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**THE SQUARE OF BASIC EMOTIONS MODEL
AS A PRACTICAL SELF-REGULATION TOOL FOR DEVELOPING PERSONALITY'S
EMOTIONAL AWARENESS AND EMOTIONAL RESILIENCE**

Purpose. The article aims to present the Square of Basic Emotions model (SBE Model) as a universal practical self-regulation tool for developing Emotional Awareness and Emotional Resilience.

Methods. The SBE Model is based on Damasio's neuropsychological concept of emotion [6], considering each emotion as a signal of deficit or disturbance of internal or social balance.

The model was developed based on empirical research conducted within the online School of Emotional Literacy. A total of 238 volunteers from Ukraine participated in the study (12 small groups in both online and offline formats), including 38% men and 62% women, aged 27–45 years. Through structured discussions and questionnaires, a wide spectrum of emotions ($n = 60$ emotive lexemes) was classified into clusters using a signal-based approach derived from Plutchik's psycho-evolutionary theory of emotion [24].

To justify the Model, the methodological section employed a comprehensive set of statistical procedures: inter-rater agreement assessment via Fleiss' k [11]; verification of the four-cluster structure using the χ^2 test of independence and Cramér's V effect size, supplemented by Correspondence Analysis (CA) for visual inspection of the latent structure [14]; and item-level validity analysis using match proportions and 95% Wilson confidence intervals [30].

Results. Statistical analysis revealed a stable four-cluster structure. The broad spectrum of emotions was classified into four conditionally basic emotions: joy, fear, guilt/shame, and anger. The SBE Model is based on the premise that emotions function as signals of an imbalance between expectation and reality, aimed at restoring adaptive equilibrium in communication and the social environment [24]. However, unlike Plutchik's psycho-evolutionary theory, the SBE Model includes not eight but four basic emotions. This simplified classification of emotional experiences allows for rapid identification of the key emotional state, its functional role, and facilitates immediate transition to practical problem-solving. The model demonstrated robust psychometric properties, including high measurement precision and internal consistency.

Conclusions. The SBE Model is a reliable tool for self-regulation. On the one hand, it enables rapid identification of emotional states and enhances emotional awareness; on the other hand, it supports the development of emotional resilience during practical problem-solving through the application of a five-component algorithm—Situation \rightarrow Emotion \rightarrow Thought \rightarrow Action = Result (SETAR)—which shortens the time required for adaptive responses in stressful situations. Thus, the SBE Model integrates emotional diagnostics with behavioral correction, complementing both therapeutic approaches (e.g., Rational Emotive Behavior Therapy [9]) and educational frameworks such as the RULER approach [3].

KEY WORDS: *The Square of Basic Emotions Model (SBE Model), Emotional Awareness, Emotional Resilience, Emotive Lexicon, Basic Emotions, Emotional Intelligence.*

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Introductions

In the context of increasingly intensified information flows characteristic of Industry 4.0, the development of fundamental components of Emotional Intelligence (EI) - such as emotional awareness (self-awareness and social awareness) and emotional resilience (self-management and relationship management) - offers significant potential for preserving and enhancing personal and social resources. The growing interest in Emotional Intelligence is evidenced by the rising number of scientific publications indexed in Web of Science and Scopus [21]. However, a key bottleneck remains the development of universal, easily applicable tools for strengthening the core components of Emotional Intelligence.

This article presents a practical self-regulation tool designed to independently cultivate emotional awareness and emotional resilience. Its value lies in its alignment with established theoretical frameworks in the field of Emotional Intelligence, while also demonstrating empirical validation and broad applicability in both educational and corporate settings.

The aim of this article is to present the Square of Basic Emotions model (the SBE Model) as a practical self-regulation tool for developing Emotional Awareness and Emotional Resilience, based on the rapid identification of an individual's specific emotional states.

The present article aims to demonstrate Hypothesis 1.0: in instrumental application, the diversity of emotional states (emotive lexemes) can be classified into four groups based on shared signals and functions. It is assumed that the wide variety of emotions and subjective experiences can be distributed across four functional basic reactions—anger, joy, guilt/shame, and fear. These four conditionally basic emotions serve as operational units of analysis.

These four conditionally basic emotions were identified through the lexicographic stage of the study and through the analysis of signals and functions of various emotions within the trainer's practical work during group sessions. This approach is closely aligned with the evolutionary core of Robert Plutchik's model. In Plutchik's theory, there are eight basic emotions, but they can be consolidated into

four key survival systems (System – Basic Emotion), namely: Approach – joy; Protection – anger; Avoidance – fear; Social regulation – shame/guilt (secondary emotions).

Emotions are understood as signals within adaptive human behavior in social environments [7,8,23,29]. Emotions influence behavior in social contexts [23]. They shape perception, trigger thought and action, enable rapid responses to social changes, and support adaptation and group functioning [29].

A number of foundational theories address the social functions of emotions. According to Robert Plutchik's psycho-evolutionary theory [24], emotions are signals of imbalance between expectation and reality, aimed at restoring adaptive equilibrium. Basic emotions are assumed to have evolved as mechanisms supporting survival. Each emotion corresponds to a specific behavioral impulse: fear promotes avoidance, anger—protection, sadness—restoration of connection, joy—affiliation and social engagement. Lazarus's appraisal theory [19] similarly suggests that emotions emerge from cognitive evaluations of an event's relevance to personal goals and needs. When an event is perceived as threatening or obstructive, an emotion arises that signals the need to change behavioral strategy. Thus, emotion not only reflects internal state but also functions as a trigger for adaptation, initiating reappraisal of the situation. A related perspective is found in the functional theory of emotions by H. Campos, which emphasizes that emotions provide feedback on the degree to which one's actions align with social expectations and internal needs [4]. Emotions signal the necessity to redirect attention, reassess the situation, and choose further behavior—especially in socially uncertain contexts. A. Damasio's neuropsychological theory [6] adds that emotional signals (somatic markers) function as biological indicators of event significance. These signals shape decision-making by enabling rapid and intuitive orientation in social settings. Thus, emotions serve as neuropsychological tools for prediction and choice, forming the basis of strategic behavior.

Social emotions such as guilt and gratitude perform adaptive functions essential for social interaction and relationship building

[7,8]. Emotions such as shame, guilt, pride, and gratitude arise in interpersonal contexts and depend on the cognitive appraisal of social circumstances [23]. They are associated with experiences of discomfort and a motivation to repair potential harm, serving functions of restoring trust and facilitating social rehabilitation [26].

Positive affiliative emotions—happiness, joy, satisfaction, gratitude, appreciation—emerge in situations perceived as favorable, aligned with personal goals, and reflective of positive social intent. These emotions are associated with experiences of pleasure, safety, generosity, and readiness to cooperate. They broaden cognitive and behavioral repertoires [12] and enhance interpersonal closeness. In professional contexts, positive affect promotes constructive behavioral responses and increases employee loyalty [2].

Emotions such as sadness, disappointment, distress, worry, and fear appear when outcomes diverge from expectations or desires. Their shared function is to signal a need for support, and research confirms that such emotions elicit helping behavior [7]. These emotions are essential for forming and maintaining social relationships, while their suppression may threaten close connections. In professional settings, they can evoke empathy and prosocial behavior and, in negotiations, may even increase concessions [29].

Dominance-related emotions—anger, contempt, pride—have an antagonistic nature and reflect attempts to restore autonomy or superiority. Anger arises when goals are blocked and another person is perceived as responsible; contempt is linked to a sense of moral superiority; pride signals achieved status [27]. Their social effects are multifaceted: expression of anger may damage relationships but may also motivate problem solving, increase follower motivation and effectiveness, and foster cooperation or concessions in conflict situations [29].

Taken together, emotions form a complex signaling system that plays an essential role in adaptive social behavior. Emotions function as immediate signals that help maintain adaptation, clarify boundaries, restore balance, and support mature emotional responses. Emotional and social feelings operate not only as biological mechanisms of

adaptation but also as fundamental tools of social interaction that sustain effective behavior, well-being, and mental health throughout the lifespan.

Understanding emotional states through the lens of emotional signals and functions fosters emotional awareness, the primary component of Emotional Intelligence development [21, 22]. According to Lane & Schwartz [17], emotional awareness is defined as the ability to perceive and understand one's own emotions, allowing individuals to recognize and describe their emotional states. Gohm & Clore [13] emphasize that emotional awareness includes not only differentiation and identification but also understanding the causes and consequences of emotions for oneself and others. Barrett et al. [1] extend this definition by highlighting the importance of continually expanding one's emotional vocabulary, which enhances accurate description and deeper understanding of internal states. Thus, emotional awareness is a multicomponent skill involving perception, recognition, verbalization, and analysis of emotions. Emotional awareness forms the foundation of emotional resilience.

According to Hill & Argyle [16], emotional resilience is defined as the ability to maintain predictable and coherent emotional responses, considered the opposite of neuroticism. Li [20] highlights the conditions necessary for sustaining emotional resilience, noting that it involves maintaining emotional balance under pressure, allowing individuals to function effectively and preserve mental health even under significant stressors. Hay & Ashman [15] describe emotional resilience as a stable transition between emotional states and moderate resistance to external influences, manifested in calmness, absence of anxiety or depression, and confidence in one's plans and relationships. Contemporary research supports the view that emotional resilience is a stable personality trait observed across the lifespan, forming the basis for adaptive functioning and personal development. Thus, emotional resilience is defined as a fundamental and multifaceted characteristic supporting ongoing emotional regulation, stress tolerance, and effective adaptation to life challenges.

The present study draws on the models of Albert Ellis [9], Robert Plutchik [24], and the Yale RULER methodology [3] as key frameworks for developing emotional

awareness and emotional resilience. These approaches were selected due to their robust components that can be applied to the analysis of everyday emotional states and behavior regulation in social environments. Plutchik's model is based on eight basic emotions—joy, trust, fear, surprise, sadness, disgust, anger, anticipation. While evolutionarily grounded and systematic, it is simplified in the present study. Albert Ellis's Rational Emotive Behavior Therapy (REBT) explains that behavior is influenced not by the activating event (A) itself but by beliefs (B), which determine emotional and behavioral consequences (C). Although well-structured and effective, REBT requires abstract reasoning and typically involves professional guidance. In contrast, the SBE Model

functions as a self-regulation tool, increasing its applicability in everyday practice. The RULER methodology [3] includes five sequential skills: Recognize, Understand, Label, Express, Regulate. This framework is widely applied in social-emotional learning programs and provides a foundation for integrating the SBE Model into educational settings.

In this study, the practical SBE Model serves as the missing link between theoretical approaches to Emotional Intelligence development and the practical cultivation of emotional awareness and emotional resilience for real-world problem solving. The findings help bridge the gap between theory and practice in the development of Emotional Intelligence components.

Methods

The object of the study is a simplified model designed for the rapid identification of emotional states and the determination of practical actions. The sample consisted of participants from 12 small groups (10–30 people) attending the Emotional Literacy training program. The trainings were conducted in both online and offline formats. In total, 238 residents of Kharkiv (Ukraine) voluntarily participated in the study, including 90 men and 148 women, aged 27–45 years.

During the training tasks, participants were asked to classify a wide spectrum of 60 emotions and emotional states [25] into four broad clusters of emotions based on similar signals. The number of lexemes ($n = 60$) corresponds to the optimal range (50–100) typically used in psycholinguistics and lexical typology to identify stable latent groupings, conduct multivariate statistical procedures, and reliably compare similar emotional states.

Assigning an emotion to a specific cluster in most cases indicated support for the assumption that a wide spectrum of emotional states can be categorized into four clusters. Participants completed the questionnaires individually by assigning each emotion to one of the four clusters. This was followed by group discussion, and participants almost always reached a shared conclusion that coincided with the emotional signal function proposed by the trainer. A consistent pattern emerged: each emotion could be reliably placed into one of the four clusters.

To test Hypothesis 1.0 within the

empirical evaluation of the Square of Basic Emotions Model (SBE Model), a comprehensive set of statistical techniques was used to analyze categorical data, assess inter-rater reliability, and establish construct validity. The methodological approach followed internationally recognized standards of statistical analysis.

Inter-rater reliability was assessed using Fleiss' kappa (κ), the standard measure for evaluating agreement among more than two raters when classifying items into nominal categories [11]. In this study, it measured the consistency with which respondents assigned each emotion to one of the four basic reactions. To standardize interpretation, κ values were evaluated according to the widely used guidelines of Landis & Koch [18], who proposed conventional thresholds (“fair,” “moderate,” “substantial,” “almost perfect”) for assessing agreement quality. Although these thresholds are approximate, they remain the most frequently applied interpretive framework in empirical research.

Associations between emotions and the four basic reactions were examined using the Chi-square test of independence (χ^2 -test). Pearson's χ^2 -test was used to determine the presence of statistically significant associations between each individual emotion and its predicted reaction category. The strength of association was evaluated using Cramér's V, which normalizes χ^2 values and allows interpretation on a scale from 0 to 1.

To investigate the latent structure of the data and assess whether emotions form clusters consistent with the four theoretical reactions, Correspondence Analysis (CA) was employed [14]. CA projects the rows and columns of a contingency table into a shared two-dimensional space, making it a standard approach for visualizing complex frequency tables. Its use is justified by the fact that CA is based on χ^2 distances, effectively reveals structural relationships, and clearly demonstrates whether emotions form four

stable “clouds” around the theoretical reactions [3].

The alignment of each emotion with its theoretical category was further evaluated using Wilson confidence intervals. For each emotion, the proportion of respondents who selected the reaction predicted by the model was calculated. To assess the precision of these proportions, 95% Wilson score intervals were computed, as they provide accurate estimates even for proportions close to 0 or 1 and significantly outperform the classical Wald interval in reliability [30].

Research results

The respondents participating in the small-group training sessions of the School of Emotional Literacy were asked to assign 60 Emotive Lexemes to four clusters: Forms of Anger (active orientation toward the external environment), Forms of Joy (meaning-oriented

and motivational orientation toward growth and expansion), Forms of Internal Orientation (Guilt/Shame), and Forms of Fear (control and orientation under conditions of uncertainty). The results of the voluntary survey conducted with 238 respondents are presented in Table 1.

Table 1.

Classification of emotive lexemes into 4 clusters

<i>N</i>	<i>Emotive Lexeme</i>	<i>Forms of Anger</i>	<i>Forms of Joy</i>	<i>Forms of Guilt/Shame</i>	<i>Forms of Fear</i>
1	Acceptance		202	36	
2	Admiration		236		2
3	Anger	238			
4	Annoyance	222		16	
5	Anxiety			15	223
6	Apprehension			13	225
7	Aversion	11		213	14
8	Awkwardness			218	20
9	Bliss		237		1
10	Boredom	238			
11	Calmness		236	2	
12	Compassion		1	223	14
13	Confusion				238
14	Contempt	233		4	1
15	Delight		238		
16	Despair	210			28
17	Disappointment	221	1		16
18	Discomfort	220		12	6
19	Disgrace			215	23
20	Disgust	16		221	1
21	Dissatisfaction	227		11	
22	Doubt			21	217
23	Embarrassment			217	21
24	Empathy			227	11
25	Encouragement		236		2
26	Envy	214	1		23
27	Euphoria		236		2
28	Excitement	8	207		23
29	Fury	232		2	4
30	Gratitude	4	219	15	
31	Guilt			238	
32	Insecurity	3		27	208
33	Inspiration		236		2

Table Continuation

34	Interest	4	234		
35	Irritation	232			6
36	Jealousy	54			184
37	Joy		238		
38	Love		235	2	1
39	Melancholy	220		18	
40	Nervousness		42		196
41	Optimism		235		3
42	Panic				238
43	Perfectionism	4		221	13
44	Pity			226	12
45	Rage	238			
46	Remorse			235	3
47	Resentment	231		7	
48	Restlessness			18	220
49	Sadness	215		23	
50	Self-criticism	3		229	6
51	Sense of Injustice	232			6
52	Serenity		238		
53	Shame			238	
54	Shyness			227	11
55	Sorrow	216		22	
56	Terror				238
57	Timidity			217	21
58	Tremor	11	28	4	195
59	Trust		228	2	8
60	Vigilance	8	2	13	215

Each lexeme was annotated according to four orientations corresponding to the components of the SBE Model: anger, joy, external regulators (guilt/shame), and fear. In the initial classification table, these categories are presented as Forms of Anger / Forms of Joy / Forms of Internal Orientation (guilt/shame) / Forms of Fear (Table 1).

To empirically test the hypothesis that emotive lexemes can be distributed across four conditionally basic emotional reactions, a comprehensive set of statistical methods was applied. These techniques targeted categorical data analysis, assessment of inter-rater reliability, and the establishment of the model's construct validity.

1. Construct Validity: Four-Cluster Structure

1.1. Global Association "Emotion × Basic Reaction" (χ^2 and Cramér's V)

We tested the hypothesis of independence between rows (emotions) and columns (the four basic reactions of the SBE Model) using Pearson's Chi-square test for a 60×4 contingency table.

The results demonstrate a pronounced dependence:

$\chi^2(177) = 36,875.62$, $p < .001$, with an effect size of Cramér's V = 0.928, indicating a very strong association between the type of emotion and the choice of basic reaction.

Therefore, the distribution of emotions across the four reactions is not random but highly structured. This finding aligns with the theoretical architecture of the SBE Model, which posits four stable "poles" of emotional reactions.

1.2. Visual Structural Validation: Correspondence Analysis (CA)

To visually validate the cluster structure, a Correspondence Analysis (CA) was conducted. Rows (60 emotive lexemes) and columns (four reactions) were projected into a shared two-dimensional space based on χ^2 distances (Figure 1).

This visualization allows for an intuitive inspection of how tightly each lexeme aligns with the four theoretical clusters and whether distinct "clouds" of emotional categories appear, as predicted by the SBE Model.

On the resulting correspondence map, the first two dimensions account for 36.56% and 33.79% of inertia respectively (70.35% cumulatively), which is sufficient for

interpreting the latent structure. The emotions cluster around their corresponding basic reactions, and the column points (anger, joy, internal—guilt/shame, fear) are positioned at a considerable distance from one another, indicating distinct associative profiles. Taken together, the four clearly expressed “clouds” correspond to the four reactions of the SBE Model, visually confirming its construct validity.

Emotions associated with the reaction joy form the most compact cluster, indicating high semantic homogeneity of positive emotional experiences. Their dense grouping around the corresponding centroid reflects the

stability of behavioral and cognitive features characteristic of emotional states linked to positive motivation, expansion, and social approach.

The anger cluster also demonstrates strong structural integrity, albeit with slightly greater variability in configuration. This suggests that emotions belonging to this category share a general orientation toward external activation and counteraction, yet differ in intensity and functional load. Nevertheless, their proximity to one another and to the basic reaction centroid confirms their alignment with a unified behavioral dominance.

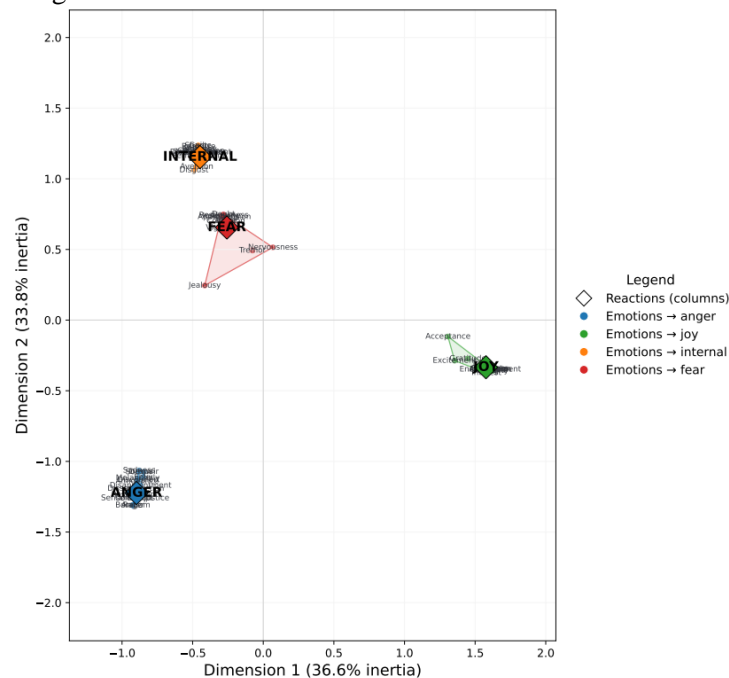


Fig 1. - Correspondence Analysis (CA)

A more complex spatial organization was observed for emotions classified under internal (guilt/shame) and fear. Although the cluster centers are clearly separated, some emotions occupy intermediate positions, forming areas of overlap. This distribution reflects the theoretically expected adjacency between states involving inner reflection, self-evaluation, and experiences of guilt/shame, and states of uncertainty, perceived threat, or instrumental control associated with fear.

Overall, the geometric structure of the biplot supports the construct validity of the model: the four basic reactions act as stable poles around which emotional states cluster according to their behavioral and cognitive characteristics. The clear delineation of

clusters and the meaningful configuration of transitional areas indicate that the model accurately captures key distinctions in emotional response patterns reflected in the respondent sample.

Thus, the construct validity of the model is confirmed. The high χ^2 and Cramér’s $V \approx 0.93$ indicate that the variability of respondents’ choices among the four reactions strongly depends on the type of emotion; the association is close to the maximum possible for contingency tables of this size. The two-dimensional correspondence map demonstrates visual alignment with the model: four stable clouds of emotions gravitate spatially toward the expected reactions. The first two dimensions collectively explain approximately 70% of inertia, which is typical

for well-structured nominal data and sufficient for substantive conclusions regarding the four-pole organization of the emotional space.

The obtained results—both statistical (χ^2 , Cramér's V) and visual (CA biplot)—convergently confirm the construct validity of the SBE Model: the respondents' data exhibit a stable four-cluster structure consistent with the theoretical assumption of four basic emotional reactions.

2. *Inter-rater reliability: Fleiss' κ*

To assess inter-rater agreement, Fleiss' kappa (κ) was used—the standard coefficient for situations in which multiple raters classify the same set of items into nominal categories. Across the full set of 60 items (emotions), the following values were obtained: average observed agreement; chance-expected agreement; overall Fleiss' $\kappa = 0.866$. These values indicate a high level of agreement among respondents when assigning emotions to the four basic reactions. According to the benchmarks proposed by Landis and Koch (1977), this falls within the range of “almost perfect” agreement (0.81–1.00). The distribution of κ at the level of individual items (emotions) further supports this conclusion:

median $\kappa =$; interquartile range: 0.784–0.978; minimum/maximum: 0.528 / 1.000. A descriptive check of item “unambiguity” via the proportion of the dominant reaction shows: 59/60 emotions have a matching proportion ≥ 0.80 ; 51/60 — ≥ 0.90 ; 31/60 — ≥ 0.95 .

These observations are consistent with the high overall κ and indicate that the majority of items exhibit strong and stable categorization. The high Fleiss' κ values and the compressed distribution suggest that respondents reliably and consistently recognized, for most emotions, the basic reaction predicted by the SBE Model. This means that the cognitive-affective features underlying the four reactions were sufficiently distinct for participants; in other words, the model provides categories that function as “natural” groupings for reflective emotion classification.

The proportion of items exhibiting near-complete unanimity (≥ 0.95) further reinforces this conclusion: for a substantial subset of emotions, respondents' choices were nearly identical, supporting the construct validity of the model.

3. *Item-Level Validity*

For each emotion, we identified the dominant basic reaction (the category receiving the majority of responses), calculated the point estimate of the match proportion, and computed the 95% Wilson confidence interval. The mean match proportion for the dominant reaction was 0.945, with a median of 0.954; the interquartile range was 0.912–0.992, the minimum/maximum values were 0.773 / 1.000, and the average bounds of the 95% Wilson confidence interval were [0.912; 0.964].

Thus, most emotions demonstrate a very high match proportion with the dominant reaction, and for a substantial number of items, the upper bound of the confidence interval approaches 1. This indicates robust differentiation of emotional stimuli by respondents according to the four basic reactions defined by the SBE Model.

The analysis of these match proportions between emotions and the expected categories within the SBE Model reveals a stable and unambiguous pattern of agreement. Consequently, the findings demonstrate that the SBE Model reliably differentiates the majority of emotional states, and the variations observed in the lower range of the scale reflect not deficiencies of the model but rather natural features of human emotional categorization.

4. *Extended Robustness Checks and External Validation*

Hierarchical clustering of the four-reaction profiles and comparison with the theoretical classification were performed by normalizing the four-dimensional emotional reaction profile (anger, joy, internal—guilt/shame, fear) for each of the 60 emotive lexemes. Using the resulting 60×4 matrix, hierarchical clustering was conducted (Ward's method, Euclidean distance) with a predefined cut at $k=4$ clusters. Agreement between the empirical clusters and the a priori classification of the SBE Model was evaluated using the Adjusted Rand Index (ARI) and Fowlkes–Mallows Index (FM)—standard external clustering validation metrics, where ARI is corrected for chance agreement and FM assesses pairwise cluster correspondence. The results were unequivocal: ARI = 1.000; FM = 1.000. This indicates that clustering based solely on the empirical four-dimensional profiles exactly reproduces the theoretical four-group structure of the SBE Model,

providing strong external evidence of its construct validity (a “blind” clustering solution fully matching the theory). These results substantially reinforce both the construct and criterion validity of the SBE Model.

Thus, Hypothesis 1.0 is confirmed on the basis of statistical evidence: a wide variety of emotions can indeed be classified into four conditionally basic emotional reactions with distinct functional roles.

Introduction of SBE Model

The SBE Model is a functional-cognitive framework of emotional regulation based on a systemic understanding of emotions as signals of internal and external regulation. The model serves as a structure for analyzing, interpreting, and intentionally

processing emotional states. It functions as a navigational tool in real-world practical situations and reduces the time required for decision-making. The SBE Model operates as a dynamic map for moving through emotional states and as a practical instrument for developing self-regulation and sustainable goal-directed action (<https://eihuman.online/o-metode/>).

Visually, the SBE Model is represented as a square consisting of four “basic emotions”—joy, anger, guilt/shame, and fear (Figure 2). These emotions are not viewed as discrete experiences to be controlled or avoided, but rather as functional signals that indicate specific types of disruptions in internal or social regulatory processes.



Fig. 2 – SBE Model

The purpose of the SBE Model is to develop the ability to consciously recognize and interpret emotional signals, link them to the context of a social situation, and thereby strengthen emotional awareness and emotional resilience through the behavioral-analysis formula SETAR: moving from a situation to an outcome through emotion, thought, and action.

The objectives of the SBE Model are to:

- develop the skill of perceiving emotions as functional signals;
- cultivate the ability to conduct causal analysis of one’s own behavior;
- reduce emotional automaticity and enhance subjective control over reactions;
- create a foundation for forming mature and stable behavioral patterns in social interactions.

The SBE Model is based on the rational-emotional-behavioural therapy formula of A. Ellis' formula, from situation to outcome through emotion, thought and action, which allows for an analysis of the cause and effect relationships between emotional response, cognitive interpretation and behavioural response. The formula SETAR serves as the

foundation for analyzing causal relationships between an emotional reaction, its cognitive interpretation, and the behavioral response that follows. Applying formula SETAR to a concrete situation facilitates understanding of cause-and-effect connections. Moving through the steps of the formula shifts attention from surface-level emotional experiences toward the functional tasks the system is attempting to address; it enables rapid identification of which basic function has been disrupted (safety, boundaries, norms, expectation alignment) and promotes a transition from describing an emotional experience to selecting an action that restores systemic balance. In this way, a comprehensive skill is formed: to identify → decode → become aware → regulate → maintain stability.

The SBE Model promotes a movement from signal to action by relying on cognitive interpretation and deliberate choice of behavioral strategy. Each emotion is understood as a signal indicating a deficit or disruption in internal or social equilibrium. Thus, anger indicates frustration of a need, fear signals a threat of loss, guilt reflects an internal

prohibition or doubt, and joy signifies the attainment of something desired. This signal-based interpretation provides the starting point for situational diagnosis: individuals ask themselves what exactly is producing the emotion and what outcome they seek to achieve. A distinctive feature of the model is that it offers a structural decomposition of the emotional reaction in the moment.

At the first stage, using diagnostic questions (such as “What am I not receiving?”, “What am I afraid of losing?”, “What within me is causing doubt?”), a person identifies which basic emotion is active and what signal it conveys. Next, they reflect on what thought (about oneself, others, or the situation) the emotion triggers, and what action this thought leads to. The final step is aligning that action with the desired outcome and adjusting behavior in real time. This approach facilitates rapid exit from automatic reaction patterns, reduces the intensity of destructive emotions through awareness of their functional signal, and enables conscious decision-making while maintaining internal stability.

Using the model in real time prevents confusion between feeling and state, reduces chaotic aspects of emotional experience, and creates space for intentional choice. SETAR analysis provides insight into one’s automatic patterns. Identifying the emotional signal and

understanding the emotion’s function allows for accurate regulation of the emotional process and disrupts persistent maladaptive cycles that typically arise when emotional experiences lack a coherent conceptual structure. This prevents individuals from confusing the signal with the state, from becoming stuck in endless rumination, impulsive action, or polar emotional extremes.

Applying the formula as a real-time navigational tool enables the formation of stable behavioral-regulation skills without lapses into impulsivity, while maintaining focus and psychological resources in difficult situations, and adjusting one’s movement toward a goal without accumulating tension—essentially, cultivating emotional resilience as the ability to maintain focus while moving forward.

Between 2016 and 2026, the SBE Model underwent extensive practical testing in corporate settings through individual consultations (more than 500 consultation hours per year, with 3–5 consultations delivered to 120 clients annually).

We aligned established findings on the signal, functional, and behavioral properties of emotions with each of the four components of the basic-emotion model and summarized their characteristics in a table. Within the model, every emotion is treated as a signal and is characterized by specific functions (Table 2).

Table 2.

Components of the SBE Model: Signal and Functions

Basic Emotion	Signal	Function
Joy	A signal of attaining what is desired (an indication that what was intended or wished for has been achieved; expectations match reality; there is contact with something meaningful or desired).	Reinforces successful patterns; signals that the outcome aligns with one’s needs, values, and direction of movement.
Fear	A signal of potential loss (indicates possible loss of resources, uncertainty, or loss of control points).	Ensures control, energy conservation, and survival; signals risk, uncertainty, or loss of stability.
Anger	A signal of not receiving what is desired; a mismatch between expectations and the current situation (indicates disagreement or rejection, a discrepancy between expectations and results and/or others’ actions, violation of personal boundaries, or conflicting interests).	Restores boundaries and removes obstacles; signals that others’ actions or the situation do not meet one’s criteria.
Guilt/Shame	A signal for reassessing or redistributing resources (indicates a potential violation of personal or social norms/rules, a loss of alignment between a potential or actual action and internal beliefs, rules, or values).	Supports self-regulation through adherence to norms; signals a breach of value- or role-based expectations and the need to revise behavior or criteria.

The SBE Model develops core components of Emotional Intelligence, specifically:

- Emotional Awareness — the ability to rapidly decode emotional signals, distinguish the root emotional reaction from derivative emotions, and understand how a basic reaction transforms into thoughts, behavior, and outcomes through the formula SETAR. This process enables the individual to recognize automatic patterns.

- Emotional Resilience — the continuous use of the model as a navigational tool allows individuals to form stable self-regulation skills, preventing lapses into impulsivity, maintaining focus and psychological resources in challenging situations, and adjusting their goal-directed behavior without accumulating tension, even under conditions of uncertainty.

The SBE Model is universal because it relies on the basic regulatory functions of the human nervous system and is largely insensitive to linguistic or cultural differences. Additional evidence of its cross-cultural validity comes from its successful integration into corporate educational practice in Spain.

Inter-rater reliability was assessed using Fleiss' kappa (κ), the standard measure for evaluating agreement among more than two raters when classifying items into nominal categories [11]. In this study, it measured the consistency with which respondents assigned each emotion to one of the four basic reactions. To standardize interpretation, κ values were evaluated according to the widely used guidelines of Landis & Koch [18], who proposed conventional thresholds ("fair," "moderate," "substantial," "almost perfect") for assessing agreement quality. Although these thresholds are approximate, they remain the most frequently applied interpretive framework in empirical research.

Associations between emotions and the four basic reactions were examined using the Chi-square test of independence (χ^2 -test). Pearson's χ^2 -test was used to determine the presence of statistically significant associations between each individual emotion and its predicted reaction category. The strength of association was evaluated using Cramér's V,

Specifically, the SBE Model is used in emotional development and EQ coaching programs in Spain (<https://eihuman.online/>). The model is effectively applied with Spanish clients, including emotional diagnostics, the development of emotional regulation skills, and the formation of constructive communication strategies.

Furthermore, the model is undergoing successful adaptation in a university-level English-language course Emotional Intelligence in Entrepreneurship (<https://www.fm.uniba.sk/nc/vyhladavanie/>). Its implementation in two distinct linguistic and cultural systems - English and Spanish - demonstrates that the SBE Model transfers effectively into multilingual educational and corporate environments while retaining its diagnostic and instructional value.

The functional logic of emotions is universal and does not depend on specific linguistic representations: the emotional signals of the basic reactions are interpreted consistently across cultures because they reflect universal human regulatory mechanisms described in cognitive and neuropsychological theories.

Conclusions

which normalizes χ^2 values and allows interpretation on a scale from 0 to 1.

To investigate the latent structure of the data and assess whether emotions form clusters consistent with the four theoretical reactions, Correspondence Analysis (CA) was employed [14]. CA projects the rows and columns of a contingency table into a shared two-dimensional space, making it a standard approach for visualizing complex frequency tables. Its use is justified by the fact that CA is based on χ^2 distances, effectively reveals structural relationships, and clearly demonstrates whether emotions form four stable "clouds" around the theoretical reactions [3].

The alignment of each emotion with its theoretical category was further evaluated using Wilson confidence intervals. For each emotion, the proportion of respondents who selected the reaction predicted by the model was calculated. To assess the precision of these proportions, 95% Wilson score intervals were computed, as they provide accurate estimates even for proportions close to 0 or 1 and

significantly outperform the classical Wald interval in reliability [30].

The SBE Model is a reliable and practical tool for developing emotional awareness and emotional resilience. The validation process demonstrated strong psychometric properties, including high measurement accuracy and internal consistency. Statistical analyses reliably assessed inter-rater agreement (Fleiss' κ); confirmed the presence of a strong association between emotions and the four basic reactions (χ^2 and Cramér's V); visualized and validated the cluster structure of the data (CA); and evaluated the precision of the model's predictions for each emotion (Wilson confidence intervals). Together, these methods meet international standards for categorical data analysis and provide a multidimensional and rigorous confirmation of the model's validity. The SBE Model has a clear structural design and can be effectively applied to the development of emotional awareness and emotional resilience in both corporate and educational settings.

The model serves as a navigational tool in real practical contexts and reduces the time

required for decision-making. Its key advantage is the ability to translate emotional experience from the realm of unconscious reactions into a domain of analysis and constructive action. The SBE Model enables rapid identification of the basic emotional reaction, its signal, and its function, allowing for the selection of an appropriate regulation strategy—whether physical, cognitive, or behavioral. It is built on regulating outcomes through intentional action derived from the signal logic of emotion. This makes the SBE Model particularly applicable in social and professional environments, where resilience depends not on emotional stability per se, but on the quality and timeliness of decision-making.

Thus, this study helps narrow the gap between Emotional Intelligence theory and the practical self-regulation of emotional states for sustainable development. The SBE Model is a reliable and practical instrument for cultivating Emotional Awareness and Emotional Resilience. It has a clear structure and can be applied in professional contexts as well as in higher education settings.

Conflict of interest

The author declares that there is no conflict of interest regarding the publication of this manuscript. Furthermore, the author has fully adhered to ethical standards, including those related to plagiarism, data falsification, and duplicate publication.

The work does not use artificial intelligence resources.

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МОДЕЛЬ «КВАДРАТ БАЗОВИХ ЕМОЦІЙ» ЯК ПРАКТИЧНИЙ ІНСТРУМЕНТ САМОРЕГУЛЯЦІЇ ДЛЯ РОЗВИТКУ ЕМОЦІЙНОЇ СВІДОМОСТІ ТА ЕМОЦІЙНОЇ СТІЙКОСТІ ОСОБИСТОСТІ

Мета. Метою статті є представлення Моделі Квадрат базови емоцій (SBE Model) як універсального практичного інструмента саморегуляції для розвитку емоційної свідомості та емоційної стійкості.

Методи. SBE Model інтегрує теоретичні підходи нейропсихологічної концепції емоцій Дамазіо (Damasio, 1994), психоеволюційної теорії емоцій Плутчика (Plutchik, 2001), раціонально-емоційної поведінкової терапії Елліса (Ellis, 1957) та освітньої моделі RULER (Brackett et al., 2011). Модель ґрунтується на нейропсихологічній концепції Дамазіо, відповідно до якої кожна емоція розглядається як сигнал дефіциту або порушення внутрішньої чи соціальної рівноваги.

Модель була розроблена на основі емпіричного дослідження, проведеного в онлайн-Школі Емоційної Грамотності. У дослідженні добровільно взяли участь 238 респондентів з України (12 малих груп в онлайн та офлайн форматах), серед яких 38% чоловіків та 62% жінок віком 27–45 років. За допомогою структурованих дискусій і анкетування широкий спектр емоцій (n = 60 емотивних лексем) було класифіковано у кластери за сигнальним підходом, що спирається на психоеволюційну теорію емоцій Плутчика (Plutchik, 2001). Для обґрунтування моделі застосовувався комплекс статистичних процедур: оцінка міжреспондентської узгодженості за коефіцієнтом к Флейсса; перевірка чотирикластерної структури за допомогою χ^2 -критерію незалежності та показника розміру ефекту Cramér's V; Correspondence Analysis (CA) для візуальної перевірки латентної структури; а також аналіз валідності на рівні окремих пунктів із використанням часток збігів та 95% довірчих інтервалів Вілсона.

Результати. Статистичний аналіз виявив стабільну чотирикластерну структуру. Широкий спектр емоцій був класифікований за чотирма умовно базовими емоціями: радістю, страхом, виною/соромом і гнівом. Модель SBE ґрунтується на припущенні, що емоції функціонують як сигнали дисбалансу між очікуваннями та реальністю, спрямовані на відновлення адаптивної рівноваги у комунікації та соціальній взаємодії (Plutchik, 2001). На відміну від моделі Плутчика, SBE Model містить не вісім, а чотири базові емоції. Таке спрощення класифікації дає змогу швидко ідентифікувати ключовий емоційний стан, його функцію та оперативно переходити до розв'язання практичних задач. Модель продемонструвала високі психометричні характеристики, включаючи високу точність вимірювання та внутрішню узгодженість.

Висновки. SBE Model є надійним інструментом саморегуляції. З одного боку, вона дозволяє швидко визначити емоційний стан та підвищує рівень емоційної усвідомленості; з іншого — сприяє розвитку емоційної стійкості в процесі розв'язання практичних завдань завдяки застосуванню п'ятикомпонентного алгоритму Situation → Emotion → Thought → Action = Result (SETAR), що скорочує час адаптивної реакції у стресових ситуаціях. Таким чином, SBE Model поєднує емоційну діагностику з поведінковою корекцією, доповнюючи як терапевтичні підходи (зокрема, Rational Emotive Behavior Therapy; Ellis, 1957), так і освітні моделі, зокрема RULER (Brackett et al., 2011).

КЛЮЧОВІ СЛОВА: модель Квадрат базових емоцій (SBE Model), емоційна усвідомленість, емоційна стійкість, емотивна лексика, базові емоції, емоційний інтелект.

Конфлікт інтересів

Автор заявляє, що конфлікту інтересів щодо публікації цього рукопису немає. Крім того, автор повністю дотримувався етичних норм, включаючи плагіат, фальсифікацію даних та подвійну публікацію.

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