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A Pilot Study of Posttraumatic Growth Training for Patients with Posttraumatic Stress Disorder

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ABSTRACT

The aim of the present study was to identify if a training to favor PG in patients with PTSD (PGT) generates improvement compared to only the application of conventional treatment. The instruments applied were: Maladaptation Scale, Post-Traumatic Stress Disorder Symptom Severity Scale, Psychological Well-Being Scale, and Post-Traumatic Growth Inventory. All 10 participants received Cognitive Processing Therapy (CPT) for PTSD. Two groups were then randomly formed. The PGT was administered to the experimental group and the control group was kept on wait list. The four scales were applied before, after the treatment and again after one year. The experimental group showed an improvement in Psychological Well-Being and was almost statistically significant with respect to PG. However, there were no differences in PTSD symptoms or in maladaptation levels. It is concluded that PGT was effective in increasing psychological well-being for the participants. This study might be improved by increasing the sample size for those who receive PGT be also for PG, which may act as a protective factor against future relapses or other disorders.

Key words: posttraumatic stress disorder, cognitive behavioral therapies, cognitive processing therapy, posttraumatic growth training.

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Novelty and Significance

What is already known about the topic?

- Posttraumatic Stress Disorder is a serious alteration that a person can suffer after having experienced an event where his life or dignity is endangered.
- A positive psychological change has also been identified in some people under the same circumstances; this change has been called Posttraumatic Growth.

What this paper adds?

- A Post-Traumatic Growth Training that seeks to strengthen patients diagnosed with Posttraumatic Stress Disorder after receiving conventional treatment has been developed.
- The group that received Post-Traumatic Growth Training showed an improvement in psychological well-being compared to the control group, which may act as a protective factor against future relapses or other disorders.

Mexico has been singled out as one of the most violent countries according to the Global Peace Index (2012), which ranked it 135th out of 158 countries, making it one of the least peaceful nations in the world. In addition, the National Survey of Victimization and Perception on Public Security 2012 (ENVIPE) indicates that 24.5%

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of the Mexican population over 18 years of age (that is to say 18,675,004 people) were victims of crime, with an average of 1.2 crimes per victim. This adds up to a total of 22,389,492 crimes. This does not include offenses such as homicides, kidnappings, drug trafficking, smuggling of illegal immigrants and other crimes related to organized crime that have been increasing in recent years. Estimates suggest that 91% of crime is organized and unreported; so only 9% of crimes are reported making the data offered markedly underestimated.

According to the DSM-5 Statistical Diagnostic Manual (American Psychiatric Association, 2013), the violent situations described above are potentially traumatic because the life or integrity of oneself, one's family member or an intimate friend has been put at risk, often leading to Posttraumatic Stress Disorder (PTSD). In Mexico, the prevalence of PTSD was 13% and the prevalence of potentially traumatic exposures was 77%, and up to 50% of the evaluated subjects had multiple traumas (Mc Pherson-Sexton, 2006).

Currently, there are different treatments for PTSD with an 80% rate of improvement in the first year. Despite this, 8% of patients experience relapses (Foa, Hembree, Cahill, Rauch, Riggs, Feeny, & Yadin, 2005).

It is also necessary to point out that 20% of patients do not benefit from such treatments and that a significant number of patients with PTSD experience comorbidity with other mental disorders (Sareen, Cox, Stein, Afifi, Fleet, & Asmundson 2007). Up to 37.2% of patients with PTSD also meet criteria for major depressive disorder and 7.2% of patients meet criteria for manic episodes. Regarding the relationship to other anxiety disorders, it has been observed that up to 33.5% of patients with PTSD show panic attacks, 4% agoraphobia and 19.9% social phobia. Regarding substance abuse, 5.8% of patients met criteria for alcohol abuse and 4.4% of other drugs. Also, PTSD has been associated with different chronic physical conditions such as respiratory problems, neurological alterations, gastrointestinal alterations, etc. (Sareen *et alii*, 2007).

On the other hand, it has been described (Tedeschi & Calhoun, 1996) that some people, after going through a potentially traumatic experience, have been able to experience what is known as Posttraumatic Growth (PG) where changes are observed in at least 5 areas; appreciation for life, relationships with others, personal strengths, new possibilities and spiritual changes.

PG has been conceptualized as a process that is incompatible with the presence of PTSD and therefore can function as a protective factor against relapses (Tedeschi & Calhoun, 1996) and also reduce the risk of other disorders and alterations. Therefore, we hypothesize that a treatment designed with techniques developed to favor PG may improve the condition of patients after receiving a specific treatment for PTSD (which has shown evidence of its efficacy). At the same time, it is important to note that it is not enough for patients to experience a clinically and statistically significant reduction of PTSD symptoms. Rather, it is considered desirable for treatment to have a positive impact on psychological well-being since both, posttraumatic growth and psychological well-being can function as protection against relapses and concomitant disorders.

Therefore, the objectives of the present investigation are: (1) To compare the levels of PTSD symptomatology and pre- and post-treatment maladaptation of CPT in the total sample to corroborate the efficacy of Resick's Cognitive Processing Therapy; (2) Compare levels of PTSD symptoms, levels of maladaptation to daily life, posttraumatic growth levels and levels of psychological wellbeing between pre and post treatment groups of the Posttraumatic Growth Training (PGT); (3) Compare the levels of change (post treatment-pre treatment) of the four variables between the group which received

the PGT and the control group; and (4) Compare levels of PTSD symptoms, levels of maladaptation to daily life, levels of posttraumatic growth and levels of psychological wellbeing between groups in the follow-up phase, 1 year after intervention.

METHOD

Participants

A sample with an equally divided $n= 10$ was obtained between the control and experimental groups. There were no significant differences in sociodemographic variables: sex, age and schooling (see Table 1) among the groups.

Inclusion criteria included: being over 18 years old, meeting PTSD criteria according to DSM IV-TR, a score equal or superior to 15 of PTSD on Echeburúa's scale, and the participant had to sign the informed consent. Exclusion criteria were: not being able to read and write or have concomitant disorders such as Psychotic Disorders, Substance Dependence or disorders that prevent continuity of treatment, such as Mental Retardation, Generalized Developmental Disorders and Dementias (evaluated from the clinical interview). Elimination criteria were considered: abandoning treatment for more than two sessions, or failing to complete two consecutive assignments between sessions. 2 participants were eliminated.

Table 1. Socio-demographic data for Experimental and Control groups and Total Sample.

		Experimental Group	Control Group	$t(p)$	$\chi^2(p)$	Total Sample
<i>N</i>		5	5			10
Sex	Woman	2 (40%)	3 (60%)		.000 (1.000)	50%
	Man	3 (60%)	2 (40%)			
Age	<i>M</i>	36	37.2	.193		36.6
	<i>SD</i>	8.54	10.94	(.743)		9.27
	Min-Max	(21-41)	(20-50)			(20-50)
Years of schooling	<i>M</i>	16	16	.000 (1.000)		16
	<i>SD</i>	1.41	1.41			1.41
	Min-Max	(14-18)	(14-18)			(14-18)

Instruments

Scale of Severity of Symptoms of Post-traumatic Stress Disorder (Echeburúa, Corral, Amor, Zubizarreta & Sarasua, 1997). A hetero-applied scale consisting of 17 items based on the diagnostic criteria of DSM-IV-TR (American Psychiatric Association, 2000). Its function is to evaluate the symptoms and intensity of PTSD. It is used in the form of a structured interview. The format is a Likert scale from 0 to 3 to measure the intensity and frequency of symptoms. Of the 17 items it contains, 5 refer to re-experiencing symptoms, 7 to avoidance symptoms and 5 to hyperactivation or arousal symptoms. The range is from 0 to 51 on the global scale, from 0 to 15 on the re-experiencing subscale, from 0 to 21 on avoidance and from 0 to 15 on hyperactivation or arousal. It also has the peculiarity of having a subscale of anxiety and its somatic manifestations with the intention of guiding the clinician in the selection of therapeutic strategies. Its range is 0-39. The test shows a reliability coefficient test retest (4 weeks, using normative and clinical sample) of 0.89. The internal consistency measured with Cronbach's alpha is 0.92. Its content validity is fully satisfactory according to the DSM-IV-TR diagnostic criteria. An adequate level of convergent validity is observed. Regarding the discriminant validity, it was observed that applying a cutoff point of 15 gives a

sensitivity of 100% and a specificity of 93.7% between normative subjects and those afflicted with PTSD. So its diagnostic efficacy is 95.45%. Researchers also applied the Inadequacy scale (Echeburúa, Corral, & Fernández Montalvo, 2000) which is used to measure how PTSD affects a participant's daily life. It consists of 6 Likert-like items ranging from 0 to 5 with a total range of 0 to 30. It measures the degree of change for participants in areas such as: work or study, social life, free time, relationship and family life. The higher the score the participant obtains, the greater their maladaptation following a traumatic event. Regarding internal consistency, a Cronbach's α coefficient of .94 was obtained. The discriminant validity, both as a whole and in each one of its items, allows one to differentiate between healthy subjects and those affected by mental disorders. The diagnostic efficacy of the test is 90% when an overall cutoff of 12 is made giving a sensitivity of 86% and a specificity of 100%.

Posttraumatic Growth Inventory (Tedeschi & Calhoun, 1996), designed based on a 6-point Likert scale and 21 items which are mentioned as a result of the crisis experienced. It is a self-report that measures 5 growth areas after a highly stressful event: New possibilities ($\alpha = .84$) Spiritual changes ($\alpha = .85$) Appreciation for life ($\alpha = .67$) Relate to others ($\alpha = .85$) Personal strength ($\alpha = .72$). The reliability of the total inventory is $\alpha = .90$.

Scale of Psychological Well-Being (SPWB; Ryff, 1989), adapted for the Mexican population by Medina Calvillo, Gutiérrez Hernández, & Padrós Blázquez (2013). It has 39 items. The mean score for the total scale was 184 ($SD = 22.65$ for sample A) and 185 ($SD = 23$ for sample B), while the mean for the subscales ranged from 27 $SD = 4.46$, which was the subscale of Dominion of the environment and 35 corresponding to the subscales of Autonomy and Personal Growth. The scale showed good internal consistency with Cronbach's α values ranging from .908 to .918 on the total scale, values in the subscales ranged from .61 (Environment domain) to .84 (Personal growth). We obtained values of test-retest reliability (2 months) of $r = .796$ corresponding to the total scale and values in the subscales between $r = .584$ (Personal growth) and $r = .731$ (Autonomy).

Interventional treatments

Intervention was divided in two phases. Phase 1: Based on the Handbook for the Therapist of Cognitive Processing Therapy (CPT) by Resick, Monson, and Chard (2008). Participants received a manual with specific content and activities. The Cognitive Processing Therapy intervention had twelve sessions, one each week with a duration of one hour as follows:

Session 1, Psychoeducation of PTSD and CPT. A description of the treatment is given; PTSD is described and how it is maintained; The most important symptoms; The theory of information processing is taught; Brief description of the event; Explanation and treatment objectives; Assignment the homework: What is the impact statement of the event and identify the stagnation points.

Session 2, The meaning of the event. Read the impact statement; Identify stagnation points; Teaching the connection between thoughts and feelings; Introduce the system A-B-C; Assignment of an A-B-C log sheet to the day and at least one of the traumatic event as a homework.

Session 3, Identification of emotions and thoughts. Review and clarify the homework: A-B-C record sheets; Discussing trauma-related A-B-C sheets. Homework assignment: written description of the traumatic event and A-B-C sheets.

Session 4, Remembrance of the traumatic event. Read the story of the trauma that was left as a homework; Identify stuck points; Debating stuck points; Assignment the homework: rewrite the traumatic event with details on feelings, thoughts and emotions and continue with the A-B-C sheets each day.

Session 5, Identification of stuck points. Read the second story of the trauma out loud; Review A-B-C sheets; Challenge of assumptions and conclusions; Registration of

challenge issues; Assignment the homework: Each day work with one stuck point and make a record of challenge questions.

- Session 6, Challenge Questions.* Review the challenge question records; Identify and work with those who had difficulties; Working with the stuck points that are being challenged; Recording patterns of problematic thoughts; Homework assignment: Recording patterns of problematic thoughts every day.
- Session 7, Patterns of problematic thinking.* Review the log of problematic patterns; Challenging Beliefs Worksheet (CBW); Safety issues with oneself and others; Assignment of homework: make CBW every day based on stuck points. Also read the security module and see how previous beliefs were affected by the event.
- Session 8, Security issues.* Review CBW and coping with security stagnation points; Confront problematic cognitions and develop alternatives using CBW; Confidence issues related to self and others; Task assignment: Reading the trust module and thinking about trust beliefs before the event and how the event changed or reinforced those beliefs. Use the CBW to continue analyzing the stuck points.
- Session 9, Confidence issues.* Reviewing the CBW and coping with stuck points of trust; Confront problematic cognitions and develop alternatives using CBW; Analyze judgments related to trust and stagnation points; Power/control module; Task assignment: read the power / control module and do a CBW on it every day.
- Session 10, Power/control issues.* Review CBW and coping with power/control stuck points. Confronting problematic cognitions and developing alternatives using CBW; Analyze power/control judgments, stuck points, and anger management; Give and receive power; Introduce the module of esteem for the discussion of problems of esteem with oneself and others; Assignment of task: reading the module of esteem and making a CBW on it every day. Also give and receive a compliment each day, as well as perform a pleasant activity each day.
- Session 11, Issues of esteem.* Review the pleasant compliments and activities that the patient has performed; Review the CBW and address stuck points of esteem. Confronting problematic cognitions and developing alternatives using CBW; Introduce the module of intimacy for the discussion of problems of intimacy with oneself and others; Homework assignment: Rewriting the impact statement by pointing out what it means to the patient right now and how their beliefs are about him, others and the world in terms of security, trust, power/control, esteem and intimacy. Also read the Intimacy module and do a CBW on it every day.
- Session 12, Questions about the intimacy and meaning of the event.* Review the CBW and coping with intimacy and self-intimacy stuck points. Confront problematic cognitions and developing alternatives using CBW; Reading the new trauma impact statement; Reviewing the course of treatment and progress of the patient; Identification of future goals; Motivating to continue applying the learned skills.

Phase 2- In this phase, was developed a manual for patients and another one for therapists containing the Posttraumatic Growth Training (PGT), with the intention of encouraging variables that make up the PG. The patients' manual was only given to the experimental group and consists of four weekly sessions of one hour each, which are described below:

- Session 1, Psychoeducation of Satisfaction and Exposure to Death (Spiritual Changes).* Explaining what Posttraumatic Growth is, its components and the findings that have been obtained. Subsequently, we work with the understanding of the crisis as well as the satisfaction, and the set point after the suffering through the Socratic Dialogue. Then the coping of life and death is dealt with and an exercise of imagination (known by the Stoics as *Premeditatio Malorum*) of self-death and the events subsequent to it is performed. Finally a homework called *Epitaph* was assigned, where the patient is instructed to write what he would like to communicate to his family and friends about his own life and death. As a testament form the patient, it should explain what

he hopes to bring to his family in the spiritual, material and economic spheres. He was also invited to write how he wants his loved ones to face his death and how he hopes to be remembered.

Session 2, Priorities and Values of Life (Appreciation for Life). The homework is reviewed, then work begins on the cognitive biases of overgeneralization and tunnel vision, identifying meaningful and pleasant experiences throughout the life of the patient. Next, we worked with priorities and appreciation of life through what we call the circle of priorities where was assigned the value and priority that patient gives to family, work, self care, friends, etc. Comparison on how the circle was before PTSD and how the patient wants it to be now. Finally, the homework called *Album Vitae* was assigned to reinforce the attention to positive experiences before, during and after the traumatic experience. To achieve this, the homework involved making a digital or physical album that includes pictures, videos, objects, drawings or anything that reflects those positive experiences before, during and after the challenging experience, it can also include significant people in their life.

Session 3, Redefinition of Life Goals (New Possibilities and Relationships with Others). The homework was reviewed and then the patient created a list with the life goals he has postponed and an approximate timeframe to achieve these goals was established. To achieve this, a hierarchy of goals was divided into short, medium and long term goals. The patient was invited to work on those short term goals of greater importance. The medium and long term goals was addressed later. Then we worked with relationships with others and with expressing affection assertively to meaningful people. Finally we assigned homework that we have called *Salieri Exercise*, a prospective exercise and a role-play where the patient makes a script of how his life will run from the present to the end. For achieve this, two conditions were asked: (1) it has to be credible (congruent) with the life lived until today, and (2) the elderly who dies is satisfied with what happened from this moment, despite the negative experiences.

Session 4, Balance between profit and loss after experience (Personal strength). The homework was reviewed, and then negative biases that impede attention to positive and enjoyable experiences is reinforced was identified. The beliefs that point to personal strengths and positive coping with potential adversities were also reinforced. Subsequently, a synthesis of the four sessions and the therapeutic closure was made. Both the patient and the therapist expressed their experience throughout the therapy and the patients were invited to continue working with the tools acquired in the PGT.

Procedure

The study was approved by an ethics committee made up of mental health experts from three public universities in Mexico. All participants signed informed consent and it was explained to them that they were randomly assigned to the control group or to the experimental group and that both groups would receive, in the first phase, a proven treatment to relieve the symptoms of Post-Traumatic Stress Disorder. In addition, the participants of the experimental group were informed that in the second phase they would receive a therapy that was under study.

The evaluation was carried out in the following order: Scale of severity of symptoms of post-traumatic stress disorder was administered to make the diagnosis type DSM-IV-TR; Inadequacy scale was used to measure the degree of affectation of the disorder in the daily life of the subject. For both groups, the pre and post treatment evaluation was done in the first phase. The duration of each evaluation was about 30 minutes. In the second phase the evaluation was performed in the following order: Post-traumatic Growth Inventory, and Scale of Psychological Well-Being.

In the first phase, both groups were given the Resick CPT of 12 sessions (one hour per week). In the second phase, both groups were evaluated and only the

experimental one was applied the PGT of 4 sessions (one hour per week). After a year of completing the intervention of both phases, the two groups were reassessed with the same instruments of the second phase.

RESULTS

A first analysis served to identify the baseline and corroborate the effect of Cognitive Processing Therapy. The data showed a significant improvement in PTSD symptoms and maladaptation levels, making use of the sample with all participants (see Table 2).

Table 2. Mean, SD, Median and significance level for Cognitive Processing Therapy (Pre- and Post Treatment using Wilcoxon test) for Total Sample.

		Pre-Treatment	Post-Treatment	Z	p
PTSD	M (SD)	29 (6.96)	9.8 (6.01)	-2.705	.007
	Median	29.5	8.5		
MS	M (SD)	23.1 (7.09)	11.8 (5.45)	-2.810	.005
	Median	21.5	10.5		

Notes: PTSD= stands for the Post-Traumatic Stress Disorder Symptom Severity Scale. MS= Maladaptation Scale.

With respect to the main objective of the study, the absence of differences in the PTSD, Maladaptation, Psychological Well-Being and Posttraumatic Growth scores between the control group and the experimental group in pre-treatment phase of Training in Posttraumatic Growth and the baseline was obtained in order to compare the scores in the post treatment (see Table 3).

Table 3. Results in Pre-treatment of Posttraumatic Growth Training (Mann-Whitney U test) in psychological tests.

		PTSD	MS	PW	PG
Experimental Group	M (SD)	11 (3.94)	12.4 (2.3)	183.4 (11.63)	53 (6.12)
	Median	9	12	186	51
Control Group	M (SD)	8.6 (7.89)	11.2 (7.79)	172 (26.27)	53.6 (5.86)
	Median	7	8	185	54
Mann Withney U (p)		8 (.421)	5.5 (.151)	1 (.690)	11 (.841)

Notes: PTSD= Post-Traumatic Stress Disorder Symptom Severity Scale. MS= Maladaptation Scale; PW= Psychological Wellbeing Scale. PG= Post-Traumatic Growth Inventory.

Subsequently, an analysis of data of the experimental group showed an improvement in Psychological Well-being ($p= .043$), and with respect to Post-Traumatic Growth the differences found were close to significance ($p= .080$), where a tendency to increase in posttraumatic growth was observed. However, no differences were observed in PTSD symptoms or in Maladaptation levels (see Table 4).

Table 4. Results in Pre- and Post-treatment (Wilcoxon Statistical Test) for Experimental Group.

	Pre M (SD)	Median	Post M (SD)	Median	Z	p
PTSD	11 (3.93)	9	8.2 (2.94)	7	-0.944	0.345
MS	12.4 (2.3)	12	9.8 (2.77)	10	-1.289	0.197
PW	183 (11.63)	186	202.6 (12.01)	200	-2.023	0.043
PG	53 (6.12)	51	59.8 (3.63)	61	-1.753	0.080

Notes: PTSD= Post-Traumatic Stress Disorder Symptom Severity Scale. MS= Maladaptation Scale; PW= Psychological Wellbeing Scale. PG= Post-Traumatic Growth Inventory.

An analysis of the data from the control group to determine changes in the variables after the application of Posttraumatic Growth Training intervention showed

no significant change in any of the variables (see Table 5). Comparative analysis of the data with the generated variable “values of change” (Post treatment value - Pre-treatment value) of the scales between the experimental group and the control group were done using the Mann-Whitney *U* test. This variable was generated as a result of subtracting the value obtained in Post-treatment of the Post-Traumatic Growth Training (or after approximately 4 weeks in the control group) with the value expressed in the pre-treatment of each participant in each PTSD, MS, PW and PG. In order to know if there were differences between the variables (exchange value) between the experimental group and the control group. It was observed that the group that received Posttraumatic

Table 5. Results in Pre- and Post-treatment (Wilcoxon Statistical Test) for Control Group.

	Pre <i>M</i> (<i>SD</i>)	Median	Post <i>M</i> (<i>SD</i>)	Median	<i>Z</i>	<i>p</i>
PTSD	8.6 (7.89)	7	5.4 (5.27)	4	-1.625	.104
MS	11.2 (7.79)	8	12.4 (9.5)	10	-0.535	.593
PW	172 (26.26)	185	167.8 (29.04)	168	-0.406	.684
PG	53.6 (5.85)	54	51.2 (8.46)	53	-1.511	.131

Notes: PTSD= Post-Traumatic Stress Disorder Symptom Severity Scale. MS= Maladaptation Scale; PW= Psychological Wellbeing Scale. PG= Post-Traumatic Growth Inventory.

Growth Training significantly improved ($p=.008$) in Psychological Welfare and was almost significant ($p=.056$) with respect to Post-Traumatic Growth. However, no differences were observed in PTSD symptoms or Maladaptation levels (see Table 6).

Table 6. Results of the change values (Pre- and Post-Treatment) and significance in the psychological tests with the Posttraumatic Growth Training Post-treatment.

	PTSD	MS	PW	PG
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)
	Median	Median	Median	Median
Experimental Group	2.80 (5.36)	2.6 (4.67)	19.2 (11.28)	6.8 (5.54)
	3	4	21	9
Control Group	3.2 (3.42)	-1.2 (5.76)	-4.2 (9.78)	-2.4 (3.84)
	4	0	1	-1
Mann-Whitney <i>U</i>	11	8	0.5	3.5
(<i>p</i>)	.841	.421	.008	.056

Notes: PTSD= Post-Traumatic Stress Disorder Symptom Severity Scale. MS= Maladaptation Scale; PW= Psychological Wellbeing Scale. PG= Post-Traumatic Growth Inventory.

Subsequently, an analysis of the data was conducted to determine if there were changes in the means of the variables in the control group after one year of the application of the Posttraumatic Growth Training intervention. The averages of all variables were not significant (see Table 7).

Table 7. Results for the Control Group with Wilcoxon Statistical Test Between Post-Treatment and One-Year Follow-Up.

	Pre-T <i>M</i> (<i>SD</i>)	Median	Post-T <i>M</i> (<i>SD</i>)	Median	<i>Z</i>	<i>p</i>
PTSD	5.4 (5.27)	4	4.8 (3.56)	7	-0.365	.715
MS	12.4 (9.50)	10	14 (6.71)	15	-0.730	.465
PW	167.8 (29.04)	168	176.8 (37.67)	183	-0.730	.465
PG	51.2 (8.46)	53	55.4 (7.02)	52	-0.944	.345

Notes: PTSD= Post-Traumatic Stress Disorder Symptom Severity Scale. MS= Maladaptation Scale; PW= Psychological Wellbeing Scale. PG= Post-Traumatic Growth Inventory.

Finally, the same analysis was carried out with the objective of knowing if there were changes in the means of the variables in the experimental group after one year of the application of the Posttraumatic Growth Training intervention. The averages of all variables were not significant (see Table 8).

Table 8. Results for the Experimental Group with Wilcoxon Statistical Test Between Post-Treatment and One-Year Follow-Up.

	Pre-T <i>M (SD)</i>	Median	Post-T <i>M (SD)</i>	Median	<i>Z</i>	<i>p</i>
PTSD	8.2 (2.94)	7	5.6 (1.67)	6	-1.633	.102
MS	9.8 (2.77)	10	10.8 (5.02)	8	-0.542	.588
PW	202.6 (12.01)	200	201 (19.66)	208	-1.841	.066
PG	59.8 (3.63)	61	57.2 (6.76)	60	-0.271	.786

Notes: PTSD= Post-Traumatic Stress Disorder Symptom Severity Scale. MS= Maladaptation Scale; PW= Psychological Wellbeing Scale. PG= Post-Traumatic Growth Inventory.

DISCUSSION

In the first phase of this study, the levels of symptoms of PTSD and of adaptation to the daily life of all participants were compared between the pre and post treatment, which corroborated the effectiveness of Cognitive Processing Therapy (CPT), showing a significant reduction in PTSD symptoms and maladaptation levels. At the end of this phase, only two patients had enough symptoms to maintain the diagnosis of PTSD. Until the elaboration of this study, there was no data on efficacy of CPT in Mexican population, such that these results are considered to contribute to the identification of evidence-based interventions. These findings are similar to those found by Resick, Nishith, Weaver, Astin, and Feuer (2002) where 19% of cases maintained PTSD symptoms after the intervention.

In the second phase, the intervention designed to influence the variables of Post-Traumatic Growth and psychological well-being was applied. The control group did not experience significant changes in any of the variables as expected. On the other hand, the experimental group showed significant changes after receiving PGT. Findings between pre and post treatment groups showed a statistically significant change in psychological well-being. Changes in post-traumatic growth were very close to significance. PTSD symptoms and maladaptation to daily life did not show significant changes in any of the two groups.

At one-year follow-up, results obtained for both groups were maintained and showed no significant changes in any of the variables. It is interesting to note that posttraumatic growth and psychological well-being were sustained, not only the decrease in PTSD symptoms. As already noted, both variables function as a protective factor against possible relapses and the development of other alterations or disorders, so that they may have a prophylactic value (Ryff, 2014).

Thus, it may be desirable that in the care of people who have experienced symptoms related to traumatic experiences, after receiving conventional treatment the intervention that has been designed in this study could be applied to promote positive changes related to psychological well-being.

Hagenaars and van Minnen (2010) have pointed out that elevated PG scores in subjects who had been treated for PTSD were associated with improved recovery and therapeutic benefit. It is therefore pertinent to have studies with a larger sample that allow to observe if there are any significant differences in that variable.

The presence of spontaneous PG has been observed after intervention in people with PTSD (Hagenaars & van Minnen, 2010), however, it is unclear if PG responds to a positive bias because of the decrease in symptoms associated with PTSD or true growth (Zoellner, Rabe, Karl, & Maercker, 2011). In the present study, this bias has

been controlled through the control group, so our results indicate a possible significant effect of Posttraumatic Growth Training.

The results suggest the appropriateness of including Posttraumatic Growth Training as an adjuvant or enhancer in effective treatments for PTSD, such as Prolonged Exposure Therapy (Foa *et alii*, 2005) and Cognitive Processing Therapy (Resick *et alii*, 2008). In this way, it would cover not only the reduction of symptoms of the disorder, but also the increase in psychological well-being which acts as a protection and recovery factor in patients (Ryff, 2014).

This study, like those carried out by Tadeschi and Calhun (1995, 1998, and 2004) and Hagenaars and van Minnen (2010), shows that it is possible to have growth after highly stressful or potentially traumatic events. But the most relevant is that the results obtained can be seen as a clear indication that their development can be favored with treatments designed *ex profeso*. It is inferred that the application of this intervention may potentiate the effects of conventional PTSD treatment, facilitate post-traumatic growth and increase psychological well-being with patients in the long term.

The present study has some limitations, the first of these would be the small sample size. Nevertheless, significant results were observed in the scale of Psychological Well-Being and tendency to significance in Posttraumatic Growth. It is desirable that future studies may have a larger sample of participants. Another limitation is that seven participants obtained the intervention via online because they did not reside in the same city of the main investigator (and therapist), the three remaining cases received the intervention face-to-face, although both groups were balanced. It could be assumed that the advantage of working with individuals face-to-face would be to be able to more easily establish adequate rapport, which would favor adherence. However, these differences were not detected through the subjective and qualitative assessment, between patients who received online and face-to-face therapy and Wagner, Knaevelsrud, and Maercker, (2007) have shown that internet-based interventions are effective for pathological grief interventions.

Notwithstanding the above, it is suggested that future studies consider differentiating between face-to-face and online treatment. It is desirable to identify whether the effectiveness of face-to-face or distance-based treatments differs, since the proliferation and extension in the use of communication technologies their could represent a benefit to reach a greater number of users. An analysis of feasibility, costs, follow-ups and relapses is also desirable in order to provide users with alternatives that fit their circumstances.

Another limitation of the present study could be the reliability of the application of the treatment. In order to increase the reliability, treatment manuals were developed that increased consistency in protocol. In addition, the same therapist applied all interventions for both groups. As therapeutic skills increase after being practiced several times, it is possible that the therapist's learning factor may have had an effect on the quality of the interventions that the first subjects of the study received compared to the latter. However, it should be noted that this limitation applies to both groups, since all participants were attended at the same time. Future studies could utilize different therapists to control for this variable.

In this study, neither hetero-applied nor qualitative evaluations were performed, in future investigations it would be desirable to have clinical evaluations performed by professionals who are blind to the treatment that each patient received.

In relation to the Posttraumatic Growth Training there was some difficulty with the homework assignment called *Album Vitae*. Some patients had difficulties in their

understanding, and execution so that with some users the activity was performed during therapy.

Self-applied tests for Symptom Severity Scale of PTSD, Posttraumatic Growth Inventory, and Maladaptation Scale are not adapted to Mexican population. It is desirable that in future research there be instruments adapted to this population.

In the comparison between groups at the end of the study it was found that the experimental group that received CPT and PGT showed a greater efficiency at least in psychological well-being. We infer that other disorders characterized by loss experiences such as pathological grief, adaptive disorders, and brief psychotic disorder may benefit from PGT. Modifications to the protocol or generation of new protocols to adapt the PGT to the type of disorder or situation to be treated are suggested.

Finally, PGT could be applied preventively to people after experiencing a potentially traumatic experience (such as a traffic accident, kidnapping, armed robbery, rape, etc.) even if they do not meet PTSD or other disorder criteria. This would be desirable after the application of other preventive interventions that have shown efficacy.

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