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Body and Health, Mind and Wellness II: The Mechanisms Behind the Effects of a Psycho-Educative Intervention

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Abstract Recent research performed on students of Universidad Veracruzana (UV), revealed a diversity of problems that affect both their academic performance and well-being. Previously, we developed a Psycho-Educative Intervention (PEI) to improve the Health and Wellness of the students of UV and evaluated their effects. To identify the mechanisms behind the effects of PEI, a Pearson's correlation test was made among all the Variables scores of the participants Before and After PEI, as well as between Variables within Before PEI and within After PEI. A complex network associating all PE Variables was found, with Thinking as the principal hub and Communicating, Breathing, Transcending, Finding Meaning, Playing/Working and Self-Responsibility and Love as secondary hubs, ruling the PE Status of an individual. This organization of the Variables could facilitate the design of strategies to improve or degrade the PE Status of an individual depending on the protective or risky nature of the stimulus.

Keywords: *health, wellness, college students, psycho-educative intervention, psycho-emotional network*

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1. Introduction

Many college students have high rates of unhealthy behaviors that may impact their overall health and quality of life [1]. This is because many college students commonly fail to engage in health promoting activities and also because this period of life is known to be highly stressful for many students [2].

Several universities have developed preventive educational interventions to reduce risks and promote health in their students [3]. However, the majority of interventions address single behaviors, neglecting the abundant studies that document the prevalence of multiple and various risk behaviors among youngsters [3,4,5].

In line with the above, "Integral Education" (IE) is an intervention which promotes human development through a process that assumes a multidimensional vision of the individual and tends to develop their emotional, intellectual, social, material and ethical intelligences in order to maximizes their individual strengths through meaningful societal roles and community-based activities [6] and also to learn how to gain knowledge, to act, to undertake and to coexist [7].

Therefore, IE implies not only the acquisition of a specific body of knowledge and techniques of the profession proper but also the adoption of values, attitudes and behaviors that together contribute to the students' participation in the transformation and improvement of the social environmental conditions and of their own personal wellness, which, as is shown by those who possess increased developmental assets, are less likely to indulge in violent and aggressive behaviors [8], tobacco use [9], risky sexual behaviors [10,11] and alcohol and drug use [12].

Thus, it is advisable to teach the students how to find the purpose, joy and meaning in their lives, that will provide them with better ways of feeling and valuing daily life and present times, besides facilitating positive sentiments and thoughts [13,14].

Recent research performed on students of Universidad Veracruzana (UV), Veracruz Region, revealed a diversity of personal problems that affect both their academic performance and wellness, making them vulnerable to a series of health risk factors (e.g., unprotected sexual practices, alcohol consumption, tobacco smoking, drug abuse, violence, etc.) [15,16,17].

Alarmed by this state of affairs of our students, we elaborated the Psycho-Educative Intervention (PEI)

named "*Self-knowledge and Care of the Soul*", with the purpose of improving their academic performance and of promoting their healthful lifestyles and evaluated the effects of PEI upon students of Universidad Veracruzana (UV), Veracruz Region [18].

To evaluate the changes in Health and Wellness (H&W) and in the behaviors of the students exposed to PEI, we used five Questionnaires, which measure H&W in an integral manner (Physical, Mental, Emotional and Spiritual Variables), as well as those Variables that affect the students in their Purpose in Life, Meaning in Suffering and their Risk and Protection Behaviors relating to Drug Abuse, variables which provide to the students with better ways of feeling and valuing daily life and present times, besides facilitating positive sentiments and thoughts [13,14].

It was found that, indeed, the PEI significantly improved the students' behaviors, leading to higher states in their H&W. It was also found and that the higher students' responses After PEI occurred in those individuals that were already more highly developed Before PEI in their Psycho-Emotional Components (Physical, Mental, Emotional, and Spiritual) and in their Abilities for Living [18]. In addition, the analysis indicated that the level of development in each Response Variable was of considerable magnitude and statistically significant, but also that there was a hierarchy or order of importance for each of them in the Health and Wellness Questionnaire, an order led by the Physical Variables, followed by the Mental and Emotional ones, and finally by those relating to Being and Meaning of Existence. A hierarchy which is much in accordance to Maslow's hierarchy of needs [19]. Although PEI improved attitudes in both Women and Men, it was found that Women had better general scores Before de PEI than Men did, but After PEI Men improved their scores significantly, reaching levels similar to those of Women, and both ranked the importance of the Response Variables very similarly [18].

Considering the favorable results obtained and the proved effectiveness of PEI, as well as the ever-growing need for social and personal security of the student population of UV [16,17,20], it is recommendable that the PEI "*Self-knowledge and Care of the Soul*" be established as an Obligatory Assignment within the Basic Formation Area for new students to career Studies in Nursing, at least, until its effectiveness is evaluated in a wider repertory of professional disciplines in UV, other universities and in other social sectors.

If such success of PEI may be generalized to all students of UV demands of further studies to sum more participants at the maximal rate of thirty students per PEI: a significant numerical limitation of PEI.

To explore the how and why PEI manages such changes in the Psycho-Emotional status of the individuals involved in the present study, we assessed in our Results if the Psycho-Emotional Variables evaluated were independent or dependent variables, that is, if there were positive and/or negative correlations (Pearson's correlation coefficient) among them. This in hope of testing the hypothetical existence of a Psycho-Emotional Network ruling the Psycho-Emotional status of an individual. The identification of such a network could give light to the mechanisms involved in the effects of PEI and point to the most effective combination(s) of actions to be taken in order to improve on an individual's Psycho-Emotional status and/or to prevent their possible negative and dangerous behaviors.

2. Methodology

2.1. Experimental Design and Selection of Participants

The present study is of the type Before and After a treatment or an event, PEI in our case. The participants were recruited from students registered in a professional career of the Universidad Veracruzana, of either sex, and of 19-30 years of age, which volunteered to participate in PEI, and had completed the PEI or complied with an attendance of 80%. Sample size was limited to a maximum of 30 students, because the effectiveness of group interventions decreases with increasing the number of participants above thirty [21]. Random sampling of participants was not performed because the inscription of the students to PEI was "online", open to all the students in the UV, Veracruz region and by law, its access to PEI may not be refused by the institution once the student is accepted by UV.

It is important to note that all of the UV students who participated in this study had similar idiosyncrasies (culture, social level, income) and that none of the students had a disenfranchised profile since Public Education in Mexico is, by law, offered gratuitously to all Mexican citizens.

In this way, 30 participants were registered in the Group, 27 finished the PEI, 20 of which were women and 7 were men.

No ethical committee was necessary to consult and approve this project since all of the students were invited to take part in the study after the research assistants had read and explained to them a short description of the study and of its possible effects, and then asked the students to sign a form of Informed Consent if they volunteered to participate.

2.2. Instruments of Measurement: Questionnaires

All questions of all the Questionnaires were translated and asked in Spanish and validated.

1). The Health and Wellness Questionnaire (Wellness Inventory) by Travis and Ryan [22], consists of 296 questions divided into 12 Sections. The Sections are: Self-Responsibility and Love (S1), Breathing (S2), Sensing (S3), Eating (S4), Moving (S5), Feeling (S6), Thinking (S7), Playing and Working (S8), Communicating (S9), Intimacy (S10), Finding Meaning (S11) and Transcending (S12). All the questions were translated to Spanish and were graded from 1 to 4 and the values were then added and divided by the number of questions made to obtain the average score of the questionnaire of each individual. The psychometric properties of the Wellness Inventory were evaluated by Palombi [23], the internal consistency proved to be very high

(0.93 out of 1), in accordance with Cronbach's calculation of the alpha correlation coefficient.

2). The Purpose-In-Life (PIL) Questionnaire by Crumbaugh and Moholick [24] evaluates the individuals' attitude towards life, particularly the magnitude of the "existential vacuum" [25]. The PIL contains 20 questions, which are graded from 1 to 7; then the values are added and divided by the number of questions to obtain an average of PIL for each individual. The reliability of this instrument was analyzed with the method of the "two halves" of Crumbaugh and Moholick [24], thereby obtaining Pearsons' correlation coefficient ($r= 0.81$, $n=225$, $P<0.05$). To interpret the scores in the PIL, it should be noted that score intervals from 92 to 112 represent a situation of indefinition regarding Goals and Purpose In Life; whereas scores grater of 113 suggest their presence, while scores lower than 91, indicate their absence or an "existential vacuum".

3). The Meaning in Suffering Test (Questionnaire) (MIST) by Starck [26] measures the capacity of individuals to find Meaning in Suffering resulting from those unavoidable painful experiences that will have to be faced at some stage of their lives. It is a self-applied questionnaire, divided into parts: Part I contains 20 questions consisting of affirmations about pain; it uses a grading range from 1 to 7, in which 1 indicates that the individual has "never" felt or does not believe in the affirmations presented; number 2 indicates they "rarely" do, and so on until reaching number 7, which indicates he "constantly" feels it or believes in the affirmation; Part II contains 17 additional questions to which the individual must also respond, although in this study only the questions in part I were used. The reliability of this instrument is high ($r=0.81$) (with a Cronbach Alpha of 49). Once the answers to the questionnaire have been completed, the sum of all the reagents is divided by the total number of questions in part I (20) to obtain an average.

4). The Drug Use Screening Inventory (DUSI) Questionnaire (Risk and Protection Factors) by Tarter [27], modified by Diáz-Negrete et al., [28], contains 135 questions characterized as having binomial answers: "yes" (1) or "no" (0). The Protection scores are the sum of the "no" answers and the Risk scores are the sum of the "yes" answers. The greater the Protective Factors are, the risk of becoming involved in drug consumption diminishes. The reliability of this instrument was evaluated by using the Cronbach alpha correlation coefficient, which gave a high result ($r=0.97$) and an explained variance of 83%. This questionnaire measures the severity of the consumption tendency in domains: 1) Substance abuse, 2) Psychiatric disorder, 3) Behavior problems, (4) Health status, 5) School adjustment, 6) Family adjustment (SF), 7) Work adjustment, 8) Peer relations, 9) Social competency, 10) leisure/recreation. This questionnaire has been used with adults and adolescents to measure the extent of the change occurring in the tendency to consume drugs once an educative intervention or treatment has been applied in those individuals that needed to increment preventive aspects in their persons. It is, therefore, a highly useful questionnaire, both for measuring preventive aspects in the young and for indicating to the need of intervention or treatment of persons who are addicted or in great risk of becoming addicted.

5). The Perception of Stress Questionnaire (PSQ) by Levenstein et al., [29] is self-administered and consists of 30 questions that are graded on a Likert-type scale of 4 degrees. The questionnaire is applied twice: the first (Past) in reference to the patient's situation during the last year or two years, and the other (Recent) in reference to the patient's situation during the last month. In both cases an index is obtained from the average of all the questions, which can oscillate from 0 (very low level of stress perceived) to 1 (very high level of stress perceived). This questionnaire has proved to have concurrent validity and high internal consistency. The reliability level is 0.80, with a cutoff value of 45; the sensitivity (true positives) is 86% and the specificity (true negatives) is 78%.

2.3. Procedure

The five questionnaires were applied to the participants during the first day of classes. The PEI "*Self-knowledge and Care of the Soul*" was taught in the intersemestral period of winter, 2011, every day of the week, from Monday to Friday, between 10 a.m. to 2 p.m., in a garden of the Mocambo campus installations, Veracruz Region, of UV. The PEI is really a form of treatment of the students' possible negative attitudes and behaviors which difficult their attaining Health and Wellness (H&W).

The PEI consists of a total of 15 sessions, given one per day from Monday to Friday, for three weeks. PEI includes different methodologies which offer the participants an opportunity to engage in their personal introspection and knowledge [30]. For that purpose we adopted a comprehensive and multidimensional perspective of the individual, which differs from traditional workshops at other institutions. Our's includes strengthening the individuals' H&W protective factors through the individuals' reconnection with their bodies, emotions, thoughts, communities and environments. Thus improving the individuals' understanding the meaning of their lives and the worthiness of positive values, behaviors and beliefs, as well as inducing a sense of respect for themselves, the others and for their environments.

These methodologies consisted of exercises of Deep Ecology (i.e., "*The Work that Reconnects*", "*Despair Work*", "*The Shift: Seeing with New Eyes*") [31], breathing and meditation techniques, body exercises of "Chi-Kung" [32] and some bioenergetic exercises (i.e., "*Cellular Breathing*", "*Umbilical Centre in the Navel Radiation Pattern*") [33,34], narrative therapy (i.e., "*Externalizing Conversations*", "*Definitional Ceremony and Outsider-Witness*") [35] and exercises of visualization and meditation, with elements of the Spiritual Self Schema Therapy (3S) [36] (For more details on the nature, sequence and duration of PEI's activities see Supplementary Material).

The PEI program was designed and implemented by our group leader (first author), whom had had extensive experience and training in the specific activities cited and, therefore, the replication of PEI would require that the replicant group leader develops competency on each of the PEI's activities by assisting to the training courses offered by the UV, including close contact and training with our leader.

PEI's Response Variables are: Importance of Health and of Physical, Mental and Spiritual Well-Being; Perception of Stress; Prevention of Drug Consumption; Detection of Addictions; Reflections and Sensitization concerning the Purpose in Life; Meaning in Self Suffering and That of Others. All Response Variables were numerically scored in each individual participant, Before and After PEI was completed.

The day before the completion of PEI (on the fourteenth session), the five questionnaires were again applied to the same participants in order to measure the effects PEI had had upon them. The After PEI evaluation was also carried out with numerically expressed scores and statistically comparable averages in the responses of each of the participants to each one of the Response Variables included, in order to calculate the statistical significance of the response differences within each individual and between individuals in each one of the Groups tested.

2.4. Network Analysis

In order to ascertain if the changes in the Psycho-Emotional Variables do occur when applying PEI, Pearson's correlations of the Response Variables within each questionnaire and between questionnaires were calculated Before and After PEI and in Women and Men separately and jointly as a measure of the association among the Variables.

Subsequently, Pearson correlations obtained were plotted by Agna software. Agna is a platform-independent application designed for social network analysis, sociometry and sequential analysis. Agna allows to create, edit, analyze, store and visualize networks.

Network Analysis (or social network analysis) is a set of mathematical methods used in social psychology, sociology, ethology, and anthropology. This methodology assumes that the way the members of a group communicate with each other affects some important properties of the group (such as performance, leadership, work satisfaction, etc.).

Sequential analysis deals with chains of behaviors by way of recording the behaviors of an animal under specific personal and circumstantial conditions and then by dividing the complete set of behaviors into basic sequential units, or links, to make with them a single filed sequential chain [37]. Herein we studied the chain of behavioral changes of the Response Variables which occur within each of the participants After PEI.

3. Detailed Results and Discussions

3.1. Evaluation of a Cause-effect Relationship Between the Psycho-Emotional Status of the Individuals Before PEI and the One after PEI

From the correlations between each of the Variables' scores Before and After PEI, it is noteworthy that only Risk Factors and Perception of Stress correlated negatively, while most of the Variables of Wellness and the Protection Factors correlated positively (Table 1). That is, the less stressed and more protected the individual is Before PEI, the lesser is its response to PEI.

It is also worth noting that, in general, all the Variables improved their scores After PEI, although to different extents but in relation with their scores Before PEI. The Sections: Thinking (S7A), Playing/Working (S8A) and Communicating (S9A), were the most positively changed, followed by Transcending (S12A), Self-Responsibility and Love (S1A), Risk Factors (RA), Protection Factors (PA), Meaning in Suffering (MSA), and finally the less sensitive were Moving (S5A), Intimacy (S10A), Feeling (S6A), Sensing (S3A), Breathing (S2A) and Perception of Stress (PSQA), in that order (Table 1).

On the other hand, when measuring the effects of sex, there were clear differences between Women and Men (Table 1). For example, in the case of the correlations of the Variables Before and After, Men exhibited lower numbers of significant correlations than Women did, meaning perhaps that Men are less sensitive to their Psycho-Emotional Status Before PEI than Women are (Table 1).

3.2. Effects of PEI upon the Differences in the Number of Significant Correlations among Variables Before and after PEI

Besides measuring the effects of the Psycho-Emotional Status of the participants Before PEI upon their Variables' scores After PEI, we analyzed the mutual Variables' correlations Before PEI (Table 2), and After PEI (Table 3), and also compared the correlations between each Variable's scores Before and After PEI (Table 4).

From the above analyses it is clear that many Variables are significantly ($P<0.05$) associated with each other even Before PEI. Nonetheless, the statistically significant associations increase their number (N), their scores of statistical significance (A, average correlation coefficient) and their Intensity ($I = NxM$) of association After PEI (Table 4). From this it is to be concluded that a Psycho-Emotional (PE) Network does exists and determines and rules the Psycho-Emotional Status of an individual. This PE Network of variables incorporates the participation of almost all Variables in response to the stimulation of a single one: a doubled-edged property of networks, because while it may reduce impetuous and dangerous decisions, it may also result in a shut-down of the entire network and of its functions, if a disruptive stimulus is strategically targeted upon the most connected Variables [38].

The results of this study stress how important it is for the wellbeing of humans to Think, to Work/Play, to Find Meaning and Purpose in Life and to Transcend, in that order, since even Before PEI, these Variables were mutually correlated, and the more so After PEI. In addition, it is to be noted that Variables such as Breathing, Sensing, Eating and Intimacy (Table 2 and Table 3), which did not correlate with many other Variables Before PEI, correlated with many more Variables After PEI than others did (Meaning in Suffering, Risk and Protection Factors and Perception of Stress). So, it seems that the

changes in H&W generated by PEI, are associated with the improvement in the Variables related to the exchange or communication with the world, including Breathing, Feeling, Eating and Intimacy: that is, with the sensory and emotional pleasures, with the 'Pleasant Life' [39,40].

Table 1. Pearson's correlations among the Variables, integrated by the Sections of the different questionnaires applied before (B) and After (A) the PEI. Black numbers indicate the total scores (T), red numbers women scores (W) and blue numbers men scores (M). The values in bold face and asterisk (*) indicate statistically significant coefficients with P<0.05. Abbreviations: Wellness Inventory: Self-Responsibility and Love (S1), Breathing (S2), Sensing (S3), Eating (S4), Moving (S5), Feeling (S6), Thinking (S7), Working/Playing (S8), Communicating (S9), Intimacy (S10), Finding Meaning (S11) Transcending (S12); Meaning in Suffering Test (MS); Purpose in Life Questionnaire (PIL); Risk (R) and Protection (P) Factors Questionnaire; Perception of Stress Questionnaire (PSQ)

	S1A	S2A	S3A	S4A	S5A	S6A	S7A	S8A	S9A	S10A	S11A	S12A	MSA	PILA	RA	PA	PSQA
	0.52*	0.23	0.28	0.16	-0.05	0.25	0.39*	0.33	0.39*	-0.05	0.36	0.37	0.46*	0.35	-0.39*	0.38*	-0.35 T
S01SelfRespLove B	0.39	0.14	0.18	0.08	-0.22	0.07	0.30	0.19	0.25	-0.26	0.32	0.33	0.30	0.06	-0.12	0.13	-0.19 W
	0.71	0.39	0.59	0.34	0.70	0.41	0.62	0.72	0.55	0.35	0.35	0.35	0.66	0.80*	-0.72	0.70	-0.49 M
	0.10	-0.05	-0.05	0.25	-0.20	-0.20	0.11	-0.05	0.01	0.03	-0.11	0.00	-0.04	0.11	0.01	-0.01	0.05 T
S02 Breathing B	0.44*	0.08	-0.01	0.37	-0.38	-0.08	0.16	-0.03	0.18	-0.04	-0.06	0.18	0.26	0.30	-0.28	0.30	-0.21 W
	-0.05	-0.30	-0.08	0.08	0.10	-0.02	0.10	-0.15	0.10	0.48	0.09	0.18	-0.27	-0.03	0.25	-0.25	0.52 M
	0.27	0.38	0.42*	0.54*	0.37	0.26	0.45*	0.55*	0.28	0.39*	0.43*	0.27	0.16	0.45*	-0.27	0.27	-0.27 T
S03 Sensing B	0.32	0.39	0.39	0.58*	0.23	0.26	0.38	0.49*	0.23	0.40	0.47*	0.28	0.12	0.48*	-0.19	0.21	-0.29 W
	0.89*	0.71	0.71	0.58	0.86*	0.71	0.80*	0.91*	0.75	0.47	0.64	0.62	0.86*	0.73	-0.78*	0.76*	-0.54 M
	0.47*	0.43*	0.35	0.69*	0.26	0.25	0.32	0.32	0.38*	0.15	0.41*	0.40*	0.32	0.29	-0.06	0.06	-0.10 T
S04 Eating B	0.50*	0.46*	0.32	0.69*	0.23	0.16	0.27	0.32	0.29	0.16	0.42	0.39	0.23	0.45*	-0.10	0.13	-0.29 W
	0.51	0.28	0.45	0.73	0.46	0.49	0.46	0.32	0.64	0.15	0.45	0.53	0.60	0.18	0.01	-0.07	0.46 M
	-0.01	-0.18	-0.02	0.24	0.28	-0.19	0.13	0.11	-0.09	0.09	-0.08	-0.01	0.01	0.24	-0.02	0.02	0.25 T
S05 Moving B	0.18	-0.17	-0.07	0.32	0.04	-0.22	0.03	0.01	-0.22	0.09	-0.14	0.05	0.05	0.23	0.18	-0.15	0.28 W
	0.54	0.19	0.22	0.29	0.74	0.30	0.47	0.44	0.48	0.12	0.26	0.28	0.77*	0.46	-0.58	0.54	-0.15 M
	0.35	0.16	0.30	0.11	-0.13	0.32	0.43*	0.37	0.33	0.21	0.16	0.30	0.23	0.30	-0.34	0.34	-0.28 T
S06 Feeling B	0.30	0.07	0.22	0.09	-0.26	0.27	0.39	0.32	0.31	-0.00	0.05	0.27	0.28	0.03	-0.14	0.16	-0.06 W
	0.42	0.42	0.53	0.16	0.37	0.37	0.55	0.52	0.35	0.68	0.33	0.33	-0.08	0.71	-0.64	0.68	-0.65 M
	0.35	0.29	0.31	0.39*	0.03	0.35	0.45*	0.47*	0.41*	0.37	0.38	0.45	0.38	0.28	-0.19	0.19	-0.13 T
S07 Thinking B	0.37	0.27	0.34	0.38	-0.09	0.31	0.44	0.51	0.44	0.19	0.29	0.43	0.49	0.50	-0.27	0.30	-0.19 W
	0.41	0.40	0.20	0.44	0.56	0.58	0.57	0.40	0.50	0.93	0.71	0.71	0.13	0.07	-0.16	0.18	0.09 M
	0.28	0.19	0.30	0.27	0.18	0.29	0.46*	0.55*	0.28	0.21	0.33	0.38*	0.22	0.10	0.03	-0.04	0.20 T
S08 WorkPlaying B	0.49*	0.23	0.31	0.15	-0.00	0.32	0.44*	0.65*	0.24	0.00	0.26	0.37	0.42	0.18	-0.06	0.09	0.01 W
	0.56	0.48	0.45	0.82*	0.61	0.73	0.67	0.41	0.76*	0.73	0.79*	0.85*	0.36	0.11	-0.03	0.01	0.42 M
	0.57*	0.45*	0.40*	0.31	0.12	0.52*	0.49*	0.48*	0.53*	0.36	0.31	0.42*	0.48*	0.38	-0.41*	0.41*	-0.33 T
S09 Comunicating B	0.50*	0.46*	0.41	0.28	0.10	0.53*	0.51*	0.58*	0.50*	0.33	0.25	0.38	0.47*	0.37	-0.45*	0.47*	-0.39 W
	0.43	0.13	0.39	0.42	0.56	0.35	0.58	0.28	0.56	0.58	0.34	0.44	0.14	0.55	-0.39	0.37	0.09 M
	0.11	0.49*	0.28	0.33	0.67*	0.26	0.30	0.38	0.35	0.65*	0.11	0.09	0.15	0.31	-0.26	0.26	-0.14 T
S10 Intimacy B	0.20	0.60*	0.32	0.39	0.63*	0.37	0.24	0.39	0.46*	0.76*	0.08	0.06	0.25	0.33	-0.19	0.18	-0.18 W
	0.51	0.31	0.23	0.22	0.78*	0.40	0.62	0.46	0.50	0.57	0.40	0.41	0.39	0.56	-0.77*	0.77*	-0.38 M
	0.28	0.30	0.32	0.40*	0.15	0.20	0.32	0.44*	0.27	0.26	0.40*	0.32	0.17	0.36	-0.19	0.19	-0.16 T
S11 FindingMeaning B	0.40	0.34	0.30	0.42	0.02	0.19	0.23	0.47*	0.26	0.01	0.43	0.32	0.36	0.43	-0.24	0.27	-0.28 W
	0.44	0.34	0.45	0.42	0.50	0.50	0.63	0.41	0.53	0.89*	0.54	0.59	-0.03	0.46	-0.34	0.36	-0.08 M
	0.36	0.21	0.41*	0.37	-0.01	0.15	0.41*	0.28	0.25	0.00	0.30	0.31	0.24	0.22	-0.00	0.00	0.06 T
S12 Trascending B	0.45*	0.25	0.44*	0.39	-0.07	0.17	0.46*	0.35	0.26	-0.10	0.41	0.44	0.34	0.22	0.08	-0.07	0.03 W
	0.23	-0.04	0.28	0.32	0.32	0.17	0.36	0.05	0.39	0.33	0.13	0.25	-0.01	0.41	-0.17	0.15	0.25 M
	0.32	0.14	0.33	0.14	0.08	0.38*	0.59*	0.31	0.45*	0.23	0.32	0.43*	0.33	0.26	-0.38*	0.37	-0.20 T
MS MeaningSuffer B	0.34	0.11	0.33	0.06	-0.22	0.40	0.55*	0.20	0.43	-0.02	0.25	0.46*	0.36	0.02	-0.24	0.26	-0.20 W
	0.63	0.36	0.35	0.37	0.87*	0.51	0.72	0.58	0.62	0.71	0.53	0.56	0.49	0.59	-0.70	0.69	-0.26 M
	0.35	0.15	0.29	0.36	0.07	0.14	0.30	0.16	0.19	0.10	0.09	0.21	0.08	0.35	-0.14	0.14	0.02 T
PIL PurposeLife B	0.44	0.20	0.29	0.38	-0.02	0.15	0.27	0.21	0.08	0.03	0.09	0.24	0.09	0.32	-0.07	0.10	-0.06 W
	0.25	-0.04	0.29	0.32	0.35	0.16	0.36	0.06	0.41	0.23	0.10	0.21	0.08	0.45	-0.24	0.21	0.21 M
	-0.57*	-0.32	-0.35	-0.32	-0.24	-0.35	-0.54*	-0.49*	-0.52*	-0.21	-0.30	-0.39*	-0.50*	-0.71*	0.78*	-0.78*	0.52* T
R Risk B	-0.55*	-0.30	-0.18	-0.27	-0.02	-0.19	-0.41	-0.43	-0.33	-0.00	-0.19	-0.31	-0.49*	-0.39	0.71*	-0.71*	0.53* W
	-0.66	-0.35	-0.61	-0.38	-0.72	-0.42	-0.70	-0.58	-0.63	-0.41	-0.31	-0.37	-0.45	-0.91*	0.82*	-0.80*	0.44 M
	0.60*	0.34	0.36	0.31	0.21	0.39*	0.57*	0.49*	0.51*	0.22	0.32	0.41*	0.48*	0.67*	-0.82*	0.82*	-0.57* T
P Protection B	0.55*	0.27	0.21	0.27	0.00	0.00	0.46*	0.43	0.30	0.00	0.19	0.30	0.42	0.34	-0.67*	0.67*	-0.49* W
	0.65	0.44	0.59	0.35	0.73	0.46	0.72	0.59	0.62	0.45	0.35	0.39	0.40	0.91*	-0.92*	0.91*	-0.57* M
	-0.39*	-0.33	-0.35	-0.27	0.01	-0.31	-0.43*	-0.31	-0.39*	-0.01	-0.22	-0.33	-0.35	-0.46*	0.63*	-0.63*	0.65* T
PSQ PerceptStress B	-0.39	-0.21	-0.18	-0.22	0.21	-0.13	-0.36	-0.18	-0.35	0.06	-0.07	-0.33	-0.42	-0.32	0.53*	-0.54*	0.59* W
	-0.47	-0.67	-0.54	-0.32	-0.36	-0.47	-0.48	-0.50	-0.42	-0.10	-0.33	-0.29	-0.32	-0.55	0.72	-0.72	0.71 M

Table 2. Pearson's correlations among Variables, integrated by the sections from the different questionnaires applied Before (B) of PEI. Black numbers indicate the total (T) scores, red numbers women (W) scores and blue numbers men (M) scores. The values in bold face and asterisk (*) indicate statistically significant coefficients with P<0.05. Abbreviations: Wellness Inventory: Self-Responsibility and Love (S1), Breathing (S2), Sensing (S3), Eating (S4), Moving (S5), Feeling (S6), Thinking (S7), Working/Playing (S8), Communicating (S9), Intimacy (S10), Finding Meaning (S11) Transcending (S12); Meaning in Suffering Test (MS); Purpose in Life Questionnaire (PIL); Risk (R) and Protection (P) Factors Questionnaire; Perception of Stress Questionnaire (PSQ)

	S2B	S3B	S4B	S5B	S6B	S7B	S8B	S9B	S10B	S11B	S12B	MSB	PILB	RB	PB	PSQB
	0.20	0.36	0.36	0.13	0.60*	0.39*	0.41*	0.44*	-0.01	0.33	0.56*	0.62*	0.39*	-0.55*	0.58*	-0.39* T
S01SelfRespLove B	0.41	0.34	0.38	0.13	0.63*	0.46*	0.65*	0.37	-0.06	0.41	0.65*	0.65*	0.45*	-0.42	0.51*	-0.57* W
	0.07	0.88*	0.26	0.75*	0.44	0.11	0.06	0.44	0.56	0.30	0.23	0.71	0.27	-0.80*	0.70	-0.12* M
		0.46*	0.39*	0.44*	0.35	0.58*	0.39*	0.25	0.20	0.51*	0.42*	0.35	0.55*	-0.22	0.18	-0.22 T
S02 Breathing B		0.49*	0.50*	0.39	0.50*	0.68*	0.31	0.44	0.13	0.50*	0.45*	0.38	0.66*	-0.46*	0.48*	-0.53* W
		-0.20	0.28	-0.05	0.25	0.49	0.54	0.73	0.13	0.70	0.72	0.34	0.61	-0.23	0.09	0.66 M
			0.65*	0.41*	0.28	0.48*	0.38*	0.30	0.46*	0.55*	0.41*	0.35	0.49*	-0.28	0.29	0.21 T
S03 Sensing B			0.76*	0.29	0.30	0.54*	0.38	0.41	0.41	0.59*	0.48*	0.27	0.63*	-0.23	0.30	-0.21 W
			0.27	0.74*	0.39	0.28	0.21	0.25	0.62	0.24	-0.01	0.71	0.04	-0.66	0.65	-0.40 M
				0.28	0.14	0.39*	0.38*	0.35	0.24	0.62*	0.40*	0.04	0.55*	-0.30	0.26	-0.13 T
S04 Eating B				0.33	0.23	0.46*	0.36	0.32	0.32	0.74*	0.37	0.02	0.54*	-0.30	0.30	-0.25 W
				0.39	-0.30	-0.00	0.68	0.49	-0.03	0.12	0.58	0.14	0.62	-0.35	0.17	0.10 M
					0.11	0.22	0.40*	0.04	0.23	0.21	0.24	0.23	0.44*	-0.18	0.15	-0.06 T
S05 Moving B					0.27	0.32	0.39	0.19	0.04	0.21	0.29	0.06	0.58*	-0.11	0.18	-0.13 W
					-0.05	0.07	0.12	0.34	0.68	-0.01	0.17	0.72	0.27	-0.64	0.58	-0.10 M
						0.70*	0.53*	0.72*	0.24	0.56*	0.49*	0.69*	0.48*	-0.44*	0.52*	-0.52* T
S06 Feeling B						0.76*	0.72*	0.79*	0.23	0.54*	0.54*	0.76*	0.57*	-0.37	0.46*	-0.62* W
						0.49	0.14	0.48	0.51	0.78*	0.28	0.54	0.20	-0.57	0.66	-0.34 M
							0.63*	0.67*	0.36	0.72*	0.52*	0.51*	0.53*	-0.38	0.41*	-0.36 T
S07 Thinking B							0.67*	0.74*	0.35	0.73*	0.57*	0.49*	0.67*	-0.52*	0.53*	-0.53* W
							0.68	0.41	0.55	0.77*	0.16	0.65	0.05	-0.14	0.22	0.05 M
								0.50*	0.19	0.61*	0.58*	0.46*	0.57*	-0.32	0.33	-0.22 T
S08 WorkPlaying B								0.67*	0.12	0.58*	0.61*	0.48*	0.63*	-0.50*	0.57*	-0.38 W
								0.64	0.27	0.65	0.57	0.42	0.51	-0.27	0.23	0.03 M
									0.41*	0.58*	0.41*	0.52*	0.60*	-0.57*	0.59*	-0.38* T
S09 Comunicating B									0.52*	0.65*	0.37	0.56*	0.56*	-0.50*	0.54*	-0.56* W
									0.54	0.79*	0.94*	0.66	0.91*	-0.78*	0.70	0.06 M
										0.36	0.09	0.23	0.24	-0.17	0.16	-0.08 T
S10 Intimacy B										0.31	0.07	0.06	0.25	-0.06	0.04	-0.06 W
										0.51	0.27	0.94*	0.29	-0.70	0.80*	-0.34 M
											0.53*	0.30	0.54*	-0.40*	0.37	-0.27 T
S11 FindingMeaning B											0.52*	0.21	0.56*	-0.43	0.42	-0.41 W
											0.63	0.63	0.52	-0.53	0.55	-0.01 M
												0.55*	0.61*	-0.25	0.26	-0.22 T

S12 Trascending B												0.61*	0.55*	-0.15	0.22	-0.35 W
												0.37	0.98*	-0.65	0.54	0.12 M
MS MeaningSuffer B													0.42*	-0.40*	0.46*	-0.36 T
													0.44	-0.25	0.36	-0.52* W
													0.36	-0.75	0.77*	-0.14 M
PIL PurposeLife B														-0.48*	0.48*	-0.20 T
														-0.39	0.47*	-0.31 W
														-0.70	0.58	0.04 M
R Risk B															-0.96*	0.50* T
															-0.98*	0.67* W
															-0.96*	0.33 M
P Protection B																-0.62* T
																-0.70* W
																-0.54 M

Table 3. Pearson's correlations among Variables, integrated by the sections from the different questionnaires applied After (A) PEI. Black numbers indicate the total (T) scores, red numbers women (W) scores and blue numbers men (M) scores. The values in bold face and asterisk (*) indicate statistically significant coefficients with P<0.05. Abbreviations: Wellness Inventory: Self-Responsibility and Love (S1), Breathing (S2), Sensing (S3), Eating (S4), Moving (S5), Feeling (S6), Thinking (S7), Working/Playing (S8), Communicating (S9), Intimacy (S10), Finding Meaning (S11) Transcending (S12); Meaning in Suffering Test (MS); Purpose in Life Questionnaire (PIL); Risk (R) and Protection (P) Factors Questionnaire; Perception of Stress Questionnaire (PSQ)

	S2A	S3A	S4A	S5A	S6A	S7A	S8A	S9A	S10A	S11A	S12A	MSA	PILA	RA	PA	PSQA
	0.72*	0.56*	0.64*	0.21	0.63*	0.68*	0.50	0.71*	0.24	0.51*	0.68*	0.73*	0.44*	-0.47*	0.47*	-0.44* T
S01SelfRespLove B	0.70*	0.52*	0.64*	0.20	0.43	0.70*	0.43	0.61*	0.12	0.34	0.63*	0.60*	0.37	-0.31	0.33	-0.34 W
	0.88*	0.90*	0.87*	0.90*	0.92*	0.96*	0.97	0.96*	0.64	0.86*	0.86*	0.84*	0.73	-0.69	0.67	-0.38 M
		0.78*	0.71*	0.56*	0.72*	0.66*	0.62*	0.74*	0.52*	0.60*	0.62*	0.56*	0.45*	-0.40*	0.40*	-0.53* T
S02 Breathing B		0.78*	0.70*	0.63*	0.69*	0.65*	0.58*	0.78*	0.56*	0.53*	0.62*	0.51*	0.53*	-0.37	0.37	-0.56* W
		0.87*	0.83*	0.70	0.94*	0.86*	0.92*	0.85*	0.60	0.88*	0.84*	0.67	0.56	-0.59	0.58	-0.46 M
			0.73*	0.53*	0.75*	0.80*	0.69*	0.71*	0.46*	0.68*	0.69*	0.39*	0.56*	-0.42*	0.42*	-0.46* T
S03 Sensing B			0.70*	0.53*	0.76*	0.77*	0.60*	0.68*	0.43	0.69*	0.75*	0.31	0.46*	-0.32	0.33	-0.46* W
			0.81*	0.65	0.84*	0.86*	0.90*	0.85*	0.53	0.73	0.73	0.62	0.79*	-0.63	0.61	-0.48 M
				0.53*	0.57*	0.69*	0.51*	0.66*	0.52*	0.64*	0.69*	0.44*	0.45*	-0.28	0.27	-0.24 T
S04 Eating B				0.48*	0.40	0.62*	0.40	0.53*	0.47*	0.50*	0.60*	0.33	0.57*	-0.26	0.27	-0.36 W
				0.75	0.94*	0.86*	0.78*	0.94*	0.62	0.92*	0.94*	0.73	0.40	-0.32	0.29	0.04 M
					0.42*	0.53*	0.56*	0.47*	0.65*	0.45*	0.37	0.23	0.46*	-0.33	0.33	-0.16 T
S05 Moving B					0.40	0.38	0.49*	0.38	0.67*	0.37	0.24	0.17	0.44	-0.20	0.18	-0.23 W
					0.82*	0.92*	0.82*	0.91*	0.69	0.80*	0.82	0.80*	0.64	-0.71	0.69	-0.24 M
						0.77*	0.70*	0.87*	0.59*	0.76*	0.86*	0.62*	0.37	-0.47*	0.46*	-0.42* T
S06 Feeling B						0.72*	0.65*	0.77*	0.54*	0.56*	0.74*	0.46*	0.22	-0.33	0.37	-0.45* W
						0.94*	0.89*	0.95*	0.74	0.98*	0.97*	0.72	0.50	-0.50	0.48	-0.21 M
							0.77*	0.83*	0.54*	0.69*	0.80*	0.56*	0.56*	-0.51*	0.51*	-0.36 T
S07 Thinking B							0.69*	0.77*	0.37	0.55*	0.78*	0.55*	0.43	-0.36	0.37	-0.37 W
							0.91*	0.97*	0.78*	0.89*	0.90*	0.71	0.73	-0.71	0.69	-0.34 M
								0.64*	0.56*	0.67*	0.60*	0.55*	0.55*	-0.47*	0.47*	-0.36 T
S08 WorkPlaying B								0.54*	0.51*	0.59*	0.50*	0.53*	0.45*	-0.32	0.34	-0.28 W
								0.87*	0.64	0.83*	0.80*	0.77*	0.73	-0.71	0.70	-0.53 M
									0.57*	0.72*	0.89*	0.77*	0.55*	-0.56*	0.55*	-0.43* T
S09 Comunicating B									0.50*	0.51*	0.82*	0.76*	0.46*	-0.45*	0.47*	-0.55* W
									0.70	0.91*	0.93*	0.78*	0.62	-0.58	0.55	-0.17 M
										0.49*	0.52*	0.25	0.38	-0.32	0.32	-0.19 T
S10 Intimacy B										0.22	0.25	0.29	0.39	-0.29	0.30	-0.26 W
										0.82*	0.83*	0.26	0.39	-0.39	0.39	-0.11 M
											0.84*	0.53*	0.41*	-0.38*	0.38*	-0.34 T
S11 FindingMeaning B											0.67*	0.40	0.48*	-0.32	0.34	-0.46* W
											0.99*	0.67	0.36	-0.38	0.36	-0.08 M
												0.68*	0.42*	-0.39*	0.39*	-0.31 T
S12 Trascending B												0.69*	0.50*	-0.30	0.35	-0.49* W
												0.65	0.38	-0.37	0.35	-0.02 M
													0.43*	-0.47*	0.47*	-0.38* T
MS MeaningSuffer B													0.50*	-0.38	0.41	-0.36 W
													0.45	-0.50	0.46	-0.17 M
														-0.75*	0.75*	-0.61* T
PIL PurposeLife B														-0.45*	0.47*	-0.55* W
														-0.90*	0.90*	-0.72 M
															-1.00*	0.80* T
R Risk B															-0.99*	0.83* W
															-1.00*	0.80* M
																-0.80* T
P Protection B																-0.85* W
																-0.82* M

The tightness of the Psycho-Emotional Network of Variables may facilitate positive or negative changes in Risk behaviors of the individual, as shown by the reduction in Risk of Addiction After PEI from 35.52 to 25.30 [18]. A negative example of the network structure may occur when Addiction and Drug Abuse take place in an individual isolated from its community, and who suffers of extreme emotions, repetitive thoughts, alienation, boredom and meaninglessness [41,42], thus closing the vicious cycle that intensifies isolation and consumption of drugs. These associations show that the relationship between Finding Meaning and Health is not

unidirectional, that is, not only high scores in Sections such as Feeling, Thinking and Communicating and Purpose in Life contribute to Health, but also reduce the isolation of an individual and induce positive feelings and thoughts. In this sense, PEI not only increases the perceived H&W but protects the participant from harmful habits such as Drug Abuse.

Furthermore, when comparing between Women and Men the number of Variables with statistically significant correlations, it turned out that Women had more significant correlations than Men did Before PEI (Table 2 and Table 4) but not After PEI, when Men greatly increased their number of significant correlations to levels compared with, or exceeding, those of Women (Table 3 and Table 4). In a previous study, it was found that women had better general scores After PEI than men did, which seemed to indicate that women benefit more than men do from PEI [18]. Nonetheless, upon analyzing the degree of interconnection among the Response Variables, men, whose interconnection levels were lower than those of women Before PEI, were much higher than those of women After PEI.

But, who benefits most by PEI: women scoring better than men do in most individual Response Variables or men's better interconnecting the Response Variables among themselves? We speculate that interconnecting the Response Variables would provide a Network with more resilience to perturbations than would a collection of independent Response Variables, based on the properties of scale-free networks of various nature [38] which are impregnable to randomly oriented attacks, even if numerous, upon individual elements but quite vulnerable if attacks are aimed at a few of the Hubs in the network.

It should be noticed that Perception of Stress (S17), not having any correlation with other Variables in Men (Table 3), strengthens the notion that Men have less means for Coping with Stress than Women do [43,44].

3.3. Psycho-Emotional Network of Variables: In Women and in Men, Separately and Jointly

Given the clear interconnection among Variables we performed a more detailed study of those correlations which were statistically significant, to test for the existence of a network behind the correlations and explain the effects of PEI upon the participants.

This we did by counting, for each Variable, their number of correlations (N), their average correlation coefficient (A), the intensity (I) of their correlations (I = NxA) and the ordered rank (R), of the correlation's I's to then compare the Variables in the separate sexes and jointly (Table 4).

The Variables' Joint Totals of the average scores of I Before PEI is 58.68 and After PEI is 90.87 (Table 4). This Variables' overall integrator effect of PEI upon the Psycho-Emotional Network is not equal in Women and Men, the former increasing the scores from 51.87 to 61.62, while Men increased from 16.24 to 81.28. Moreover, not all Variables participated equally in the network Before and After PEI, and not all kept their same R in I After PEI. For example, in the Variables' Joint scores, the three higher Variables in R Before PEI were: Thinking (S7), Purpose in Life (PIL) and Playing/Working (S8) while, After PEI, Thinking remained in the first Rank, followed by Communicating (S9) and Transcending (S12).

Likewise, if distinguishing between sexes, the three higher Variables in R Before PEI of Women, they ranked first Purpose in Life (PIL), followed by Thinking (S7) and Feeling (S6), in that order, and After PEI, they ranked first Breathing, followed by Transcending (S12) and Thinking (S7), in that order. In contrast, Men Before PEI ranked Risk (R) first, followed by Finding Meaning (S11) and Transcending (S12) while, After PEI, they ranked Playing/Working (S8), Self-Responsibility and Love (S1) and Thinking (S7) in that order (Table 4).

Table 4. Classification of Psycho-Emotional Variables in the Psycho-Emotional Network of the participants (Global, Women, Men) Before and After the PEI, according to the Number (N) of Variables with which each one of them significantly correlated (P<0.05), the Average Magnitude (M) of the correlations, the Connection Intensity (I = NxM) it contributes to the Network and its Intensity Ranking Order (R)

	Before												After											
Variable	Jointly				Women				Men				Jointly				Women				Men			
	N	M	I	R	N	M	I	R	N	M	I	R	N	M	I	R	N	M	I	R	N	M	I	R
S01 SelfRespLove	10	0.30	3.00	13	8	0.43	3.44	10	3	0.28	0.84	10	15	0.44	6.60	9	7	0.63	4.41	11	11	0.90	9.90	2
S02 Breathing	8	0.47	3.76	10	10	0.33	3.33	12	0	0.00	0.00	14	16	0.48	7.68	7	14	0.55	7.70	1	9	0.87	7.83	6
S03 Sensing	9	0.48	4.42	7	6	0.58	3.48	9	2	0.81	1.62	8	16	0.49	7.84	5	12	0.56	6.72	4	8	0.85	6.80	8
S04 Eating	7	0.48	3.36	11	5	0.60	3.00	13	0	0.00	0.00	14	13	0.60	7.80	6	10	0.58	5.80	7	9	0.88	7.92	7
S05 Moving	4	0.42	1.68	14	1	0.58	0.58	16	2	0.74	1.48	9	10	0.52	5.20	12	5	0.56	2.80	15	8	0.85	6.80	8
S06 Feeling	11	0.39	4.29	8	11	0.51	5.61	3	1	0.78	0.78	11	15	0.52	7.80	6	10	0.54	5.40	8	10	0.92	9.20	4
S07 Thinking	12	0.54	6.48	1	13	0.52	6.76	2	1	0.77	0.77	12	15	0.59	8.85	1	10	0.68	6.80	3	11	0.89	9.79	3
S08 WorkingPlaying	12	0.49	5.88	3	10	0.51	5.10	5	0	0.00	0.00	14	15	0.53	7.95	4	11	0.56	6.16	5	12	0.84	10.08	1
S09 Comunicating	12	0.37	4.44	6	10	0.40	4.00	7	4	0.46	1.84	5	16	0.54	8.64	2	15	0.48	6.00	6	11	0.90	9.90	2
S10 Intimacy	3	0.48	1.44	15	0	0.00	0.00	17	2	0.87	1.74	6	10	0.54	5.40	11	6	0.54	3.24	14	3	0.81	2.43	10
S11 FindingMeaning	10	0.48	4.80	5	9	0.60	5.4	4	3	0.78	2.34	2	15	0.53	7.95	4	10	0.46	4.60	9	10	0.89	8.90	5
S12 Trascending	11	0.50	5.50	4	9	0.55	4.95	6	2	0.96	1.92	3	14	0.59	8.26	3	12	0.57	6.84	2	10	0.89	8.90	5
MS MeaningSuffer	9	0.42	3.78	9	6	0.59	3.54	8	2	0.85	1.70	7	14	0.42	5.88	10	8	0.57	4.56	10	4	0.80	3.20	9
PIL PurposeLife	14	0.44	6.16	2	12	0.57	6.84	1	2	0.94	1.88	4	14	0.33	4.62	13	11	0.31	3.41	13	3	0.26	0.78	13
R Risk	8	-0.39	-3.12	12	6	-0.4	-2.28	14	3	-0.85	-2.55	1	13	-0.4	-6.7	8	4	-0.3	-1.04	16	3	-0.4	-1.2	11
P Protection	8	0.18	1.44	15	9	0.21	1.89	15	2	-0.08	0.16	13	13	0.27	3.51	14	4	-0.2	-0.88	17	3	-0.3	-0.9	12
PSQ PerceptStress	5	-0.28	-1.40	16	8	-0.4	-3.36	11	0	0.00	0.00	14	9	-0.4	-3.2	15	9	-0.4	-3.51	12	2	-0.0	-0.02	14
Totals	152	0.34	51.68		133	0.39	51.87		29	0.56	16.24		233	0.39	90.87		158	0.39	61.62		127	0.64	81.28	

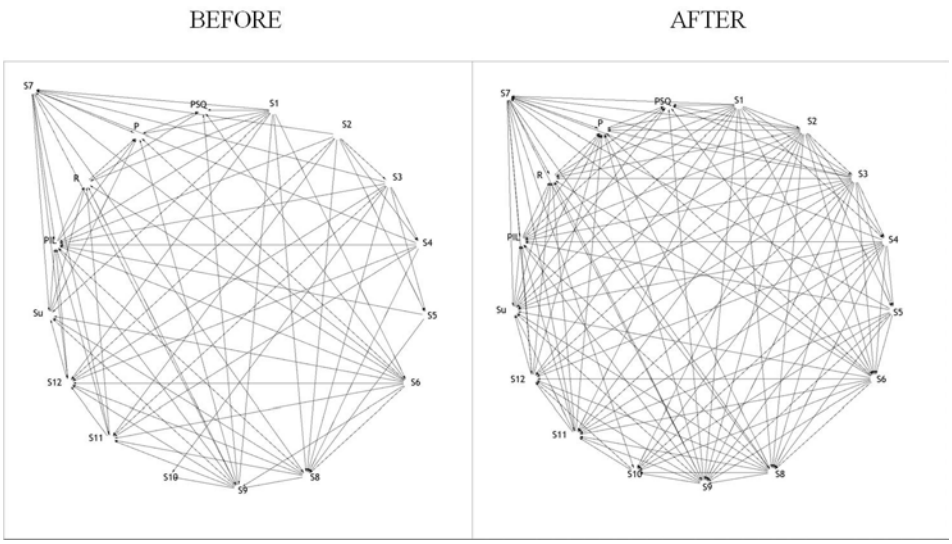

Figure 1. Psycho-Emotional Network Before and After PEI, in Women and Men Jointly. Statistically significant Pearson's correlations scores obtained between the Psycho-Emotional Variables Before and After PEI, were introduced to the AGNA software to build and viewing the Psycho-Emotional Network. The must correlated variable or node (Hub) (S7) is displayed on the outside of the Psycho-Emotional Network to denote their importance for the Network functioning. Psycho-Emotional Variables abbreviations: Self-Responsibility and Love (S1), Breathing (S2), Sensing (S3), Eating (S4), Moving (S5), Feeling (S6), Thinking (S7), Working/Playing (S8), Communicating (S9), Intimacy (S10), Finding Meaning (S11) Transcending (S12); Meaning in Suffering (Su); Purpose in Life (PIL); Risk (R) and Protection (P) Factors; Perception of Stress (PSQ).

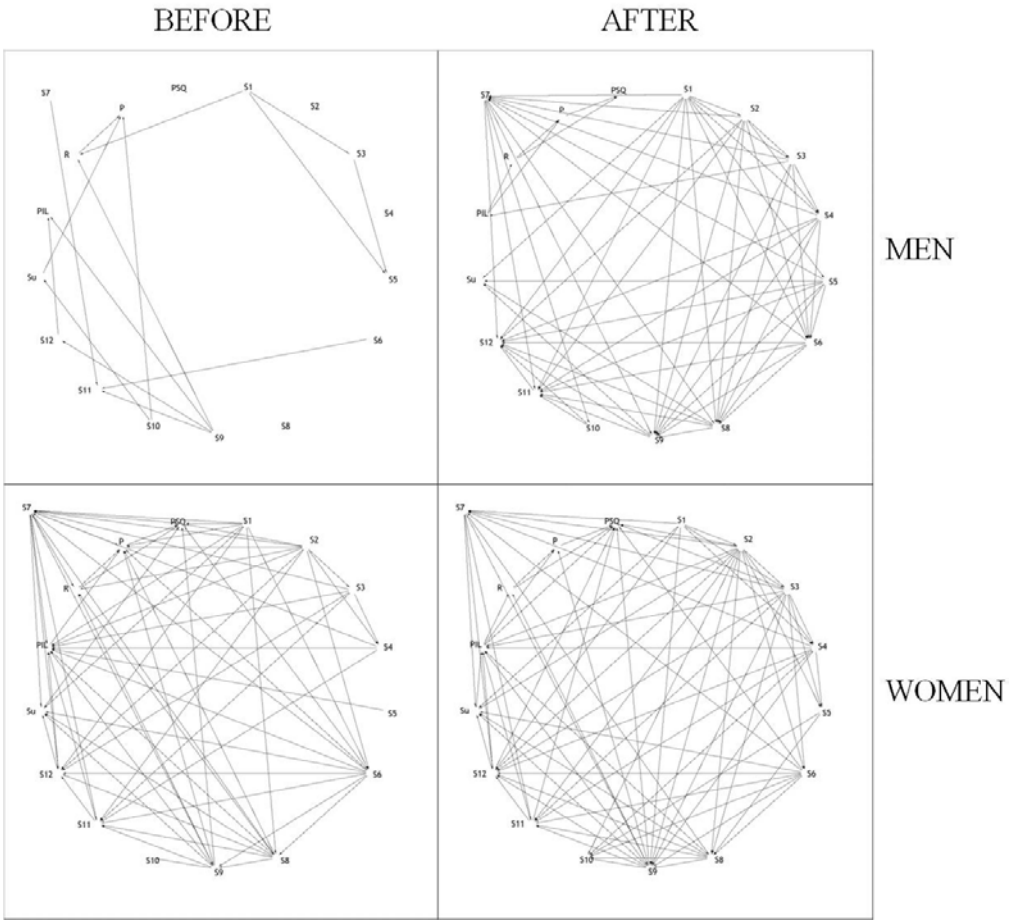

Figure 2. Psycho-Emotional Network in Women and Men Before and After PEI.

This is very much in line with the previously reported sexual dimorphism, in which females were selected as the principal caretakers and educators of the offspring while males were destined only for hunting, procuration of food, and territorial exploration and defense [18].

It is worth noting that the Variable Thinking (S7) was always in the first three ranks of the Psycho-Emotional Network, not mattering if measured jointly or separately with respect to sex, Before or After PEI. A fact that makes of Thinking a central hub of the network, while Variables like Communicating (S9), Breathing (S2), Transcending (S12), Finding Meaning (S11) and Playing/Working (S8), which increase their connectivity on account of the PEI,

become secondary hubs to which the rest of the Variables are connected (Figure 1).

On the other hand, we also performed specific network analysis in order to evaluate quantitatively the changes occurred in Men and Women Variable's correlation networks, jointly and separately, Before and After PEI (Figure 2). We found that the total number of connections in Women increased from 68 to 79 (1.16 more times), while Men´s increased from 15 to 63 (4.2 more times). Likewise, the density (number of links/number of all possible links) of the Network increased considerably After the PEI, from 0.25 to 0.29 (1.16 increment) in the case of Women, and from 0.05 to 0.23 (4.6 increment) in the case of Men. These measurements are a reflection of the higher connectivity found after PEI in both Men and Women. Although, the change in both density and total number of connections was significantly higher in men than in women.

When we analyzed the "centrality" of the Variable's correlation network (a measure to determine the most important nodes in the flow of information) in order to identify the most important hubs in the network. We found that Moving (S5) was the most central hub in Women, when the Bavelas-Leavitt measurement was used [45,46,47], while Feeling (S6) and Thinking (S7) were the most central hubs in Men Before PEI, using the same measurement. However, after applying the PEI, the most central hubs changed, becoming Intimacy (S10) in the case of Women and Purpose in Life (PIL) in the case of Men, the most central hubs.

Furthermore, when analyzing the hubs through which most of the paths that connect all of the hubs among themselves ("betweenness centrality"), Thinking (S7) was the most important hub Before PEI in Women, while Communicating (S9) was the most important hub After PEI. In the case of Men, Risk (R) was the most important hub Before PEI, and Purpose in Life (PIL) was the most important hub after PEI. Both centrality measurements indicate that in Men, After the PEI, Purpose in Life (PIL) became a particularly important hub in the network. This was not the case for Women, for whom the most central hubs After PEI were different depending on the centrality measurement used. These measurements may indicate that Purpose in Life (PIL) in Men becomes a central issue After PEI, around which the other Variables orbit. In the case of Women, the most central hubs After PEI were Communicating and Intimacy (S10 and S9), perhaps reflecting the well-known communicating skills of Women is central in order to keep connected all the other Variables ("The North Sea will sooner be found wanting in water than a woman at a loss for words" – Jutland [48].

The centrality measurements performed are not a reflection of the most connected hubs but rather of the most important hubs for other reasons (Information Flow, Network Topology), and are especially useful to design precise interventions that positively (e.g., PEI) or negatively may efficiently affect all the other hubs in the network.

4. Conclusions

The Intensity values of the Psycho-Emotional Variables of students organized the Variables in the form of a Network, and depending on the measurement employed the importance ranks of the Variables varied, with Thinking (S7), Communicating (S9), Purpose in Life (PIL) Intimacy (S10) and Risk (R) as the most outstanding hubs Before and After PEI, in both Women and Men, while Breathing (S2), Transcending (S12), Finding Meaning (S11), Playing/Working (S8) and Self-Responsibility and Love (S1), as secondary hubs connecting with the rest of them (Figure 1 and Figure 2).

We propose that PEI first activates the Network's Thinking or Communicating, which in turn activate secondary hubs and then the rest of the Variables, thus determining the Psycho-Emotional status of the individual, much in accord with the famous proverb "*Mind precedes all things; mind is their chief, mind is their maker. If one speaks or does a deed with a mind that is pure within, happiness then follows along like a never departing shadow*" [49], and also in accord with the Cognitive-Behavioral Approach [50,51], in which, Thinking, when translated to emotion and action, may propitiate happiness or suffering, depending on the nature of the thought itself, like love and hate, respectively.

The psycho-educational interventions when directed to college students must include activities that modify intrusive thoughts, emotional intelligence, assertive communication, the Purpose in Life and the Meaning in Suffering, in order to generate the desired impact on the Psycho-Emotional Network and its consequences on the students' Health and Wellness.

The network organization of the Psycho-Emotional Variables allows searching for the shortest distance from a protective Variable to a risky Variable in order to correct it, as does Family Adjustment, which corrects the individual's Substance Abuse [18]. Likewise, we speculate that the network organization may provide with ways to strengthen the commission of negative actions, like does explicit violence in films and media may induce the commission of atrocious crimes of a similar nature, as it may have happened in the massacre in the inauguration of Batman *The Dark Knight Rises* in Colorado USA by a James Holmes disguised as a the Joker [52], and even make them look ordinary.

In order to have healthy societies, it is recommended to sow in children habits and thoughts that generate healthy adults in the future, as recommended by "The Positive Education" [53].

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References

[1] Moore, M.J., Werch, C.E., Bian, H. "Pilot of a computer-based brief multiple-health behavior intervention for college students". J Am Coll Health, 60(1), 74-80, 2012.

[2] Dusselier, L., Dunn, B., Yongyi, W., Shelley, M. II, Whalen, D. "Personal, health, academic, and environmental predictors of stress for residence hall students". J Am Coll Health, 54, 15-24, 2005.

[3] The American College Health Association (ACHA). "American College Health Association–National College Health Assessment

Spring 2008 Reference Group Data Report (Abridged)". J Am Coll Health, 57, 477-488, 2009.

[4] Prochaska, J.J., Spring, B., Nigg, C.R. "Multiple behavior change research: an introduction and overview". Prev Med, 46, 181-188, 2008.

[5] VanKim, N.A., Laska, M.N., Ehlinger, E., Lust, K., Story, M. "Understanding young adult physical activity, alcohol and tobacco use in community colleges and 4-year post-secondary institutions: a cross-sectional analysis of epidemiological surveillance data". BMC Public Health, 10, 208, 2010.

[6] Roehlkepartain, E.C., Hong, K.L., Scales, P.C. "Boosting student achievement by building developmental assets: new research strengthens the case". Minnesota School Boards Association Journal, 58, 16-18, 2005.

[7] Ruiz-Lugo, L. "Formación Integral: Desarrollo Intelectual, Emocional, Social y Ético de los Estudiantes". Revista Universidad de Sonora, 19, 11-13, 2007.

[8] Aspy, C.B., Oman, R.F., Vesley, S.K., McLeroy, K., Rodine, S., Marshall, L. "Adolescent violence: The protective effects of youth assets". J Couns Dev, 82, 269-277, 2004.

[9] Atkins, L., Oman, R.F., Vesley, S., Aspy, C.B., McLeroy, K. "Adolescent tobacco use: The protective effects of developmental assets". Am J Health Promot. 16, 198-205, 2002.

[10] Oman, R.F., Vesley, S.K., Aspy, C.B., McLeroy, K., Luby, C. "The association between multiple youth assets and sexual behavior". Am J Health Promot, 19(1), 12-18. 2004.

[11] Vesly, S.K., Wyatt, V.H., Oman, R.F., Aspy, C.B., Kegler, M.C., Rodine, S., Marshall, L., McLeroy, K.R. "The potential protective effects of youth assets from adolescent sexual risk behaviors". J Adolesc Health, 34, 356-365, 2004.

[12] Oman, R.F., Vesely, S., Aspy, C.B., McLeroy, K.R., Rodine, S., Marhsall, L. "The protective effect of youth assets on adolescent alcohol and drug use". Am J Public Health. 94, 1425-1430, 2004.

[13] Peterson, C., Park, N., Seligman, M.E.P. "Orientations to happiness and life satisfaction: the full life versus the empty life". Journal of Happiness Studies, 6, 25-41, 2005.

[14] Seligman MEP. "Positive health". Applied Psychology: An International Review, 57, 3-18, 2008.

[15] Barradas-Alarcón, M.E., Iradanery-Martínez, L.M., Balderrama-Trápaga, J.A., Gamboa-Olivares, D.C. "Consumo de Alcohol en Estudiantes de Nivel Superior". Impulso Tecnológico, 29-44, 2009.

[16] Fernández, B., Barradas, M.E., González, M., Enríquez, C., Mota, I., Riego, N. "Conductas sexuales en estudiantes de psicología". Revista de Investigación en Ciencias de la Salud, 5(1), 2010.

[17] Riego-García, N., Enríquez, C. Dinámica de la violencia durante el noviazgo. Primera edición. Madrid: Editorial Académica Española, 2011.

[18] Romo-Gonzalez, T., Enríquez-Hernández, C.B., Riego-Azuara, N.A., Sánchez-Gracida, O.D, López-Mora, G., Gantiva-Díaz, C.A. Larralde, C. Research in Psychology and Behavioral Sciences, 1(2), 16-30, 2013.

[19] Maslow, A. "A preface to motivation theory". Psychosomatic Med, 5, 85-92, 1943.

[20] Herrera, M. Comportamiento de la violencia contra la mujer durante el noviazgo en estudiantes universitarios. Tesis (Licenciatura). Veracruz, Veracruz, Universidad Veracruzana, Facultad de Enfermería, 2009.

[21] Ayala-Velazquez, H. Manual de autoayuda para personas con problemas en su forma de beber. México: Editorial Porrúa, 1998.

[22] Travis J, Ryan S. Libro Completo de Salud y Bienestar. (1ª ed.). España: Gaia ediciones, 1999.

[23] Palombi B. "Psychometric Properties of Wellness Instrument". Journal of Counseling Development. 71(2), 221-225, 1992.

[24] Crumbaugh, J., Maholick, L. Manual de Instrucciones del Test de Sentido de Vida. Viktor Frankl Institute of Logotherapy, 1981.

[25] Frankl, V. Ante el Vacío Existencial. (6ª. Ed.). España: Editorial Herder. Sexta Edición, 1990.

[26] Starck P. Meaning in Suffering Test. Viktor Frankl Institute of Logotherapy, 1985.

[27] Tarter R, Hegedus A. "The Drug Use Screening Inventory: Its application in the evaluation and treatment of alcohol and drug abuse". Alcohol Health and Research World . 15:65-75, 1991.

[28] Díaz-Negrete, D., González-Sánchez, J., García-Aurrecoechea, V. "Adaptación del Drug-Use Screening Inventory para su aplicación en adolescentes mexicanos". Adicciones, 18(2), 197-210, 2006.

[29] Levenstein, S., Prantera, C., Varvo, V., Scribano, M., Berto, E., Luzi, C., Andreoli, A. "Development of the Perceived Stress Questionnaire: a new tool for psychosomatic research". Journal of Psychosomatic Results, 37, 19-32, 1993.

[30] Romo-González, T., Banderas-Rodríguez CA. Taller Integral Preventivo del Consumo de Drogas. Autoconocimiento y cuidado del alma. Manual para su aplicación. Madrid: Editorial Académica Española, 2011.

[31] Macy, J., Brown Y. Coming Back to Life. USA: New Society Publishers, 1998.

[32] Chia, M., Li, J. La Estructura Interna del Tai Chi. (3ª ed.).España: Editorial Sirio, S.A., 2001.

[33] Lowen, A. Bioenergética. España: Editorial Diana, 1975.

[34] Hartley, L. Wisdom of the Body Moving: An Introduction to Body-Mind Centering. North Atlantic Books, 1995.

[35] White M, Epston D. Medios narrativos para fines terapéuticos. (1ª ed.) España: Editorial Paidós Ibérica, S.A.,1993.

[36] Avants, K., Margolin, A. "Development of Spiritual Self Schema (3-S) Therapy for the Treatment of Addictive and HIV Risk Behavior: A Convergence of Cognitive and Buddhist Psychology". Journal of Psychotherapy Integration, 14(3), 253-289, 2004.

[37] Benta, M. AGNA 2.1. http://mac.softpedia.com/get/Network-Admin/AGNA.shtml, 2008.

[38] Barabasi, A-L. Linked: How Everything Is Connected to Everything Else and What It Means. USA: Penguin Group, 2003.

[39] Seligman, M.E.P. Authentic happiness: using the new positive psychology to realize your potential for lasting fulfillment. New York, Free Press, 2002.

[40] Linley, P. A., Joseph, S., Harrington, S., & Wood, A. M. "Positive psychology: Past, present, and (possible) future". The Journal of Positive Psychology, 1, 3-16, 2006.

[41] Nakken, C. The Addictive Personality. (1st. edi.) USA: Editorial First Harper & Row Edition Published, 1998.

[42] De Leon, G. La Comunidad Terapéutica y las Adicciones. Teoría, Modelo y Método. (1ª ed.) España: Editorial, Desclée de Brouwer, S.A., 2004.

[43] Taylor SE, Klein LC, Lewis BP, Gruenewald TL, Gurung RA, Updegraff JA. "Biobehavioral responses to stress in females: tend-and-befriend, not fight-or-flight". Psychol Rev. 107(3):411-29, 2000.

[44] Ter Horst GJ, Wichmann R, Gerrits M, Westenbroek C, Lin Y. "Sex differences in stress responses: focus on ovarian hormones". Physiol Behav. 97(2):239-49, 2009.

[45] Bavelas, A. "Communication patterns in task-oriented groups". Journal of the Acoustical Society of America, 22, 723-730, 1950.

[46] Bavelas, A., Barrett, M. "An experimental approach to organizational communication". Personnel. 27, 386-397, 1951.

[47] Leavitt, H.J. "Some effects of certain communication patterns on group performance". Journal of Abnormal and Social Psychology. 46, 38-50, 1951.

[48] Swacker, M. The sex of the speaker as a sociolinguistic variable. In B. Thome & N. Henley (Eds.), Language and sex: Difference and dominance. Rowley, Mass.: Newbury House, 1975.

[49] Dhammapada 1. Acharya Buddharakkhita. The Dhammapada: The Buddha's Path of Wisdom. Buddhist Publication Society. Sri Lanka, 1996.

[50] Rachman, S. The evolution of cognitive behavior therapy. In Clark, D, Fairburn, CG & Gelder, MG. Science and practice of cognitive behaviour therapy. (pp 1-26). Oxford: Oxford University Press, 1997.

[51] Hassett, A.L., Gevirtz, R.N. "Nonpharmacologic treatment for fibromyalgia: patient education, cognitive-behavioral therapy, relaxation techniques, and complementary and alternative medicine". Rheum. Dis. Clin. North Am., 35(2), 393-407, 2009.

[52] The Sun. Batman maniac is 'Joker' in jail. Published: 23rd July. http://www.thesun.co.uk/sol/homepage/news/4444369/Batman-cinema-killer-James-Holmes-acts-like-The-Joker-in-jail.html, 2012.

[53] Seligman, M.E.P, Ernst, R.M., Gillham, J., Reivich, K., Linkins, M. "Positive education: positive psychology and classroom interventions". Oxford Review of Education. 35(3); 293-311, 2009.