

**The technique of color word
associations
(CWA)**

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1. Methods based on the preference of colors

Methods based on color preference belong to the handling methods, where during their administration subject selects, transforms or manipulates the stimulus material. Projective handling techniques are used in psycho-diagnostics of children and adults.

The most famous include for example **Lüscher test** (LBT, 1949), **Color pyramid test** (BPT, 1946) of Max Pfister, where both authors proceeded from the assumption that individual color treatment is related to personality, especially the affectivity. Pfister test is not only about choice of colors, but also their organization. Lüscher diagnosis is based on evaluating the importance of preference and rejection of certain colors. The main hypothesis is consideration that color preference is in some way dependent on certain personality variables, on situational conditions of the organism and on objectively affecting factors (Svoboda, M.: Psychological diagnosis of adults. Prague, Portal 1999). Test theory is based on the relation between physiological mechanisms and color structure, i.e. that the specific color is bind to the specific forms and contents of individual experience or behavior.

The group of so-called color tests includes also **Chroma association Experiment** (CAE) from author Vadim Ščepichin who developed the method in the 70s of the 20th century. The method is useful especially for the diagnosis of personality characteristics and determination of social relations of an individual, including his individual value system. The original version consists of a test material of 12 color pencils and a list of several dozen stimulus words, which is by author designed to represent to the largest extent the reality of life, and fall into the sphere cognitive, emotional and social. It is a projective, resp. semi-projective personality test, which was spread under the name Color Semantic Differential Test (CSDT, Ščepichin, Ricklová). The technique is by its design similar to the association experiments as well as works with colors as a means of diagnosis and it works also with procedures that are typical for assessment scales (Osgood semantic differential method). The individual first assigns to every stimulus word 3 colors that fit to the word. Furthermore, he numerically evaluates every word on a four point scale and in the end sets individual preference of colors - ranks them hierarchically. The method is based on a comparison of the various levels of stimulus words rating. CSDT authors do not come from a general psychological meaning assigned to individual colors, but from the individual significance of these colors for a specific individual. They recognize that each color provokes in a person specific emotional response which is at least similar for a considerable part of the population. The test measures the subjective meaning of the word by assigning a color to it by the individual, eventually three out of twelve colors (unconscious evaluation) and a value of 1-4 (conscious evaluation). When evaluating and interpreting they work with relations between the stimulus words which were created based on the association chains. Variables such as color hierarchy, combinations of colors in the hierarchy and frequency of colors in the protocol are monitored. During evaluation also stimulus words are divided based on evaluation 1-4 into 4 categories of stimuli: clearly preferred, more preferred more rejected and clearly rejected. An integral part of the evaluation and interpretation is the qualitative analysis. The test is used in psycho-diagnostics of children and adults.

2. CWA Technique Description

The technique of color word associations (CWA) is combined projective technique using calibrated sets of words (i.e. verbal modules 48-120 words) and a palette of eight colors of M. Lüscher. It concerns 8 different colors, which differ in their accurately measurable wave spreads (including ability of identification of so-called color space - see. <http://www.reprodukce-barev.org/?menu=3>) which forms the basis of so-called Little Lüscher color test see http://en.wikipedia.org/wiki/Max_L%C3%BCscher. Numerical identifier of each color (according to LCT) preserved, it makes it easier for a computer to record specific reactions (response) of people to the stimulus word. An individual assigns to each stimulus word 3 colours whereas it is a forced choice in terms of sequence (it is not possible to assign the same color to one word several times). This produces 56 variants of possible responses (triple color combinations) to one particular word. Possibility to use such a tool to detect man responses is based on the existence of so-called association areas where historically named Broc's motor and Wernicke's sensor center of speech is located (see http://cs.wikipedia.org/wiki/Mozkov%C3%A1_k%C5%AFra).

Innovation of color test (LCT) and color-word association (CWA) enables to focus on various areas of human behavior and experience. CWA technique combines the advantages of both methods. At the same time it has an interdisciplinary approach - respecting current empirical findings of a number of scientific and interdisciplinary disciplines e.g. in psychology, biology, physics, sociology, neuroscience, social psychology, etc.

CWA technique measures the spectrum of socio-psychological attitudes, including their strike force - not only what people think and what they prefer (value hierarchy) but also whether their attitudes are actually implemented in their behavior, both successfully and in what time horizon. It measures the dynamics of functional processes of consciousness, measures the attitudes, i.e. complex units in consciousness (of an individual or a group). Data capture is performed by a computer program Sensor.

3. Sensor and method of data collection

In practice, for data capture has been routinely used the latest version of internet sensor, where

it came to a change and adaption of perceptual field when entering and selecting combined color word associations so that "mask the sensor"

- eliminates perceptual defenses as much as possible
- if possible does not evoke spatially perceptive stereotypes
- is by shape and its color "surface" more based on or copies natural empiricism than human creations.

Implemented changes in the sensor mask contain:

1. inhomogeneous color surface - description and justification:

<http://www.barvyzivota.cz/drupal/?q=nehomogenni-barvova-plocha-misto-plne-homogenni-barvy>

2. verbal subject in the circle center - description and justification:

<http://www.barvyzivota.cz/drupal/?q=slovni-objekt-uprostred-kruhu-misto-pod-dvema-radami-barev>

3. circle shape of "eight presented color balls" - description and justification:

<http://www.barvyzivota.cz/drupal/?q=tvar-kruhu-8-prezentovanych-kouli-misto-dvou-rad-po-4-prvcich>

4. the shape of "simulated" ball - description and justification:

<http://www.barvyzivota.cz/drupal/?q=koule>

5. in the circle of eight presented color balls never occur 3 most often chosen colors ("trio") next to each other which excludes spatial perseveration

The process of data capture is run in a standard way which is described in the online sensor. The data capture itself has 3 phases and respondent complies with the established procedure:

(1) capture of the initial color selection

- keep looking at the colors and let them affect you
- then select all eight colors in the order from the most pleasant to the least pleasant
- once you enter the entire selection, press "Continue"

(2) words capture

- keep looking at the colors and let them affect you
- read the word aloud and then repeat it in your head
- look at the colors and as quickly as possible select three of them
- as soon as you enter all 3 colors press "Continue"

(3) capture of the final color selection

- keep looking at the colors and let them affect you
- then select all eight colors in the order they affect you at the moment (it is not a hidden memory test, the selection can be quite different, similar or identical)
- once you enter the entire selection, press "Continue"

Data capture can be implemented individually or in groups. The entire administration process takes 20 to 40 minutes with respect to the time and extent of personal calibrated set of words.

4. Calibrated sets of words

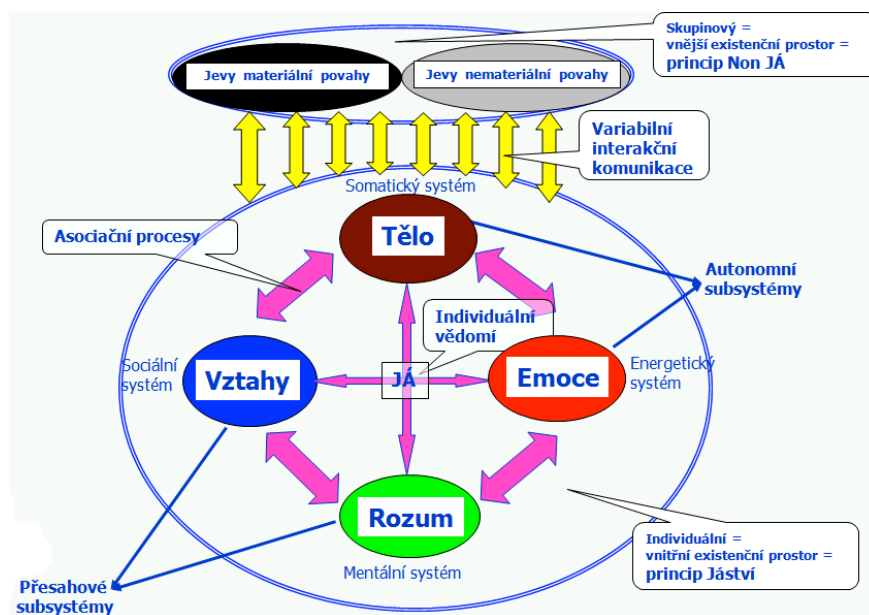
A calibrated set of words consists of a group of word objects which itself describes tested area. CWA technique uses a set of basic sets of words that are balanced and have been tested on ten thousands of clients - calibrated sets of words. In terms of the number of word objects and the age of the respondent the verbal module is about e.g. a set of 48, 60, 72, 96, 108 and 120 words. These modules can be used immediately and the result is relevant to the observed (measured) region. Word database objects can be innovatively modified based on focus on a specific problem or monitored area.

Sets of words for each tested area are organized by semantic analysis. The validity and accuracy of the selected word objects is tested on appropriately chosen test group. A representative sample of respondents (individuals or groups) is selected by age, gender, diversity or environment specificity, type of school, etc., so that the choice corresponds to the observed (measured) region. Then the linkage (correlations) between different word objects and measured feature (monitored area) is measured. Also the resolution of individual word objects is tested. Word objects which are hereby validated for measuring a particular feature are then grouped into separate word groups - factors (e.g. a factor Central objects and the factor of Person and group, Internal control factor, the Activity factor, etc.). This procedure is repeated for each sub-unit - feature of tested area. After analysis of all word groups and validation with a test group of respondents there are only such words in speech groups (factors) which are validated to have the ability to differentiate. This produces a calibrated word module for respective tested area. At the same time the norms of word groups (factors) are calculated - for each word group a measure of how people usually perceive this word object is set. The measurement results in an indication of what place in the consciousness of every tested person is taken by the word group (verbal object), or meaning and value it individually has for him and how much it differs from ordinary perception. The record of what value and importance verbal groups have on individuals goes through analysis and evaluation - using method of Objective Communication Analysis of Consciousness. This result is then graphically illustrated in the output.

5. Method of Objective Communication Analysis of Consciousness (OCAC)

OCAC - is a method by which captured association processes of various semantic objects (stimulus words) are processed and evaluated. The system converts analytical data into structured consciousness map (hierarchy of attitudes and values). For analytical evaluation (color preference in the 1st and 2nd choice, frequency of each color selection, selection of color pairs and color trios) and application usage a system DSAT (Differential structure of attitudes Test) is created. The system enables to filter, compare, simulate, re-structure correlated data while there is no loss or distortion of information about the complex structure and strength of binding correspondences of each consciousness. On the basis of these data charts about the impact of processes on the consciousness formation are created. OCAC method allows transversal (i.e. state) measurement as well as assesses development trends (forecasts) of individual attitudes (mental processes) in 6-12 months time horizon, with summary attitudes (for whole, semantically defined themes) in up to 3 years, including the monitoring of efficiency and dynamics of changes. If there was any intervention used on an individual or a group, re-testing has high redeemable value.

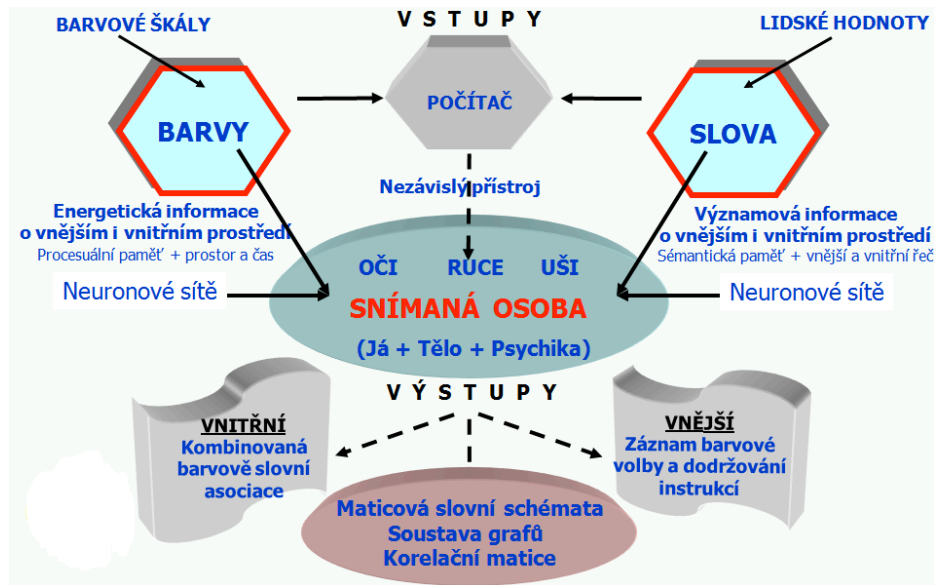
For educational purposes and the study material author created color graphic model and illustratively describes the scheme of integrated consciousness and shows functional processes of OCAC. It enables to monitor the transfer and the behavior of information (stimulus) in the consciousness system on the basis of the mutual interaction of four autonomous subsystems of consciousness (physical, emotional, intellectual and relational system) and the environment.



All systems **operate essentially as one unit** (consciousness integrity) and form specific, individually internal and integrated consciousness of the individual. Each individual system also produces and processes its specific information and sends it back into communication circulation of consciousness in its specific communication form: somatic – energetic - mental - social. Ontogenetically and phylo-genetically **the development takes place** always to the right (right-handed helix) and starts from the Body, i.e. a succession of Body - Emotion – Mind - Relations. Primarily the initial processing happens at the level of the body. For their entry and incentive identification the body (somatic system) has all external and internal sensory organs at disposal. For their transmission and performance then the basic functional system – neural with the participation of all others (lymphatic blood, muscle ...). Joint and integrated transmission medium through which all four systems can catch, process and participate these information are **association processes** "technically" running throughout the whole neural system. Then there is fully registered information flow in the brain which thus creates an integrated consciousness unit with the participation of all 4 systems. For the effective operation of the integrated consciousness of the individual there are developed and utilized so-called **dynamic association stereotypes** (attitudes) which are the most and the most frequently used by integrated consciousness of the individual. **The quantity and variety grows with the development of the individual, primary** social groups and with the development of population (society). **In the entire used spectrum of stereotypes** there is always a certain part which represents a group-useful, similarly shaped and for other individuals understood and shared association stereotypes (group synergism). Next to this, there is always also a part which is clearly individualized and original, which is purely purposeful and effective only for the individual. This section is for other individuals incomprehensible and very difficult to communicate (group interferences). The best, the most rapidly and most completely identified, recognized and used are the information that provide or produce systems lying in the above mentioned scheme next to each other. Relatively worst, the slowest with a certain degree of distortion then the information transmitted by systems lying completely opposite to each other because they must be conveyed and identified (translated) via systems lying next to each other. Associative processes may show variations and errors in the defined objective-communication model, so-called **association blocks** (serious Errors) or **Loop** at different levels (less serious error). They always cause some degree of disturbing the consciousness integrity. The blocks are formed primarily in somatic system, looping can be then primarily caused by other systems. All other materialized and immaterialized events (except for individual himself) create external existential space with which the internal environment of the individual (integrated consciousness) is in constant communication interaction. The lower the quality and level of interaction, the lower probability of internal and external existential space harmony (individual consciousness and the outside world). Both spaces then stand opposite to each other and mutually contradict each other.

6. Diagram of the stimulus character incentive

The entire process of data capture stimulates automated and intuitive formulas of feelings, thoughts and experience which reflect the proportion of intellectual as well as emotional, physical and socio-relational. Through OCAC method scan results are evaluated by CWA combined technique which belongs to the so-called blind, when an individual has very little chance to manipulate with the type of answers according to expectations and opinions of others. Capture form is for an individual and group significantly acceptable and stimulates the minimal types of communication defenses.



Respondent is not limited during the capture not even by quantity and quality of "known" information, nor by his level of rational thinking because for answers he uses associative mechanisms that are almost identical for all people. They differ only in their content quality and target focus what of course corresponds with the individuality of each person. "Measured Information" about so-called mental phenomena of an individual or groups are therefore complex, coherent and respect long-term and short-term evolution processes of brain development of the individual, in summary form also of groups.

After the data capture, output for the measured area is automatically generated in the form of clear charts and graphs that show the level of quantity and quality of the measured values of particular individual or group.

7. Basis and chronological overview of the CWA Technique development

1890 - W. James – basic associations principles and human consciousness

1947 - Max Lüscher – LCT - color test (color and color pair) - colors in tests (Rorschach, Zulliger, Pfister pyramid, Color squares Test...) - use of association in tests (Association experiment, Unfinished sentences, Lie detector...)

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1980 - The capture standards of Lüscher Color Test (hereinafter LCT) for children age

1981 - The combination of words and colors, the technique of color word associations (the CWA) – for data administration pencil and paper was used

1985-1990 - the use of CWA Technique as a part of the test battery for selection of talented pupils of 4th and 5th grade of elementary school to sports, language and math classes

1986 - The computer variant of the Differential structure of attitudes Test (hereinafter DSAT)

1988 - The computer version of the LCT (video mode in DOS)

1990 - Establishment of DSAT - "The diagnostic-analytical-psychological services"

1991 - The computer version of DSAT

1993 - The Computer variant of DSAT + LCT link

1994 - Local scanner (computer version of CWA)

1999 - The first monitoring of sociopath-mix (socially pathological phenomena in behavior), district Bruntál Elementary School

2001 - Software Package of Diagnostic-interventional system of Life Color (hereinafter DIS-LC)

2001 - Creation of OCAC didactic model with the description of the functional processes and mutual interactions of autonomous systems of consciousness

2001 – Launch of DIS-LC exercises in the Czech Republic under the guarantee of the Ministry of Education (IPPP CR)

2004 - Launch of Internet sensor

2006 - The computing core is fully re-factorized and fully automated

2006 - Foundation of DAP-Services, Inc.

2009 - The first use of CWA in foreign languages

2011 - The first use of color associations by images

2012 - The first use of color associations on videos

8. Conclusion

Use of DIS-LC has brought since the 70s of 20th century rich empiricism and many years of practical experience. There have been developed huge statistical standards (from 3 years age of child up to adulthood - without restrictions of upper age limit) which are annually thanks to new and new images constantly updated and specified. In the 1st quarter of 2013 385k of captured individuals of the Czech population were processed in the database of DAP Services Inc. DIS-LC method is given maximum effort with the aim of its further development, complement and use. There are developed partial as well as integrated population analysis which are accessible on the DAP-Services, Inc. website. They are designed for professional users of DIS-LC but also for those who are interested in studying, discussing and debating about the method. DAP-Services, Inc. (founded in 2006) is in contact with the Institute of Prof. Dr. Max Lüscher in Switzerland (Institute of Psycho-medical Diagnostics in Lucerne, Switzerland). Currently there is a process of comparative studies and validation in relation to particular areas that are measure by CWA technique.