3.9) on the degree of familiarity with the 'three-circle' model.

2.3 | Final Survey Development

Improvements to the survey were made in accordance with the feedback provided by the experts involved in the pilot testing. Specifically, a more detailed description of the systems, including examples of situations known to activate them, was offered to facilitate comprehension of the concepts. Instructions were refined and expanded to emphasize the discreteness of each emotion (see Supplementary material for an outline of the survey).

Based on the results of the pilot, emotions with comparable loadings on affect systems and a high degree of conceptual similarity (discretionary decision) were merged (e.g., afraid/fear, calm/tranquil/laid back, peaceful/serene, safe/secure). Those considered relatively ambiguous or prone to cross-cultural misunderstanding (e.g., attentive, surprise, warm) were excluded. For some emotions, a more common descriptive term was added to make them more straightforward for different cultural backgrounds (i.e., 'disdain' instead of 'contempt' and 'anxiety' instead of 'nervousness'). A total of 24 emotions were selected for the final list. Similar to the pilot testing, the final survey was conducted in English. The list of emotions included in the final survey is provided in Table 2.

2.4 | Recruitment Procedures

2.4.1 | Panel I. Scholars on the 'Three-Circle' Model

Following a Web of Science search, we selected the two most cited papers by Gilbert focusing on the 'three-circle' model (Gilbert 2014; Gilbert and Procter 2006). Two lists of the 50 authors with the largest number of references to each of these articles were made and merged into a final list. This list was ranked according to the following criteria: (a) authors who cited both publications; (b) authors who only cited one of the publications but who are widely recognized in the field; and finally, (c) authors who only cited one of the publications ranked by descending order of number of references. The first 50 authors from this final list were invited to participate in the study. In addition, five other authors who did not appear in the citation analysis but who have written authoritative textbooks on the field of CFT, a psychotherapeutic approach in which the 'three-circle' model is central, were also invited.

2.4.2 | Panel II. Scholars in the Field of Affective Science

We performed a search using the following search string: ((emotion* OR affective) AND (regulation OR process OR elicitation OR model)), covering the last 15 years (2005–2020). A filter was applied to select only articles, reviews, editorials and book chapters. The search provided 10,075 records. The record count was analysed, and the first 50 authors with the most records were selected. Similar to the procedure used for the first scholar panel, we also added seven more authors who did not appear in the first 50 ranks but are known authorities in the field of emotions (i.e., have published multiple papers on the field of affective science as first/last authors and/or are (co-)authors of prominent contemporary models of emotion).

2.4.3 | Panel III. Clinicians

Clinicians were eligible to participate in the study if they met the following criteria: (a) a minimum of 5 years of clinical experience; (b) clinical expertise and/or theoretical knowledge in classic cognitive–behavioural or contextual–behavioural approaches (mindfulness and acceptance-based interventions, Dialectical Behaviour Therapy), compassion-based interventions, Emotion-Focused Therapy and/or affect regulation processes and models; (c) clinical experience with adults; and (d) focused on individual or group approaches rather than systems such as couples or families. Clinicians were identified through their membership in relevant professional societies, via recognized platforms that provide certified clinical training and supervising activities, from authoritative work in the fields of interest (e.g., publication of therapists' manuals), and from acquaintances of the research team.

All experts were directly contacted by e-mail and invited to participate. A brief description of the study, including the objectives and procedures involved, was provided to the experts. Pseudo-anonymity and data confidentiality were assured, and the right to decline participation or withdraw at any time was also given. The pilot and the final survey were conducted online through LimeSurvey and consisted of only one round. The pilot and the final survey were similar in layout, except for the minor adaptations introduced in the description of the affect regulation systems and the final list of emotions presented (changes applied after the pilot). No in-person meetings were held, nor were the panellists provided feedback on their responses. No specific methods were used to encourage experts' participation except for reminders, which were sent 2 weeks and 1 month after the formal invitation e-mail.

2.5 | Expert Panel Composition

Panellists' sociodemographic and professional characteristics are presented, along with the survey's response rates, in Table 1.

2.6 | Index Conceptualization

The ultimate goal of this study was to develop a continuous score that translates the degree of activation of the affect regulation systems based on the intensity of associated emotions. The basic assumption was that experts would reach a reasonable consensus on which of the systems would be activated and to what degree by a given emotion when experienced at maximum intensity. The research team made some discretionary decisions a priori to enhance coherence, consistency and feasibility. First, emotions assigned to different primary systems by the three panels of experts would be excluded. Second, only emotions that significantly distinguished (i.e., exhibit significantly different weights) between at least two of the systems would be included. Finally, only emotions with a high degree of consensus, as assessed by the dispersion of its weight in each system (coefficient of quartile variation ≤ 0.30), would be used to develop the index.

2.7 | Statistical Analyses

Statistical analyses were conducted using IBM SPSS Statistics for Windows v.21 (IBM Corp. 2012). Descriptive analyses were performed to examine the panels' sociodemographic and professional characteristics and survey responses.

Mixed analyses of variance (ANOVA) were used to compare the ratings of each emotion: (1) across the three affect regulation systems (threat, drive and soothing) as a within-subjects measure and (2) across panels as a between-subjects measure. Preliminary analyses were conducted to ascertain whether the main assumptions for conducting the analyses (i.e., normality, homoscedasticity, sphericity) were met. When the assumption of sphericity was violated, as indicated by a significant Mauchly test, the values for main effects were reported using the Greenhouse–Geisser correction (Field 2017). Post hoc procedures were performed for all significant main effects using Tukey's HSD and Games–Howell (for non-homogeneous cases). The significance levels of these post hoc comparisons were interpreted using Bonferroni correction (Howell 2006). The magnitude of the effect sizes was interpreted according to

TABLE 1 | Sociodemographic and professional characterization of the three experts panels.

	Total (*N* = 70)	**Panel I (*n* = 24)**	**Panel II (*n* = 19)**	**Panel III (*n* = 27)**
	M (SD, range)	**M (SD, range)**	**M (SD, range)**	**M (SD, range)**
Age	45.9 (10.5, 28–75)	41.5 (8.8, 30–63)	46.9 (9.7, 28–64)	49.0 (11.5, 37–75)
Years of professional experience	19.1 (9.2, 3–47)	15.4 (7.1, 7–32)	19.8 (8.7, 3–35)	21.9 (10.3, 10–47)
Familiarity with the 'three-circle' model	6.3 (3.0, 0–10)	8.3 (1.7, 5–10)	3.5 (2.2, 1–7)	6.4 (2.8, 0–10)
Years application of Gilbert's model	7.8 (4.45, 1–18)	8.8 (4.4, 2–18)	2.6 (1.3, 1–4)	7.9 (4.1, 2–18)
	n (%)	*n* (%)	*n* (%)	*n* (%)
Gender				
Male	34 (48.6%)	10 (41.7%)	9 (47.5%)	15 (55.6%)
Female	36 (51.4%)	14 (58.3%)	10 (52.5%)	12 (44.4%)
Academic degree				
Bachelor/Licentiate	2 (2.9%)	—	—	2 (7.4%)
Master	3 (4.3%)	2 (8.3%)	1 (5.3%)	—
PhD	65 (92.9%)	22 (91.7%)	18 (94.7%)	25 (92.6%)
Nationality				
Australia	3	2	—	1
Belgium	3	—	3	—
Canada	4	2	—	2
UK	12	5	—	7
Germany	5	—	4	1
Italy	2	2	—	—
Netherlands	7	—	3	4
Portugal	19	10	3	6
Spain	1	—	1	—
Israel	1	1	—	—
Japan	1	1	—	—
USA	12	1	5	6
Professional category				
M.D.	2 (2.9%)	1 (4.2%)	1 (5.3%)	—
Psychologist/ psychotherapist	37 (52.9%)	12 (50%)	3 (15.8%)	22 (81.5%)
Researcher	31 (44.3%)	11 (45.8%)	15 (78.9%)	5 (18.5%)
Area of expertise				
Affective science	38 (54.3%)	12 (50%)	17 (89.5%)	9 (33.3%)
Classic CBT	29 (41.4%)	11 (45.8%)	7 (36.8%)	11 (40.7%)

(Continues)

TABLE 1 | (Continued)

	Total ($N=70$)	Panel I ($n=24$)	Panel II ($n=19$)	Panel III ($n=27$)
	M (SD, range)	M (SD, range)	M (SD, range)	M (SD, range)
Contextual CBT and compassion-based interventions	39 (55.7%)	18 (75%)	3 (15.8%)	18 (66.7%)
Other psychosocial interventions[a]	13 (18.6%)	6 (25%)	2 (10.5%)	5 (18.5%)
Experience with the 'three-circle' model				
No	25 (35.7%)	1 (4.2%)	14 (73.7%)	10 (37%)
Yes	45 (64.3%)	23 (95.8%)	5 (26.3%)	17 (63%)
Survey response rate[b]	27.9%	43.6%	15.3%	37.5%

Note: Panel I = experts in the 'three-circle' model, Panel II = scholars in the affect field, Panel III = Clinicians. CBT = Cognitive-Behaviour Therapies.
[a]These include Emotion-Focused Therapy, Behaviour Analysis, Dialectical–Behaviour Therapy, Eye Movement Desensitization and Reprocessing, Mentalization-Based Therapy, Experimental Psychopathology.
[b]Response rate = percentage of invited experts who completed the survey.

Cohen's (1988) benchmarks: small ($d=0.2$), medium ($d=0.5$) and large ($d\geq0.8$).

To ascertain the level of homogeneity among experts' ratings, we calculated the coefficient of quartile variation [CQV = (Quartile 3—Quartile 1)/(Quartile 3 + Quartile 1); Altunkaynak and Gamgam 2018; Bonett 2006)], a robust measure of dispersion based on distribution. This coefficient is less sensitive to outliers than those based on the mean, which is particularly important in small-to-medium-size samples. Coefficients indicating a small dispersion (of up to 0.30) around the scores attributed to each emotion in the systems were considered acceptable and used as the cut-off point for retaining that emotion.

3 | Results

3.1 | Differences Among Experts in Their Rating of Emotions

Although preliminary analyses of assumptions pointed to a non-normal distribution of the data, we decided to proceed with the planned analysis, considering that ANOVA is robust against this type of violation (Schmider et al. 2010). Means and standard deviations of all ratings attributed by the three expert panels and results of the mixed ANOVAs are presented in Table 2. The analyses revealed a substantial agreement among the three panels of experts, resulting in a robust assignment of a large number of emotions to each of the systems. Experts significantly differed in their ratings of 'strength' of activation for disdain, feeling upset, irritation and shame (regarding the threat system) as well as for boredom, feeling calm and peacefulness (regarding the soothing system). However, because they clearly and significantly did not differ in the prime system to which they assigned these emotions, these within-system differences between the panels of experts were not considered relevant by the core research group. Hence, the scores of the three expert samples were merged for subsequent statistical analysis.

3.2 | Differences in the Activation Degree of Each of the Three Systems by Different Emotions

To assess the association of each emotion to each system, we compared the mean rating attributed by experts to each emotion in each system (Table 2). Given that the assumption of sphericity was often violated, a Greenhouse–Geisser correction was applied to most analyses. Results showed that the mean rating for every emotion differed significantly among the three affect regulation systems, except boredom, for which no significant differences among the systems were found. This finding led to its exclusion from further analyses, which aligns with our a priori principles. For the remaining cases, the differences among systems were statistically significant, with medium-to-large effect sizes for the most part.

- The highest ratings for anxiety, anger, disdain, disgust, fear, feeling upset, embarrassment, guilt, grief, humiliation, irritation, sadness and shame were found in the threat system, followed generally by the drive system, and then the soothing system (except for sadness and grief, in which the ratings in the soothing system were higher than those in the drive system).
- Feeling enthusiastic, pride, pleasure and joy showed the highest ratings in the drive system, followed by the soothing system and the threat system.
- Finally, contentment, feeling calm, feeling relaxed, feeling safe, love and peacefulness had the highest ratings in the soothing system, followed by the drive system and then the threat system.

3.3 | Assessing the Level of Consensus Among Experts

Table 3 presents the descriptive results regarding the lower (Q1) and upper quartiles (Q3) and the computed CQVs.

TABLE 2 | Means, standard deviations, and results of mixed analyses of variance of the ratings provided by the experts in response to the question "Please imagine that an average, psychologically healthy adult is feeling each of the following emotions at maximum intensity: how much would each of the three affect regulation systems be activated on a scale of 0 (not activated at all) to 10 (highly activated)?"

	Threat						**Drive**						**Soothing**							
	Panel						**Panel**						**Panel**							
	I (*n* = 24)	**II (*n* = 19)**	**III (*n* = 27)**	**Total (*N* = 70)**	**# Between-panels**		**I (*n* = 24)**	**II (*n* = 19)**	**III (*n* = 27)**	**Total (*N* = 70)**	**# Between-panels**		**I (*n* = 24)**	**II (*n* = 19)**	**III (*n* = 27)**	**Total (*N* = 70)**	**# Between-panels**		**# Between systems**	
Emotion	M (SD)	M (SD)	M (SD)	*M* (95% CI)	*F* (2, 67)	*Post hoc*	M (SD)	M (SD)	M (SD)	*M* (95% CI)	*F* (2, 67)	*Post hoc*	M (SD)	M (SD)	M (SD)	*M* (95% CI)	*F* (2, 67)	*Post hoc*	F (df)	η_p^2
Anger	8.6 (1.8)	8.4 (1.8)	8.2 (2.1)	8.4 (7.94–8.87)	0.28^{ns}	—	4.1 (2.7)	5.4 (3.0)	4.3 (2.6)	4.6 (3.95–5.28)	1.38^{ns}	—	0.3 (0.9)	0.8 (2.3)	0.8 (1.6)	0.6 (0.24–1.03)	0.59^{ns}	—	**209.76 (1.788)*** ¥**	0.76
Anxiety	9.4 (1.2)	9.5 (0.8)	8.8 (1.4)	9.2 (8.95–9.53)	2.27^{ns}	—	4.0 (2.5)	4.0. (2.7)	3.1 (2.2)	3.7 (3.09–4.28)	1.03^{ns}	—	0.4 (0.9)	1.0 (2.4)	0.9 (1.6)	0.8 (0.35–1.16)	0.91^{ns}	—	**423.39 (1.809)*** ¥**	0.86
Boredom	2.6 (2.5)	1.3 (2.0)	2.1 (2.0)	2.0 (1.47–2.53)	2.07^{ns}	—	3.2 (3.2)	1.7 (2.7)	3.5 (3.1)	2.8 (2.06–3.53)	1.95^{ns}	—	1.1 (1.9)	4.1 (2.9)	2.4 (2.4)	2.5 (1.96–3.11)	—	—	1.856(2)^{ns}	n/a
Feeling calm	0.2 (0.7)	0.3 (0.6)	0.3 (0.7)	0.3 (0.12–*0.45*)	0.25^{ns}	—	2.3 (2.3)	2.0 (2.3)	1.6 (1.7)	2.0 (1.45–2.45)	0.66^{ns}	—	9.4 (1.0)	8.6 (1.5)	7.7 (3.0)	8.6 (8.04–9.06)	**3.98***	I > III*♯	**473.91 (1.720)*** ¥**	0.88
Disdain	6.8 (2.3)	4.7 (2.3)	6.2 (2.5)	5.9 (5.37–6.49)	**4.45***	I > II*♯	3.6 (2.5)	3.3 (2.2)	4.3 (2.9)	3.7 (3.09–4.34)	0.99^{ns}	—	0.3 (0.7)	2.1 (3.4)	0.9 (1.7)	1.1 (0.56–1.58)	**4.23***	II>III > I♯	**83.861 (2)*** **	0.56
Contentment	0.2 (0.4)	0.5 (0.7)	0.4 (0.8)	0.3 (0.18–0.50)	1.19^{ns}	—	2.3 (2.7)	3.6 (3.0)	3.1 (2.8)	3.0 (2.31–3.65)	1.18^{ns}	—	9.1 (1.6)	8.2 (2.0)	7.6 (3.0)	8.3 (7.74–8.87)	2.66^{ns}	—	**239.64 (1.607)*** ¥**	0.78
Disgust	8.1 (2.2)	7.2 (2.0)	7.9 (2.0)	7.7 (7.23–8.22)	1.20^{ns}	—	2.5 (2.6)	2.9 (2.8)	3.1 (2.8)	2.8 (2.18–3.49)	0.25^{ns}	—	0.7 (1.7)	0.7 (1.0)	0.8 (1.7)	0.7 (0.34–1.08)	0.04^{ns}	—	**174.04 (1.686)*** ¥**	0.72
Embarrassment	8.1 (2.0)	7.2 (1.9)	7.4 (1.8)	7.6 (7.09–8.01)	1.44^{ns}	—	3.2 (3.1)	3.3 (2.2)	3.3 (2.3)	3.3 (2.63–3.87)	0.03^{ns}	—	0.6 (1.3)	1.3 (1.7)	1.0 (1.6)	1.0 (0.58–1.31)	1.28^{ns}	—	**205. 30 (1.765)*** ¥**	0.75
Feeling enthusiastic	0.63 (1.1)	0.3 (0.6)	0.7 (1.1)	0.5 (0.31–0.78)	1.38^{ns}	—	8.8 (2.1)	7.7 (3.1)	7.8 (2.3)	8.1 (7.53–8.73)	1.42^{ns}	—	2.8 (2.9)	3.6 (3.1)	2.9 (2.2)	3.1 (2.44–3.74)	0.52^{ns}	—	**222. 57 (1.811)*** ¥**	0.77
Fear	9.54 (1.7)	9.3 (1.5)	9.4 (2.0)	9.4 (8.97–9.82)	0.14^{ns}	—	2.8 (2.7)	4.2 (2.7)	2.9 (2.4)	3.3 (2.67–3.92)	1.74^{ns}	—	0.3 (0.9)	0.5 (1.0)	0.9 (1.7)	0.6 (0.25–0.86)	1.14^{ns}	—	**379.90 (1.672)*** ¥**	0.85
Grief	6.1 (2.8)	4.6 (2.7)	5.9 (2.4)	5.5 (4.90–6.17)	1.84^{ns}	—	1.8 (2.7)	2.1 (2.3)	3.0 (2.6)	2.3 (1.66–2.88)	1.70^{ns}	—	3.4 (3.2)	2.8 (2.3)	2.8 (2.7)	3.0 (2.35–3.68)	0.39^{ns}	—	**28.73 (2)*** **	0.30
Guilt	6.6 (2.6)	6.0 (2.3)	6.6 (2.2)	6.4 (5.84–6.97)	0.47^{ns}	—	2.8 (2.8)	4.1 (2.5)	3.9 (2.6)	3.6 (2.95–4.23)	1.77^{ns}	—	1.8 (2.6)	1.3 (1.7)	1.6 (2.3)	1.6 (1.00–2.10)	0.26^{ns}		**65.10 (2)*** **	0.49
Humiliation	8.75 (2.1)	7.6 (1.7)	8.2 (2.0)	8.2 (7.70–8.67)	1.82^{ns}	—	2.9 (2.9)	3.1 (2.4)	3.0 (2.7)	3.0 (2.35–3.63)	0.03^{ns}	—	0.5 (0.8)	1.3 (2.2)	0.9 (1.6)	0.9 (0.50–1.27)	1.38^{ns}	—	**219.83 (1.816)*** ¥**	0.77
Irritation	7.2 (2.1)	6.8 (1.6)	5.8 (2.0)	6.6 (6.13–7.06)	**3.34***	I > III*	3.9 (3.0)	4.1 (2.9)	4.4 (2.5)	4.1 (3.47–4.81)	0.27^{ns}	—	0.3 (0.8)	0.8 (1.0)	0.7 (1.5)	0.6 (0.36–0.92)	1.21^{ns}	—	**169.44 (1.646)*** ¥**	0.72

(Continues)

TABLE 2 | (Continued)

	Threat						Drive						Soothing							
	Panel						Panel						Panel							
	I ($n=24$)	II ($n=19$)	III ($n=27$)	Total ($N=70$)	# Between-panels		I ($n=24$)	II ($n=19$)	III ($n=27$)	Total ($N=70$)	# Between-panels		I ($n=24$)	II ($n=19$)	III ($n=27$)	Total ($N=70$)	# Between-panels		# Between systems	
Joy	0.2 (0.4)	0.5 (0.9)	0.4 (0.8)	0.4 (0.18–0.53)	1.37^{ns}	—	6.4 (2.9)	7.4 (2.9)	6.1 (3.2)	6.6 (5.90–7.34)	1.07^{ns}	—	5.7 (3.0)	6.5 (2.7)	5.5 (2.9)	5.9 (5.20–6.60)	0.65^{ns}	—	**131.18 (2)*** **	0.66
Love	0.8 (1.4)	0.5 (0.8)	0.6 (1.0)	0.6 (0.32–0.86)	0.36^{ns}	—	4.5 (2.6)	6.6 (2.6)	5.8 (2.9)	5.7 (4.99–6.30)	3.10^{ns}		9.1 (2.1)	8.2 (2.5)	7.4 (2.9)	8.3 (7.65–8.87)	2.78^{ns}	—	**203.59 (1654)*** ¥**	0.76
Peacefulness	0.0 (0.2)	0.5 (0.8)	0.3 (0.6)	0.3 (0.13–0.41)	2.94^{ns}	—	1.2 (1.8)	2.9 (2.4)	1.5 (2.3)	1.9 (1.35–2.40)	**3.57***	II > I*	9.3 (2.0)	8.8 (1.4)	8.4 (2.7)	8.8 (8.31–9.35)	1.05^{ns}	—	**437.26 (1.358)*** ¥**	0.87
Pleasure	0.3 (0.8)	0.5 (0.8)	0.6 (1.3)	0.5 (0.22–0.71)	0.72^{ns}	—	6.9 (2.9)	6.5 (3.0)	6.6 (2.4)	6.7 (5.99–7.30)	0.17^{ns}	—	6.1 (2.8)	6.7 (2.2)	5.9 (2.6)	6.2 (5.61–6.833)	0.61^{ns}	—	**176.66 (1.752)*** ¥**	0.73
Pride	1.7 (2.9)	1.1 (1.6)	1.5 (1.9)	1.4 (0.88–1.96)	0.34^{ns}	—	8.0 (2.6)	6.8 (2.8)	7.0 (2.3)	7.3 (6.66–7.90)	1.40^{ns}	—	3.0 (3.1)	5.1 (2.9)	3.6 (2.6)	3.9 (3.20–4.58)	3.01^{ns}	—	**86.76 (2)*** **	0.56
Feeling relaxed	0.1 (0.5)	0.4 (0.7)	0.4 (0.7)	0.3 (0.15–0.45)	1.49^{ns}	—	1.8 (2.4)	2.7 (2.3)	1.8 (1.8)	2.1 (1.57–2.61)	1.41^{ns}	—	8.5 (2.3)	9.0 (1.5)	8.1 (2.2)	8.5 (8.02–9.03)	0.99^{ns}	—	**410.80 (1.494)*** ¥**	0.86
Sadness	6.2 (2.3)	4.4 (2.2)	5.1 (2.8)	5.2 (4.64–5.83)	2.93^{ns}	—	1.8 (2.8)	1.8 (1.9)	2.6 (2.7)	2.1 (1.45–2.67)	0.72^{ns}	—	2.1 (2.3)	2.4 (2.1)	2.4 (2.7)	2.3 (1.72–2.88)	0.10^{ns}	—	**38.80 (2)*** **	0.37
Feeling safe	0.0 (0.2)	0.6 (1.6)	0.3 (0.6)	0.3 (0.11–0.56)	2.16^{ns}	—	2.6 (3.5)	3.0 (2.6)	2.0 (2.3)	2.5 (1.86–3.22)	0.67^{ns}	—	9.4 (1.9)	9.2 (1.4)	8.3 (2.3)	9.0 (8.47–9.42)	2.46^{ns}	—	**314.32 (1.573)*** ¥**	0.82
Shame	9.2 (2.0)	6.6 (2.0)	8.4 (1.5)	8.0 (7.60–8.47)	**11.21*** **	I > II*** III>II**	2.9 (3.0)	3.2 (2.8)	3.7 (2.8)	3.3 (2.58–3.98)	0.58^{ns}	—	0.4 (1.0)	1.5 (1.8)	1.2 (2.5)	1.0 (0.56–1.47)	2.04^{ns}	—	**186.56 (1.834)*** ¥**	0.74
Feeling Upset	7.3 (2.2)	6.8 (1.6)	5.8 (1.8)	6.6 (6.17–7.07)	**3.93***	I > III*	3.1 (2.6)	3.7 (2.4)	3.6 (2.5)	3.5 (2.88–4.08)	0.36^{ns}	—	1.0 (1.3)	0.7 (0.9)	1.4 (2.1)	1.1 (0.68–1.44)	1.18^{ns}	—	**163.31 (1.836)*** ¥**	0.71

Note: Bold values indicate statistical significance ($p<0.05$). *$p<0.05$, **$p<0.01$, ***$p<0.001$. Tukey's HSD was used for all the reported post hoc comparisons, except those identified with ♯, where due to lack of homogeneity, Games–Howell was used. ¥ = Greenhouse–Geisser correction. ∂ = Excluded from the between-subjects analysis. Panel I = experts in the 'three-circle' model, Panel II = scholars in the field of affect regulation, Panel III = clinicians.

According to the predefined benchmark values for CQV (≤0.30), an acceptable level of homogeneity was found for most of the negative emotions in the threat system, except for grief. In the specific case of the threat system, some emotions (i.e., feeling calm, joy, feeling relaxed, feeling safe and peacefulness) presented a Q1 and Q3 of 0. This finding indicates that experts agree that these emotions are not associated in any way with the activation of the threat system. For the drive system, the emotions of pride, feeling enthusiastic, pleasure and joy demonstrated an acceptable level of consensus among experts' ratings. Regarding the soothing system, a satisfactory degree of consensus among the experts was achieved for peacefulness, feeling calm, love, feeling relaxed, feeling safe, contentment, pleasure and joy.

3.4 | Scoring Proposals for Quantifying the Activation of the Three Systems: The EASEL-3 Index

According to experts' ratings, the grey shadows in Table 3 indicate the emotions eligible to represent each system. The weights attributed by the experts to each emotion on each system are provided in Table 4. We named the scoring EASEL-3, standing for Emotions-Affect Systems ELicitation Index. To estimate its overall degree of activation, decisions need to be made on how to integrate best the load of the various emotions affiliated to the same system. A large number of different hypotheses for EASEL-3 scoring were generated (see Table 5). After extensive discussion, the authors agreed that a decision on the best possible solution

TABLE 3 | Quartiles and respective coefficients of quartile variation ($N = 70$).

Threat				Drive				Soothing			
Emotions	**Q1**	**Q3**	**CQV**	**Emotions**	**Q1**	**Q3**	**CQV**	**Emotions**	**Q1**	**Q3**	**CQV**
Fear	10.00	10.00	**0.00**	Pride	6.75	9.00	**0.14**	Peacefulness	8.75	10.00	**0.07**
Anxiety	9.00	10.00	**0.05**	Feeling Enthusiastic	7.00	10.00	**0.18**	Feeling Calm	8.00	10.00	**0.11**
Humiliation	8.00	10.00	**0.11**	Pleasure	5.00	8.00	**0.23**	Love	8.00	10.00	**0.11**
Embarrassment	7.00	9.00	**0.13**	Joy	5.00	9.00	**0.29**	Feeling Relaxed	8.00	10.00	**0.11**
Anger	7.00	10.00	**0.18**	Love	3.75	8.00	0.36	Feeling Safe	8.00	10.00	**0.11**
Shame	7.00	10.00	**0.18**	Anxiety/	2.00	5.00	0.43	Contentment	7.75	10.00	**0.13**
Disgust	6.75	10.00	**0.19**	Feeling Upset	2.00	5.00	0.43	Pleasure	5.00	8.00	**0.23**
Disdain	5.00	8.00	**0.23**	Anger	2.75	7.00	0.44	Joy	4.75	8.00	**0.25**
Guilt	5.00	8.00	**0.23**	Disdain	2.00	6.00	0.50	Pride	1.00	6.00	0.71
Irritation	5.00	8.00	**0.23**	Irritation	2.00	6.25	0.52	Feeling Enthusiastic	0.75	5.00	0.74
Feeling Upset	5.00	8.00	**0.23**	Embarrassment	1.00	5.00	0.67	Grief	0.75	5.00	0.74
Sadness	4.00	7.00	**0.27**	Fear	1.00	5.00	0.67	Sadness	0.00	4.00	1.00
Grief	4.00	8.00	0.33	Guilt	1.00	5.25	0.68	Guilt	0.00	2.25	1.00
Feeling Enthusiastic	0.00	1.00	1.00	Humiliation	0.75	5.00	0.74	Feeling Upset	0.00	2.00	1.00
Love	0.00	1.00	1.00	Contentment	0.00	5.00	1.00	Shame	0.00	1.25	1.00
Pleasure	0.00	1.00	1.00	Disgust	0.00	5.00	1.00	Anger	0.00	1.00	1.00
Pride	0.00	3.00	1.00	Shame	0.00	5.00	1.00	Anxiety	0.00	1.00	1.00
Contentment	0.00	0.25	1.00	Grief	0.00	4.00	1.00	Fear	0.00	1.00	1.00
Feeling Calm	0.00	0.00	0.00	Feeling Safe	0.00	4.00	1.00	Disgust	0.00	1.00	1.00
Joy	0.00	0.00	0.00	Feeling Relaxed	0.00	3.25	1.00	Disdain	0.00	1.00	1.00
Peacefulness	0.00	0.00	0.00	Feeling Calm	0.00	3.00	1.00	Embarrassment	0.00	1.00	1.00
Feeling Relaxed	0.00	0.00	0.00	Peacefulness	0.00	3.00	1.00	Humiliation	0.00	1.00	1.00
Feeling Safe	0.00	0.00	0.00	Sadness	0.00	3.00	1.00	Irritation	0.00	1.00	1.00

Note: Bold values indicate acceptable coefficients of quartile variation (CQV). Shaded cells indicate the final items belonging to each system. Q1 = first (25^{th}) quartile. Q3 = third (75^{th}) quartile.

TABLE 4 | Calculation of the weighted load for each emotion.

Threat		Drive		Soothing	
Emotions	**W**	**Emotions**	**W**	**Emotions**	**W**
Anger	**8.4**	Feeling enthusiastic	**8.1**	Contentment	**8.3**
Anxiety	**9.2**	Joy	**5.7**	Feeling relaxed	**8.5**
Disdain	**5.9**	Pride	**7.3**	Feeling calm	**8.6**
Disgust	**7.7**	Pleasure	**6.7**	Feeling safe	**9.0**
Embarrassment	**7.6**			Joy	**5.9**
Fear	**9.4**			Love	**8.3**
Feeling upset	**6.6**			Peacefulness	**8.8**
Guilt	**6.4**			Pleasure	**6.2**
Humiliation	**8.2**				
Irritation	**6.6**				
Sadness	**5.2**				
Shame	**8.0**				

Note: Weighted Load = Score (intensity rating provided by the participant) × Weight (attributed based on experts ratings).

can only be reached through experimental work in the future. This is, therefore, left to the research agenda. Until then, we encourage researchers interested in using the EASEL-3 to adopt the weighted dominant emotion (WDE) approach. This current scoring proposal was elected by the majority of the authors.

4 | Discussion

Specific tools to empirically assess the activation of each system and explore their dynamic interplay are lacking. This study aimed to address this unmet need by (i) mapping discrete emotions to each affect regulation system proposed by Gilbert (2005), (ii) providing an estimated weight of each emotion on each system through expert's judgement and (iii) presenting a preliminary proposal on the integration of emotions and the estimation of the degree of activation of all three systems at a given time.

4.1 | Assignment of Emotions to the Three Affect Regulation Systems

We found a large degree of convergence among experts, irrespective of their specific subfield or familiarity with the model, regarding not only the assignment of each emotion to the three affect regulation systems but also each emotion's specific 'power' as an elicitor of each system. Overall, the results support the theoretical descriptions of the systems (Gilbert 2005, 2010, 2014) and confirm previous psychometric studies disentangling their affective instances (Gilbert, McEwan, Mitra, et al. 2008) and studies indicating interrelations among emotions of the same valence (Barrett 2006).

All negative emotions were assigned to the threat system. This finding properly reflects that these emotions share an overarching defensive function, even if they differ from each other on their specific elicitors, features, goals and associated behavioural responses (activating vs. inhibitory). Positive emotions, in turn, were distributed across the two positively valenced systems, with more activating emotions generally associated with the drive system and those less activating associated with the soothing system. These two distinct forms of positive affect have been well-documented in the affective neuroscience literature (Depue and Morrone-Strupinsky 2005) and observational and psychometric studies (Condliffe and Maratos 2020; Fredrickson 2001; Gilbert, McEwan, Mitra, et al. 2008), not only in their physiological profile but also in terms of their qualities and correlates. Activating positive emotions have been associated with building and broadening (inter)personal repertoires and resources (Fredrickson and Branigan 2005), while soothing and quiescent states have been linked to affiliative and rest-and-digest properties (Gilbert 2020). These differences may translate into diverse associations with health-related, psychological and social functioning domains (Gilbert 2020). All emotions, except boredom, clearly distinguished between systems and were more strongly associated with one of them. The literature on boredom has provided mixed results regarding its nature and whether this is a low or high-arousal emotion. Some studies support the concept that boredom signals a need to shift towards novel, more meaningful, or engaging goals linked to a rise in sympathetic nervous system activity. Through this lens, boredom is seen as a high-arousal emotion that prepares for action (Bench and Lench 2013). Other studies operationalize boredom as close to apathy (Bench and Lench 2013), a low arousal or even a deactivation state associated with the dorsal branch of the vagus nerve (more related to immobilization or shutdown; Porges 2011). The ambiguity of boredom, reflected in these different conceptualizations, may have contributed to the results obtained.

TABLE 5 | EASEL-3 scoring method proposals.

Scoring method	Rationale	Example
Weighted dominant emotion (WDE)	The maximum load takes precedence over the remaining (and less activating) emotions. This implies a system's activation is determined by the most powerful (highest load) of the emotions assigned to that system. The 'load' of an emotion in a system is calculated by multiplying the intensity rating provided by the participant (on a scale from 0 to 10) by that emotion's weight on that system (see Table 4 for an overview).	If a person reports feeling 4 of anxiety, 5 of guilt, and 6 of sadness, the estimate of the level of activation of the threat system will be made based solely on the emotion with the highest load, in this case, anxiety (Load = 36.8 vs. 32 and 31.2, respectively).
Raw average (RA)	This scoring method follows one of the common practices in scoring methods in psychology and considers that all emotions contribute equally to the score.	Level of Threat activation = (Fear + Anxiety + Anger + Humiliation + Shame + Embarrassment + Disgust + Irritation + Upset + Guilt + Disdain + Sadness) / n The same scoring applies to the estimation of the other systems' activation
Weighted average (WA)	In line with the concept of multiple-selves, in the different situations of everyday life we experience a 'colourful' emotional pattern, where multiple, and sometimes contrasting, emotions are present. We calculate the weighted average load by multiplying each emotion by its assigned weight. The weighted loads emotions are then summed and divided by the number of emotions entered.	Level of Threat activation = ((Fear*9.4) + (Anxiety* 9.2) + (Anger* 8.4) + (Humiliation* 8.2) + (Shame* 8.0) + (Embarrassment*7.6) + (Disgust*7.7) + (Irritation*6.6) + (Upset*6.6) + (Guilt*6.4) + (Disdain*5.9) + (Sadness*5.2)) / n The same scoring applies to the estimation of the other systems' activation
Exponential weighing (EW)	By using exponential weighing, every emotion is weighted in such a way that one or two extreme emotions still lead to a high system score, even if other emotions are hardly scored.	Level of Threat activation = (9.4*Fear^2 + 9.2*Anxiety^2 + 8.4*Anger^2 + 8.2*Humiliation^2 + 8.0*Shame^2 + 7.6*Embarrassment^2 + 7.7*Disgust^2 + 6.6*Irritation^2 + 6.6*Upset^2 + 6.4*Guilt^2 + 5.9*Disdain^2 + 5.3*Sadness^2) / n The same scoring applies to the estimation of the other systems' activation
Weighted Dominant Emotion Plus (WDE+)	A variation of the WDE score that aims to account for the presence and intensity of other emotions besides the highest one. This index involves taking the weighted load of the highest emotion rating and add it the total number of emotions that were significantly activated (defined as a rating ≥ 3). To account for differences in intensity rating between emotions, the following activation intervals should be taking into consideration when computing the index. Intensity between 3 and 4 = 1 Intensity between 5 and 6 = 2 Intensity between 7 and 8 = 3 Intensity between 9 and 10 = 4	If a person reports feeling 8 of fear, 5 of anger, and 3 of disgust the estimation of the level of activation would be (8*9.4) + 2 + 1. If another person reports feeling 6 of fear, 4 of anger and 3 of disgust, the index would be computed as follows: (Fear*9.4) + 1 + 1.

4.2 | Selection of Emotions to Represent Each Affect Regulation System

The decision to include only emotions with a high degree of consensus among the experts in the final index serves both the robustness and the feasibility of the index. Pleasure and joy were the only emotions that fell below the cut-off point of 0.30 in two systems: drive and soothing. Some literature has indicated that different systems may activate instances of the same emotion depending on contextual features and demands (Del Giudice 2022). Indeed, theoretical descriptions of the central construct of safeness assume that it may involve low-arousal emotions but also states of playfulness and exploratory action (Armstrong et al. 2021; Gilbert 2020). Previous findings have shown that happiness clusters in more than one category, with the respective categories differing in their underlying valence and arousal (Toivonen et al. 2012). This result mirrors once more the tendency of positive emotions to be interrelated and to

cluster together. Notably, there was a lower degree of consensus regarding the drive system. The reasons underlying this observation exceed the scope of this study.

4.3 | Estimating the Overall Activation of Each System

The authors acknowledge a high degree of uncertainty regarding the most appropriate method to integrate the load of individual emotions in the final estimate of the overall activation of a given system. We suggest that our preliminary proposal be used while we invite researchers to test and explore alternative methods.

Our current proposal assumes that one system's activation degree is determined by the maximum load attributable to the individual affiliated emotions. This is based on the fact that we failed to reach a consensus on how and to what extent concomitant emotions of the same system change the level of activation induced by the predominant one (maximum load). We hope that the alternatives presented in this paper and new ones will be tested in the future. Research exploring the (non-)linear relationships between emotions and systems and potential interactive effects between emotions is warranted. Network analysis may prove helpful for this purpose, as it allows incorporating this emotional complexity while enabling the identification of profiles of co-activation or coupling that are situation-, person- or group-specific (Borsboom and Cramer 2013).

4.4 | Remarks on the use of the EASEL-3 Index

4.4.1 | Application

The EASEL-3 index can be used in both clinical and research contexts to provide an estimate of the activation of the affect regulation systems, provided that the following conditions are met: (a) the emotion scoring instruments used to feed the index are sound and valid; (b) all emotions identified as part of each system are covered and assessed unless a shorter selection of dominant emotions is made based on appropriate pilot studies on the same setting; (c) scores obtained in the primary emotion scoring instrument should be transformed into a standard scale of 11 points; (d) the timeframe attributed to EASEL-3 (trait vs. state) is the same as the emotion-scoring instruments used.

4.4.2 | Strengths and Limitations

This study provides an empirical approximation to the 'three-circle' model, endorsed by a large number of experts with different backgrounds in affective science/emotion regulation. The degree of consensus obtained among this diverse pool of experts underlines the robustness of the underlying model and the EASEL-3 index.

Some caveats should be taken into consideration when interpreting these findings. One weakness resides in the sample size, which precluded further analytic procedures such as factor analyses or network analyses. These types of analyses might, otherwise, have been used to explore the emotional configuration within each one of the affect regulation systems by identifying different intercorrelation patterns. Further studies are needed to ascertain the intelligibility, usefulness and agreement over the categories established in this study by a new set of experts from divergent scientific and clinical orientations. The absence of the emotion of excitement may be seen as a limitation, given its importance in the drive system. This decision was made upfront for the sake of parsimony and cannot be corrected.

The results provided by the expert panels are in need of empirical testing in community and clinical samples. However, given that this is the first article that takes on such an endeavour, there is no gold standard to assess the validity of the results. At the current state of knowledge, we can only hypothesize that the overall activation of each system is additionally estimated, for comparison purposes, by means of self-report methods (e.g., emotional-eliciting vignettes or scenarios), psychophysiological markers differentially associated with the affect regulation systems (e.g., heart-rate variability, electrodermal activity) and neuroimaging signatures. Moreover, it should be examined whether the EASEL-3 index is associated with other measures of threat, drive and soothing-related constructs as well as symptoms. Uncertainty regarding the computation method used to integrate the diverse emotions into the EASEL-3 index (single maximum load) must be taken into consideration until further research determines the best scoring method.

Finally, one cannot guarantee that the exact same meaning was ascribed to emotional descriptors by experts who are English and non-English native speakers. Indeed, it is now recognized that individual differences, culture and language may influence which emotions are experienced and how they are expressed (Salgado 2006; Salgado and Cunha 2018; Valsiner 2020). Nevertheless, a multi-cultural sample study showed that individuals distinguish between and use qualitatively different descriptors when referring to drive- and soothing-related emotions (Condliffe and Maratos 2020). Cross-cultural studies are warranted, aimed at testing, validating and/or adapting the emotional configurations found in the present findings in a culturally sensitive way.

4.5 | Potential Clinical and Research Uses and Implications

The methodology adopted a priori resulted in a set of indexes rooted in expert consensus that seem feasible, coherent and face valid. The present study adds to the field by providing a quantitative framework to assist in evaluating manifestations, variations, deviations and consequences associated with the three-circle affect regulation systems. On the basis of current psychological perspectives, we hypothesize that the EASEL-3 index would show higher scores of threat and lower scores of soothing in most psychological disorders. At the same time, hypo- or hyperactivation of the drive system would be more disorder-specific. This tool may represent a valuable asset in clinical and research settings if proven valid and sound.

At the assessment level, such an index will enable the evaluation of the three systems' dynamic functioning, identifying problematic emotional patterns and their association with different clinical phenotypes within and between physical and mental disorders, and perhaps even supporting early and differential diagnosis after refinement. It may be used, for instance, in experimental studies to assess the response to emotion-eliciting cues (film clips, affective images) in different normative and pathological conditions and how existing emotional patterns influence individual responding to such stimuli. It is also applicable in ecological momentary assessment of the dynamic interplay between the three affect systems in an individual's natural environment or in response to specific events or contexts (e.g., everyday hassles and social contexts) or to evaluate change in the three systems' dynamics in response to interventions.

On a more mechanistic level, the EASEL-3 index may explore different neurophysiological mechanisms, psychosocial correlates, and processes, including hypothetical moderators, associated with distinct and potentially dysfunctional systems' activation patterns. Research with EASEL-3 may help to identify instances where certain emotions do not clearly activate the targeted system, perhaps due to problematic learning experiences. It has been advocated that some people may develop, due to adverse early experiences and learning processes, fears and resistances regarding emotions or motivational states commonly perceived as positive, such as happiness or compassion (Gilbert, McEwan, Matos, et al. 2011; Gilbert, McEwan, Gibbons, et al. 2012). In these cases, positive affect may paradoxically activate the threat system (Duarte et al. 2015; Gilbert 2010; Gilbert, McEwan, Gibbons, et al. 2012). This has been recently demonstrated in a study with young offenders, who tended to display a decrease in vagally-mediated heart rate variability (HRV), a physiological pattern congruent with threat activation, in comparison to community adolescents, who showed an increment in vagally-mediated HRV (Sousa et al. 2022). In addition, given that the affect regulation systems emerge from intricate and dynamic "*patterns of (neuro)physiological activation that are constantly blending with and co-regulating each other*" (Gilbert 2015a, p. 4) there may be specific adaptive and maladaptive temporal courses. Future studies aimed at investigating the dynamic interplay and co-regulatory effects among systems, for instance using intensive longitudinal measurement methods, are warranted (Hamaker et al. 2018).

At the intervention level, it may allow measuring the efficacy of specific interventions or techniques in rebalancing the systems as a whole or in producing changes in a specific system (and eventually tracking how these changes impact the other systems) both in the short and long term. Current models of intervention such as classic CBT, contextual CBT (e.g., mindfulness and acceptance-based interventions), compassion-based interventions and experiential and humanistic approaches (e.g., Emotion-Focused Therapy) might largely benefit from this type of measurement by identifying and directly targeting specific emotional activation patterns. The EASEL-3 index may also contribute to informing the design of new personalized interventions combining different components specifically intended to address the particular needs of the individual or the group.

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Data Availability Statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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Supporting Information

Additional supporting information can be found online in the Supporting Information section. **Data S1:** Supporting Information