

Coping Intelligence

A Blueprint for Multimedia Patient Education

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Abstract: This paper presents a new approach to the theory of multimedia well-being literacy education based on the concept of Coping Intelligence. Multidimensional Positive Coping Model includes three cross-cutting parameters differentiating each coping strategy as efficient or inefficient, emotional, cognitive or behavioral, and active or passive. Results of the statistical analysis verified a basic two-factor structure of the Coping Intelligence with the alternative solutions for efficient and inefficient coping strategies characterized via three basic modalities. The unified methodology underlying the new concept of Coping Intelligence, as well as *Coping IQ* assessment, is applicable for developing multimedia well-being literacy applications for both clinical and general populations. *CIQ* parameters might serve as useful feedback while assessing changes in individual coping repertoire, for it measures not stable traits, but strategies that can be modified as a result of life experiences or educational training.

1 INTRODUCTION: COPING INTELLIGENCE AS A SCIENCE OF HUMAN STRENGTH

‘Creating a science of human strength’ is a promising direction of modern psychology focuses on ‘systematically building competence, not on correcting weakness’ (Seligman, 2000). New course of psychological research and practice is based on a healthy, positive model of human behavior. The basic principles of positive psychology strongly correspond to the guidelines of differential psychology, whose primary goal is to explore the unique abilities and strength of human individuality (Libin, A., 2008). The concept of human competence is an ideal starting point for studying the complexity of human individuality as well as investigating the fundamental issues such as quality of living, satisfaction with major life outcomes, self and others.

2 TRADITIONAL APPROACH TO EFFICIENT AND INEFFICIENT COPING

There is a huge need among academic professionals and practitioners, as well as among people with various chronic health conditions and disability, for knowledge on how to empower individual competence by mastering of efficient coping skills. However, existing studies on coping with life difficulties are very contradictory. Literature analysis of relevant concepts and related measures revealed two major trends: coping with stress (Lazarus and Folkman, 1984; Carver and Scheier, 1994) and applied problem solving (D’Zurilla and Nezu, 1990; Heppner et al., 2004). The most known in the first designated area of research is a cognitive theory of stress, developed by Lazarus and Folkman (1984), that interprets coping as either problem- or emotion-oriented. Problem-focused coping is directed toward managing a stressful situation and takes place ‘if cognitive appraisal tells that something can be undertaken’. Emotion-focused coping is directed toward regulation of emotional responses and occurs ‘when cognitive appraisal tells that nothing can be done’ in order to resolve a

stressful situation (Folkman and Lazarus, 1985). This approach frames the development of The Ways of Coping (Lazarus and Folkman, 1984), which is a widely used instrument in health and clinical studies. Although this concept and the instrument proved to be very reliable in studying stress-evoked coping responses, a major limitation of this approach in the context of coping with everyday life difficulties is that emotional strategies are viewed as inefficient, whereas cognitive and behavioral strategies are always considered efficient.

A second trend in coping research emphasizes the importance of studying social aspects of problem solving competence through attitudes and underlying belief systems. An example is the theory by D’Zurilla & Nezu (1990) who developed a Social Problem Solving Inventory (SPSI) consisting of the problem solving skill scale (PSSS) and the problem orientation scale (POS) that includes cognitive, emotional and behavioral subscales. Although the POS views cognitive and behavioral dimensions as separate categories, an emotional problem solving strategy still has the same negative connotation and is measured as an inefficient strategy.

The merge of the traditional applied problem solving concept and the stress-related coping theory resulted in Problem-Focused Style of Coping Scale (PF-SOC) developed by Heppner with colleagues (2004). The perceived effectiveness of a problem solving activity is viewed as the degree to which one’s actions facilitate or inhibit progress toward a resolution of the problem. The PF-SOC measures 18 strategies organized into three factors – reflective, reactive and suppressive styles. *Reflective style* measures cognitive activities that promote problem solving, whereas *reactive style* emphasizes distorted cognitive and emotional activities. Denial and avoidance form *suppressive style*. A cognitive strategy is analyzed as efficient or inefficient depending on the organization of the cognitive efforts, whereas emotional strategies along with behavioral ones, are defined as strictly inefficient.

2.1 New Positive Coping Model: Efficient and Inefficient Management of Everyday Life Difficulties

The above described traditional approaches, while identifying cognitive, emotional, and behavioral aspects of coping, often confuse the modality of the strategy with its functionality and outcome. This conceptual drawback presents quite a few challenges to the measurement of efficient and inefficient

strategies in coping research and psychological practice.

First of all, our review illustrates that the study of efficient and inefficient strategies has been limited in scope and in the choice of basic parameters. For instance, the inadequate conclusion that cognitive efforts are always efficient while emotional activities are always inefficient is based on a false assumption that basic parameters differentiating between efficient and inefficient strategies are associated with only one predominant modality. *Secondly*, existing models offer a very unclear depiction of the role of behavioral efforts. Behavioral strategies either form a separate category of inefficient coping (D’Zurilla and Nezu, 1990), or are combined with cognitive efficient strategies in one single class (Lazarus and Folkman, 1984; Carver and Scheier, 1994). *Most importantly*, according to the existing traditional approaches emotional strategies are viewed contradictory to cognitive and behavioral ones. In the last two decades, numerous studies proved the beneficial role emotions play in resolving life difficulties. Data suggest that particular characteristics of emotional experience such as optimism, hope, and emotional intelligence positively influence the coping process (Seligman, 1991; Snyder, 1998; Averill, 2000; Fredrickson, 2002). Salovey and Mayer, defining the concept of Emotional Intelligence (1990), stated that ‘emotion and intelligence are not mutually contradictory’. Emotional strategies may be inefficient if they are used inadequately and efficient if they employed adequately for the process of resolving life difficulties. Used correctly and adaptively, emotions help in reasoning, information processing and problem solving by prioritizing thinking, shaping memory and facilitating creativity. This findings support a new paradigm of understanding human intelligence that overcomes the limitations of ‘pure intelligence’ (Gardner, 1999) and its role in individual well-being. The contemporary view on individual competence considers emotional, cognitive, behavioral, and social abilities as integral parts of generalized intelligence (Goody, 1995; 2000; Libin, E., 2004; Sternberg et al., 2003). *In sum*, traditional perception of the incongruity between modalities (cognitive, emotional, or behavioral) of a particular strategy and its functionality or organizational efforts (efficient vs. inefficient) hinders the development of an integrated methodology for a generalized coping process and the design of an adequate assessment instrument.

A proposed concept of Coping Intelligence based

on Multidimensional Positive Coping Model (Libin, 2003a) lays at the foundation of a new blueprint for multimedia patient-centered education. This model strives to overcome limitations in studying coping by suggesting cross-cutting parameters for the unified classification of efficient and inefficient strategies. Coping Intelligence is defined by the quality, functionality, repertoire, and efficiency of cognitive, emotional, and behavioural strategies of varying intensity.

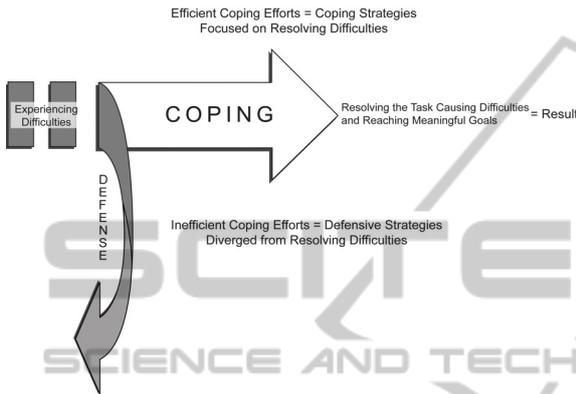


Figure 1: Multi-dimensional Model of Coping Intelligence as a Conceptual Framework for Patient-Centred Multimedia Education.

Taking into account the new findings on generalized properties of human intelligence described in the previous section, the proposed model categorizes efficient and inefficient strategies based not on their modality, but on *their functionality or the organization of coping efforts*. According to the Multidimensional Positive Coping Model each strategy is characterized by:

- **The primary cross-cutting parameter:** organization of the efforts (efficient or inefficient)
- **The secondary cross-cutting parameter:** modality of manifestation (emotional, cognitive or behavioral), and
- **The tertiary cross-cutting parameter:** intensity of efforts (active or passive)

Thus, *the organizational efforts* define a coping activity as efficient or inefficient, whereas *the modality* characterizes any given efficient or inefficient strategy as emotional, cognitive or behavioral. In addition, each emotional, cognitive or behavioral strategy can be evaluated as active or passive depending on the intensity of provided efforts. Hereby, a strategy is defined as a vector of emotional, cognitive, or behavioral efforts of varying intensity resulting either in an effective or ineffective outcome for dealing with life difficulties.

Efficient coping strategies *focus on* the resolution of the difficult situation. Accordingly, inefficient coping strategies *diverge from* the resolution of life difficulties.

2.2 Coping Intelligence™ Model: Experimental Analysis

Based on a newly developed model, a *Coping Intelligence Questionnaire (CIQ; Libin, 2002, 2003, 2008)* differentiates between efficient or inefficient strategies as they relates to three modalities – *cognitive, emotional, and behavioral*, while including three measures of the primary orientation such as *self-, subject- or others-oriented*, and two measures of the intensity of individual involvement with difficult situation, such as *passive or active* (see Figure 2). A central element of the Coping Intelligence™ framework is a conceptual classification scheme that allows describing each efficient or inefficient strategy according to four criteria: organization of the efforts that a person exhibits in a difficult situation; leading modality of the efforts; an orientation vector of employed efforts; and intensity of the efforts.

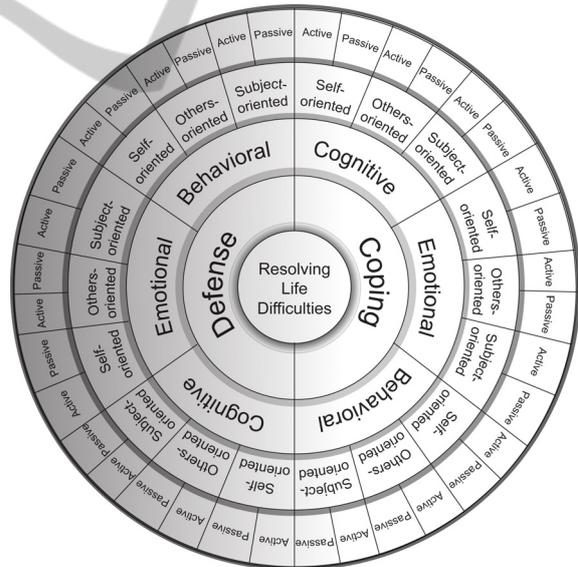


Figure 2: Experimental Coping Intelligence™ Framework.

The present article focuses on the first experimental phase of the new assessment tool development, whereas a theoretical framework for the positive coping approach is described in details elsewhere (Libin, 2003 a,b).

2.2.1 Research Methodology

Four consequential steps were performed in developing the *Coping IQ (CIQ)* assessment including (1) literature analysis and the development of a pool of items, (2) studying content validity of the new measure through the expert review panel, (3) exploring psychometric properties of the *CIQ* via Cronbach alphas, (4) and validation of the proposed measure via the analysis of individual differences in efficient and inefficient coping strategies with relation to age, gender, temperament, and subjective evaluation of meaningful life outcomes.

The sample consisted of 114 participants with the mean age of 25.7 years including 28 (25%) males and 86 (75%) females. Participants were adolescents, recruited from public high school and college, and adults attending secondary education classes. The presented data is part of a larger cross-cultural study on coping with life difficulties currently being conducted in the U.S. Russia, and Ukraine.

Participants who were enrolled in academic programs were approached for informed consent through the Office of Academic Programs. All participants were assigned a number for the study, thereby maintaining their anonymity. Researchers involved with the project were trained and sensitized to the importance of confidentiality of the data.

The *Coping IQ* instrument (*CIQ*) is designed to measure cognitive, emotional, and behavioral responses to a difficult situation viewed as a meta-concept of problematic events that trigger coping efforts. *CIQ* is a self-report measure consisting of 72 items, which assesses 3 efficient and 3 inefficient scales differentiated by the cognitive, emotional, and behavioral modality of coping responses. The instruction asks a participant to indicate whether he or she employs a particular strategy while facing a difficult situation, using a 5-point Likert-type scale of frequency with '1= never' and '5=always'. Outcome variables included 3 measures of efficient and 3 measures of inefficient coping scales, two general indexes for efficient and inefficient strategies and four indexes for active and passive efficient and inefficient measures, as well as a combined quantitative measure named *coping intelligence quotation* calculated as a ratio of efficient strategies index divided by the inefficient strategies index. All indexes and scales were calculated as a mean of appropriate strategies. Each of six *CIQ* basic scales can be briefly described as follows:

- Efficient cognitive coping is characterized by

cognitive activity *focused on* the resolution of the difficult situation, whereas inefficient coping characterizes cognitive activity *deviating from* the task at hand.

- Efficient emotional coping is comprised of emotional efforts *concentrated on* the problem's solution, while inefficient coping is associated with the emotional efforts *divergent from* resolving difficulties.

- Efficient behavioral coping consists of behavioral efforts *applied toward* resolving the difficulties. At the same time, inefficient coping characterizes behavioral activity *deviating from* problem-solving.

Subjective Life Satisfaction Scale (SLS) was developed and validated by the author in previous studies (Libin, 2003b). *SLS* measures subjective satisfaction with life goals, self and relationships with others on the 12 item Likert-type self-evaluation scale from '1=completely dissatisfied' to '5=completely satisfied'. Items refer to 5 separate, but interrelated aspects of one's life – indexes of satisfaction with meaningful life outcomes ('things that happened in my life', 'projected goals', and 'the way the life goes'), and indexes of satisfaction with socially-oriented life areas including distant relationships (with superiors, colleagues, and peers) and close relationships (with friends, parents, and other family members). *SLS* also includes three single items evaluating satisfaction with self, professional relationships, and relations with the opposite sex in general. *SLS* was tested on 60 people of both genders with the age mean of 27.4 years. Psychometric analysis showed a sufficient level of internal validity of scales with the range of Cronbach alphas from 0.84 to 0.93.

The Object-related and Communicative Temperament Inventory (STQ; Rusalov, 1989) is based on the four-phase algorithm underlying Anokhin's functional systems model (Anokhin, 1975). The *STQ* comprises 105 "agree-disagree" items organized in eight scales, measuring 4 basic temperamental parameters including ergonicity, plasticity, tempo and emotionality as they relate to social-oriented (communicative) and object-oriented areas of human activities. Four object-oriented scales measure ergonicity (Er), plasticity (P), tempo (T) and emotionality (Em) reflecting different aspects of mastering the object world. Social-oriented scales such as ergonicity (SEr), plasticity (SP), tempo (ST), and emotionality (SEm) measure respectively the level of social activity, the ease of switching from one social contact to another, the speed of social performance, and sensitivity in the communicative sphere. The *STQ* is shown to be a

valid and reliable measure of temperament with Cronbach alphas ranging from 0.72 to 0.84 (Rusalov, 1989; Bishop and Hertenstein, 2004).

During the study, 128 participants were administered a set of three questionnaires over a one-month period. A qualified researcher supervised the assessment performance. Each participant conducted self-evaluation individually. 14 participants were unable to complete the whole set due to the different reasons, therefore a total of 114 participants were included in the final analysis. Data were analyzed using SPSS 12.0.

2.2.2 Experimental Findings: Relationships between Effective and Ineffective Coping and Individual Characteristics

The study of content validity of the *CIQ* was conducted through the expert review panel, which included four experts familiar with the literature on coping. All experts were psychologists and academic professionals experienced at teaching high school, undergraduate and adult students. The panel reviewed all *CIQ* items prior to the testing. Necessary word changes were made so that the proposed items would be better understood by the participants. Then experts reviewed the list of items, rating relevance of the items to efficient or inefficient coping. The initial pool for the questionnaire included 180 items, which after initial reviewing with the group of four researchers was narrowed down to 108 items. During the next step an internal consistency of the *CIQ* was studied via data collected from 114 participants. As a result 36 more items were excluded, leaving 72 items with most significant loading organized in six scales with Cronbach alphas ranging from 0.72 to 0.81.

The next step was to study a structure of the *CIQ* via factor analysis. We assumed that two basic dimensions, inefficient and efficient coping, would be associated with two different factors. This structure of the *CIQ* was confirmed by the principal component factor analysis with Varimax rotation of 72 items. The result revealed a basic two-factor structure with the alternative factor solutions for efficient and inefficient strategies. Each efficient or inefficient factor included strategies of all three (cognitive, emotional and behavioral) modalities. The relationship between efficient and inefficient coping, measured by *CIQ*, and gender, age, and individual characteristics such as temperament and life satisfaction were studied on groups of 61 and 70 people respectively. Additionally, gender differences were studied on the balanced by age group of 48

people including 24 male and 24 female.

2.2.3 Gender and Age Differences in Efficient and Inefficient Coping

Analysis via independent sample using Levene's test for equity of variances as a statistical measure (F) of the differences between the groups (N=48) showed no significant gender-related differences regarding the preference of efficient vs. inefficient strategies. Comparison by Levene's test between two balanced by gender age groups – 15 – 16 year old (N=31) and 17 – 21 year old (N=36) – revealed significant differences in inefficient emotional and efficient cognitive coping scales. Additionally, comparisons revealed differences in the integrative coping intelligence quotation, as well as in the intensity of coping efforts measured through indexes of active and passive strategies. Only outcomes with an alpha level of less than .05 were considered for interpretation. Distribution of the analysed variables was fairly symmetric and had no outliers.

Correlation analysis of the coping, subjective life satisfaction and temperamental parameters, measured respectively via *CIQ*, *STQ* and *SLS*, confirmed our initial hypothesis about the links between inefficient strategies, life dissatisfaction, and temperamental impulsivity and neuroticism. Results of the correlation analysis showed that a higher index of *inefficient coping* via *CIQ* was associated with the lower levels of meaningful life outcomes, including goals, major life events and future prospects, personal well-being, and social relationships. The largest number of significant correlations between *ineffective coping* and low scores on *STQ* was found for the parameters of temperamental emotionality (neuroticism) and tempo (impulsivity). Cognitive, emotional and behavioral ineffective coping strategies were also associated with subjective dissatisfaction in various domains of life. The general index of inefficient coping, measured as a mean of all three scales, correlated negatively with major life satisfaction parameters. Statistically significant links were found between coping strategies and all temperamental parameters, with the exception of object-oriented ergonicity and plasticity. In sum, *inefficient coping* correlated positively with neuroticism and negatively with social impulsivity and activity. *Efficient coping* was positively associated with both socio-oriented plasticity and temperamental activity, while negatively with neuroticism products, such as A T-test was performed to clarify the structure of the relationships between different levels of coping

intelligence quotation, temperament and life satisfaction. The comparative analysis of groups (mean age 23 years) with high and low levels of *coping intelligence quotation* by temperament and subjective life satisfaction revealed that individuals with *efficient coping* are characterized by a higher level of *social-oriented plasticity* ($t_{(39)} = -3.05$, $p < 0.04$) and *index of social-oriented activity* ($t_{(39)} = -3.36$, $p < 0.02$). Individuals with *inefficient coping* are distinguished by the higher level of *object-oriented tempo* ($t_{(39)} = 2.14$, $p < 0.04$).

Also, participants with high levels of *inefficient coping* are characterized by an increased level of dissatisfaction with *meaningful life outcomes* ($t_{(34)} = -2.47$, $p < 0.02$), *social relationships* in general ($t_{(34)} = -2.56$, $p < 0.02$), and *distant social relationships* in particular ($t_{(34)} = -2.53$, $p < 0.02$). Individuals with low coping IQ are more dissatisfied with major aspects of life, including 'things that happened in life' ($t_{(34)} = -1.08$, $p < 0.05$), 'projected goals' ($t_{(34)} = -2.22$, $p < 0.03$), and 'the way life goes' ($t_{(34)} = -1.99$, $p < 0.05$). In socially-oriented areas they are especially unhappy with their distant relationships, including those with superiors ($t_{(34)} = -2.62$, $p < 0.01$), colleagues and peers ($t_{(34)} = -2.00$, $p < 0.02$), with their parents ($t_{(34)} = -2.48$, $p < 0.05$), and with their relationships with the opposite gender ($t_{(34)} = -2.06$, $p < 0.05$).

The general conclusion is that a *low coping intelligence quotation*, associated with a predominance in individual repertoire of ineffective strategies, is linked with high scores on such individual variables as temperamental impulsivity (tempo) and subjective dissatisfaction with personal achievements and relationships with others. On the contrary, a *high coping IQ*, associated with a predominance of effective strategies, is linked to socio-oriented temperamental flexibility (plasticity) and subjective satisfaction with both personal achievements and social aspects of life.

2.2.4 Discussion: Coping Intelligence in the Context of Learner's Characteristics

The absence of general principles for classification of efficient and inefficient coping poses methodological and practical difficulties in their diagnostics and differentiation, thereby causing additional obstacles in the systematic study of this important phenomenon. The newly developed concept of Coping Intelligence suggests the use of cross-cutting parameters to facilitate the unified classification of efficient and inefficient coping strategies. Results of the factor analysis verified a

basic two-factor structure of Coping Intelligence with alternative solutions for efficient and inefficient strategies characterized via three basic modalities.

A theorized relationship between efficient and inefficient coping, positioned in the continuum formed by three basic modalities – cognitive, emotional, and behavioral, guided the development of the *Coping IQ (CIQ)* instrument designed to measure a variety of strategies in all three domains. While *organization of the efforts*, being the primary cross-cutting parameter, differentiates between effective and ineffective coping, the secondary parameter describes each efficient and inefficient strategy as cognitive, emotional or behavioral according to *the manifest modality* of the efforts, whereas the tertiary parameter characterizes each strategy as passive or active.

The final version of the *CIQ* instrument consists of 72 items to ensure high reliability for each of 3 effective and 3 ineffective scales. Outcome variables included six *CIQ* basic scales, two general indexes for efficient and inefficient strategies, and coping intelligence quotation calculated as a ratio of efficient coping index divided by the inefficient coping index. As a quantity indicator, coping IQ shows whether efficient or inefficient coping strategies prevail in the individual's repertoire.

Results showed that adults employ efficient strategies more often than teenagers. Changes in coping related to age dynamics suggest that individual efficient coping repertoire arises initially as a result of the development of emotional and cognitive mental processes. Our findings also confirmed that not only emotional, but also cognitive and behavioral inefficient strategies are associated with low life satisfaction.

The greater number of statistically significant correlations between temperamental characteristics and inefficient strategies demonstrates close ties between formal-dynamic, biologically determined, variables and inadequate ways of dealing with difficult situations. In comparison to efficient coping, inefficient strategies also revealed a much greater extent of negative association with subjective life satisfaction parameters, thus illustrating strong association between inefficient coping and personal dissatisfaction with various aspects of life. In sum, *efficient and inefficient coping strategies* demonstrate reverse relations with both temperamental (formal-dynamic) and subjective life satisfaction (socio-psychological) characteristics.

3 CONCLUSIONS

The association between inefficient coping strategies and *object-oriented temperamental impulsivity (high tempo)* corresponds with the data on increased problematic behaviors in persons with high levels of impulsivity (Horton and Oakland, 1997; Mcevoy and Welker, 2000). This allows us to make an assumption that abundant psychomotor activity is negatively associated with coping outcomes. Our findings also suggest, that it is not the speed of object-oriented mental operations and motor acts performance, but rather the accuracy with which mental and motor activity are performed (*adequate and timely channeled tempo*) along with the plasticity of social-oriented activity, contribute to the successful resolution of difficult situations. In the realm of social relationships, a broader repertoire of communicative programs, and flexibility in social relationships and in establishing social contacts (indicators of high *social plasticity*) are most likely to result in more efficient ways of handling life challenges. These individual trends should be considered in tailoring multimedia education to the need of the end users as part of the overall program on well-being literacy.

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