The Effects of Stress Coping Strategies in Post-Traumatic Stress Symptoms Among Earthquake Survivors. An Explanatory Model of Post-Traumatic Stress

Efecto de las estrategias de afrontamiento al estrés en los síntomas de estrés post-traumático en sobrevivientes de un terremoto. Hacia un modelo explicativo del estrés post-traumático

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Resumen

Se determinó el efecto de las estrategias de afrontamiento (WOC) en los síntomas de estrés post-traumático (PTSD) ante un evento estresante común para 304 personas (Chile, terremoto 27 de febrero de 2010), mediante la aplicación del *Ways of Coping Questionnaire* y de la *Davidson Scale of Trauma*.
Los resultados muestran 4 modelos de regresión lineal múltiple significativos que explican el total y los 3 tipos de síntomas del PTSD a partir de las WOC evitación y resolución de problemas. Sin embargo, un primer modelo integrado mediante ecuaciones estructurales no obtuvo buenos índices de ajuste.
Se concluye con un modelo integrado alternativo que presenta muy buenos índices de ajuste. Finalmente se entregan explicaciones basadas en neuroimágenes y covert conditioning, además de reflexiones sobre prevención y prevalencia del PTSD.
Palabras clave: Estrategias de afrontamiento, estrés post-traumático, terremoto, tsunami, desastres.

Abstract

The effect of the ways of coping (WOC) in post-traumatic stress disorder (PTSD) symptoms in a stressing event common to a sample of 304 people (Chile, earthquake February, 27 2010) was determined through the application of the Ways of Coping Questionnaire and the Davidson Scale of Trauma.
The results show 4 significant Regression Multiple Linear models explaining the total and the 3 types of PTSD symptoms through WOC such as avoidance and problem solution. However, a first integrated model through structural equations did not attain good fit indexes.
The study has been concluded with an alternative integrated model presenting very good adjustment indexes (*CMIN/DF*=.058, *RMSEA*=.000, *NFI*=.999, *CFI*=.999 and *PNFI*=.100). Finally, explanations based on neuroimages and covert conditioning are provided along with reflections on the prevention and prevalence of the PTSD.
Keywords: Ways of coping, post-traumatic stress disorder, earthquake, tsunami, disasters.

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Introduction

Chile is a country known for its earthquakes. In fact, 2 of the 10 most intense earthquakes in world history have taken place here (USGS, 2010). For instance, in 1960 the city of Valdivia experienced the strongest earthquake ever measured by technical instruments, with a magnitude of 9.5 in the Richter scale. More recently, in February 27, 2010 (27-F), the central zone of Chile suffered the impact of the sixth most intense earthquake in history, with 8.8 of magnitude in the Richter scale (USGS, 2010); a few hours after the earthquake, a tsunami hit the continent and destroyed around 450 kilometers of the Chilean central coast (Barrientos, 2010). Both events caused a significant impact in an area where 80% of the population is concentrated. And, despite the number of deaths and missing people do not go over 600, the destruction of homes and its impact in the owning families is an element which makes the event quite important: approximately 299.000 people lost their homes (OPS, 2010).

Both the earthquake and the tsunami quickly described in the paragraphs above have a common characteristic: those are stressing events with a high psychosocial impact in practically the entire population. And, the fact that this has a high psychosocial impact means that this event brings along strong consequences both negative and positive in the environment (physical, social and cultural), beliefs (regarding oneself, the world and the others) and in the behavior of the people (Leiva, 2010; Morgan, Wisneski & Skitka, 2011; Pérez-Sales, 2004).

One of these consequences is the increase of post-traumatic stress disorder (PTSD), which may happen after a person observes or experiences a traumatic event involving a personal threat (González, Saiz & Bobes, 2003). According to the DSM-IV, PTSD has well defined criteria diagnosis. In the first one, during *re-experiencing* (RE), the person feels great discomfort due to memories and thoughts on the stressing event, which invade the conscience through dreams, the feeling of living again the situation, illusions and, also, hallucinations. In the second criterion, *avoidance and numbing* (AN), the person avoids any thoughts, sensation or talks over the subject, this goes along with a detachment sensation from the close-related ones and lack of hope for the future. Another criterion is *hyper-activation* (HA), that is the excessive physiological activity, translated into difficulty to sleep, irritation, lack of concentration, hyper-surveillance and exaggerated frightened answers. Each one of these criteria can be extended for over a month and may affect the person's daily life (López-Ibor & Valdés, 2002).

After the 27-F PTSD symptoms have increased significantly among its survivors. Three months after the event, the prevalence was 12% (MIDEPLAN, 2011); while in Constitución, the most affected city by the earthquake and tsunami in the country, after six months had 36% of PTSD prevalence (Leiva, 2011). However, after an impacting event such as the 27-F, people generating a traumatic response are just the minority. In 70% of the people who once experienced a traumatic event, between one seventh and one tenth parts shall develop PTSD (Pérez-Sales, 2004).

Hence, most of the people exposed to events such as the 27-F shall resist them, and even generate personal growth answers. Although 90% of the people who have experienced traumatic events report a negative impact, there is also an approximated 50% of people reporting positive effects; and not only that, people reporting to have grown as persons tend to show less depression symptoms and PTSD, and higher levels of psychological wellness (Tennen & Afleck, 2005; Zoellner & Maercker, 2006). In the case of natural disasters, most of the people are capable of recovering quickly (Galindo, 2010).

So, where those differences in the way to respond to potentially traumatic events come from? Probably the answer is in the cognitive strategies that each person has to cope with stressing situations. Lazarus and Folkman (1984) define the Ways of Coping (WOC) as cognitive efforts performed by each individual once exposed to a stressing stimulus or when its personal resources are challenged. According to the transactional model in which the WOC are explained, the person interprets individually the situation which he or she considers stressing, thus determining the consequences of the event being experienced and valuating the process itself (Reynoso & Seligson, 2002).

Regarding the classification of the WOC, many authors coincide in recognizing the existence of 8 ways each person performs cognitive efforts to cope with stressing events (González, Martín & Grau, 2007; Sinha, Willson & Watson, 2000; Vásquez, Crespo & Ring, 2003; Zavala Rivas, Andrade & Reidl, 2008): *confrontative* (C), direct, aggressive, risk or hostile actions; *distancied* (D), not thinking about the event or avoiding the situation; *self-control* (SC), controlling or regulating its own feelings, emotions and actions; *social support* (SS), look for the support of other people through advice, comprehension, information and empathy; *accept responsibility* (AR), generate actions by oneself to find the best way to solve the situation; *avoidance* (A), evade from the problematic situation saying that he or she wished it had not taken place; *problem solution* (PS), solve the situation consciously, analytically and centered in the problem; *positive reframing* (PR), establish a positive meaning to the situation and then grow as a person.

However, the WOC theory refers to the way of coping with stressing events without referring specifically to the PTSD. Despite, one of the four types of PTSD symptoms is intrinsically related to stress: HA (López-Ibor & Valdés, 2008). The above could explain the findings linking WOC-A with PTSD (Glass Flory, Hankin, Kloos & Turecki, 2009; Oflaz, Hatipoglu & Aydin, 2008; Tiet, Rosen, Cavella, Moos, Finney & Yesavaje, 2006).

As they are difficult to predict and do not occur continuously, there are only a few studies on the WOC in catastrophic events. This is relevant as Lazarus and Folkman recommend performing measurements of the WOC in stressing events which are common to the entire population, thus avoiding expected differences between the people experiencing different stressing events and with different intensities. This was the strategy followed by López-Vásquez and Marván (2004) after the 1985 earthquake in Mexico and by Glass and his collaborators (2009) after the hurricane Katrina; in both cases, the findings include the positive effects of WOC-A in the stress after the catastrophes, that is, as the use of the strategy increases, the PTSD symptoms also increase.

For this reason, given the context after the 27-F, there is an important opportunity to attain more knowledge on how the WOC affect the PTSD, main health problem after a catastrophe (Figueroa, González & Torres, 2010), through the creation of a model explaining and helping to predict its appearance. It is also important to always consider the need to prevent the appearance of these types of disorders and promote mental health in inevitable, unpredictable and incontrollable events, which most likely will occur again in the near future.

Method

Participants and procedure

The 304 participants in this study, all adults from both sexes, come from 8 different populations which experienced the 27-F in the Metropolitan and Maule regions: 16 public school teachers from Constitucion (city affected by the earthquake and tsunami); 107 parents from the same school; 75 employees from the Constitucion Health Center; 15 employees from a Talca Public Services Office (city affected by the earthquake; 10 teachers from a subsided educational establishment from Santiago (city affected by the earthquake); 29 pedagogy students from a Santiago private university; 22 pedagogy students from a Santiago public university; and 30 psychology students from a Talca university.

All participants were selected through a Non-Probability Convenience Sampling (León & Montero, 2004). It is worth mentioning that all these participants experienced the 27-F and were living in the regions affected by this event when the measuring was performed. Also, the samples from teachers, parents, employees and university students represent the general population and the samples from the Health Center represent a specially vulnerable group (Figueroa, González & Torres, 2010; Figueroa, Marín & González, 2010).

Instruments

Davidson Scale of Trauma (DST): Each item corresponds to each one of the 17 DSM-IV symptoms grouped as per the RE, AN y HA criteria. For each item, the person performs two assessments both in the following scale of 0 (never/nothing) to 4 (daily/extreme) points: one for the frequency (number of times it has happened) and other for the intensity (magnitude or gravity) with which the person experiences the symptom. The minimal possible score is 0 for the total scale and for each dimension, while the maximum is 136 for the total scale and from 32, 56 and 48 respectively for each one of the dimensions. A score higher or equals 40 points is considered as limit in order to determine if a person presents PTSD (Bobes et al., 2000; Davidson et al., 1997).

Ways of Coping Questionnaire (WOCQ): This instrument is made up of 66 items reflecting thoughts and actions used for coping. The WOCQ items which are grouped in 8 dimensions and coincide with the ways each person performs cognitive efforts to cope with the stressing events described previously (González et al., 2007; Sinha et al., 2000; Vásquez et al., 2003; Zavala, et. al., 2008).

Analysis Plan

At first, a descriptive analysis of the total of PTSD symptoms measured with the DST scale will be performed, aiming at knowing the general behavior of the sample as for the total of symptoms. Secondly, a descriptive statistics with the measures including each one of the 8 WOC measured with the WOCQ and the 3 types of PTSD symptoms measured with DST will be carried out; this is done in order to know the behavior of subscales within the ranges established in its measurement scale, thus simplifying its interpretation. Then, Pearson correlations to know the relation structure between the variables will be performed.

Thirdly, 4 Multiple Lineal Regression analysis (MLR; stepwise method) will be performed, in which the independent variables will be each one of the 8 types of WOC; this method will determine which WOC explain best the 4 dependent variables "total DST", RE, AN and HA. For this, the significant standardized regression coefficient values (b) and the percentage of variance explained (R^2) by the model will be determined. The objective is to find an explanatory and predictive model of the PTSD symptoms from the WOC. In parallel, the completeness of the Independence Assumption (Durbin-Watson "DW" between 1.5 and 2.5) and of the collinearity condition (variance inflation factor "VIF" less than 10, condition indexes "CI" less than 15, and tolerance index "To" close to one 1) will be confirmed in order to assure the quality of the models (Pardo & Ruíz, 2005).

Finally, based in the best predictive models of the three types of PTSD symptoms coming as result from the MLR, a

structural equation model (SEM) will be performed, which will value simultaneously the fit of the obtained models. If the statistics below are found in the following limits the model will be considered as one presenting good adjustments: *CMIN/DF*<3, *RMSEA*<.05, *NFI*>.9, *CFI*>.9 and *PNFI*>.5 (Hair, Anderson, Tatham & Black, 2004). Also, it is expected that all model regression and correlation parameters are significant (*p*<.05). All the analysis will be carried out using the SPSS program version 15, except for the SEM, to which the AMOS program version 16 will be used.

Results

The descriptive statistics are found in Table 1 (means, standard deviations, minimum, maximum and percentages) for the DST scale total and for the averages of each one of the DST scale 3 dimensions and the WOCQ scale 8 dimensions. Among the descriptive results it is important to note the total of symptoms measured by the DST scale, the results show that at least 29% of the people who answered the questionnaire are over the 40 points limit established to be considered as PTSD.

Regarding the structure of the correlations between the measured variables, there are three types of results. First, the total of symptoms measured by the DST is strongly related with the measurements of its 3 dimensions and with the ones of the WOCQ 4 dimensions. Secondly, the WOCQ dimension averages are closely related among themselves with the same 4 dimensions mentioned previously. And, thirdly, the 8 WOCQ dimensions are all related among themselves significantly (see table 2).

Once the significant correlations are identified a question arises: is it possible to explain the increase or decrease of PTSD symptoms measured from the DST scale total and the average of its dimensions, from the averages of the WOCQ 8 dimensions? As such, by performing the MLR to explain the total DST, we know that there are 2 WOCQ variables which explain in a significant way: A (β=.468; *p*<.01) and PS (β=−.148; *p*<.01); this model explains 19% of the total scale variance (R^2=.191) and complies with the Independence Assumption (*DW* = 1.8).

For the DST dimensions AN and HA, the models are very similar. One one hand, A (β=.468; *p*<.01) y PS (β=−.159; *p*<.01) explains significantly the 19% of the AN (R^2=.191) total variance, complying with the Independence Assumption (*DW*=1.9). In a very similar fashion, A (β=.440; *p*<.01) y PS (β=−.128; *p*<.05) explains significantly the 17% of the AN (R^2=.168) total variance, complying with the Independence Assumption (*DW*=1.8). However, the dimension RE case is something different. Only the dimension A (β=.440; *p*<.01) of the WOCQ scale explains the 9% of the RE (R^2=.092) variance total, complying with the Independence Assumption (*DW*=1.9; see Table 3).

Regarding the collinearity condition, it is possible to say that the independent variables from the 4 models are not sufficiently related among themselves (*FIV*=1.1; the highest *CI*=5.9; *To*=0.9). So, this issue is discarded. To summarize the previous findings, see the following 4 formulas allowing the prediction of the dependent variables scoring of each model:

$$Y\text{Total DST}=14.546+24.047\times X_A-6.387\times X_{PS} \qquad (1)$$
$$Y_{RE}=.480+.519\times X_A \qquad (2)$$
$$Y_{AN}=.274+.692\times X_A-.198\times X_{PS} \qquad (3)$$
$$Y_{HA}=.477+.821\times X_A-.204\times X_{PS} \qquad (4)$$

Where: YTotal DST is the total of PTSD symptoms measured with the DST scale for each participant; YRE, YAN y YHA are the means of the DST RE, AN and HA dimensions for each participant; XA y XPS are the means of the A and PS WOCQ dimensions for each person.

Table 1: Descriptive statistics for Total DST, 3 dimensions of DST and 8 dimensions of WOC.

	M	SD	Min	Max	Perc 14	Perc 29	Perc 43	Perc 57	Perc 71	Perc 86
Total DST	29.1	25.0	0.0	136.0	5.0	11.1	19.0	27.0	40.0	57.4
RE	0.9	0.9	0.0	4.0	0.3	0.4	0.6	1.0	1.4	2.0
AN	0.7	0.7	0.0	4.0	0.0	0.1	0.4	0.6	0.9	1.5
HA	1.0	0.9	0.0	4.0	0.0	0.3	0.6	1.0	1.4	2.1
A	1.0	0.5	0.0	3.0	0.5	0.6	0.8	1.0	1.2	1.5
D	1.2	0.5	0.0	3.0	0.7	1.0	1.1	1.3	1.5	1.7
PS	1.4	0.6	0.0	3.0	0.7	1.0	1.3	1.5	1.7	1.9
SC	1.3	0.4	0.0	2.7	0.9	1.1	1.3	1.5	1.5	1.9
PR	1.5	0.6	0.0	3.0	0.9	1.1	1.4	1.6	1.9	2.2
AR	1.5	0.5	0.0	3.0	1.0	1.3	1.5	1.5	1.8	2.0
SS	1.3	0.6	0.0	3.0	0.7	0.9	1.2	1.3	1.7	2.0
C	1.4	0.6	0.0	3.0	0.8	1.0	1.2	1.4	1.6	2.0

Table 2: Pearson correlations between Total DST, 3 dimensions of DST and 8 dimensions of WOC.

	RE	AN	HA	A	D	PS	SC	PR	AR	SS	C
Total DST	.866 **	.923 **	.932 **	.420 **	.218 **	.003	.156 **	.214 **	-.022	.064	.076
	RE	.720 **	.729 **	.308 **	.120 *	.001	.120 *	.145 *	.006	.064	.024
		AN	.773 **	.416 **	.230 **	-.008	.162 **	.209 **	-.069	.052	.060
			HA	.402 **	.218 **	.012	.137 *	.215 **	.01	.060	.106
				A	.620 **	.322 **	.432 **	.477 **	.122 *	.317 **	.388 **
					D	.400 **	.504 **	.619 **	.229 **	.351 **	.318 **
						PS	.517 **	.471 **	.451 **	.641 **	.715 **
							SC	.440 **	.267 **	.347 **	.422 **
								PR	.338 **	.444 **	.420 **
									AR	.335 **	.274 **
										SS	.597 **

Note: ** *p* < .01.
* *p* < .05.

Table 3: Parameters of significant MLR models to explain Total DST and 3 dimensions of DST.

	Constant		A				PS			
	B	SD	B	SD	β	t	B	SD	β	t
Total DST	14.546	3.706	24.047	2.807	.468	8.567	-6.387	2.360	-.148	-2.706
RE	.480	.100	.519	.092	.308	5.629	…	…	…	…
AN	.274	.107	.692	.081	.468	8.567	-.198	.068	-.159	-2.915
HA	.477	.135	.821	.102	.445	8.050	-.204	.086	-.131	-2.375

Finally, the SEM model through which it is possible to explain the three types of PTSD symptoms measured with the DST scale from the WOC which were significant in the MLR (PS and A) model has the following adjustment statistics: *CMIN/DF*=116.465, *RMSEA*=.617, *NFI*=.287, *CFI*=.282 and *PNFI*=.115. All regression and correlation parameters estimated for the model proved to be significant (see figure 1).

Discussion

The most important finding of this study lies on the fact that it is possible to predict to a certain degree the number of PTSD symptoms from the WOC different people have. In particular, there are two WOC which explain approximately 20% of the symptom variations: avoidance (A) and problem solution (PS). By interpreting formula number 1, the increase of A and the decrease of PS imply simultaneously the increase of PTSD symptoms. In other words, people presenting more symptoms may present a stress coping strategy based in avoidance and not based on solution planning. This is similar to what has been found by other authors (Glass et al., 2009; López-Vásquez & Marván, 2004; Oflaz et al., 2008; Tiet et al., 2006), however it incorporates something new: the PS strategy which in this case came up as significant and of negative sign. Hence, solution planning while facing stressing stimulus could mitigate in part the PTSD symptoms.

The above is confirmed by the correlation structure found among the WOC dimensions, the types of PTSD symptoms and its totals measured by the DST scale (see table 2). All of them coincide with the findings from the MLR model, except for the PS and PTSD symptoms correlation in both the total and in its 3 types. This explains why the parameter estimation procedure for correlations is different in comparison to the MLR (the first compares the variables two by two without considering the others, which does happen in the second; Pardo & Ruiz, 2005).

Figure 1: Initial SEM based on MLR direct results only (standardized version).
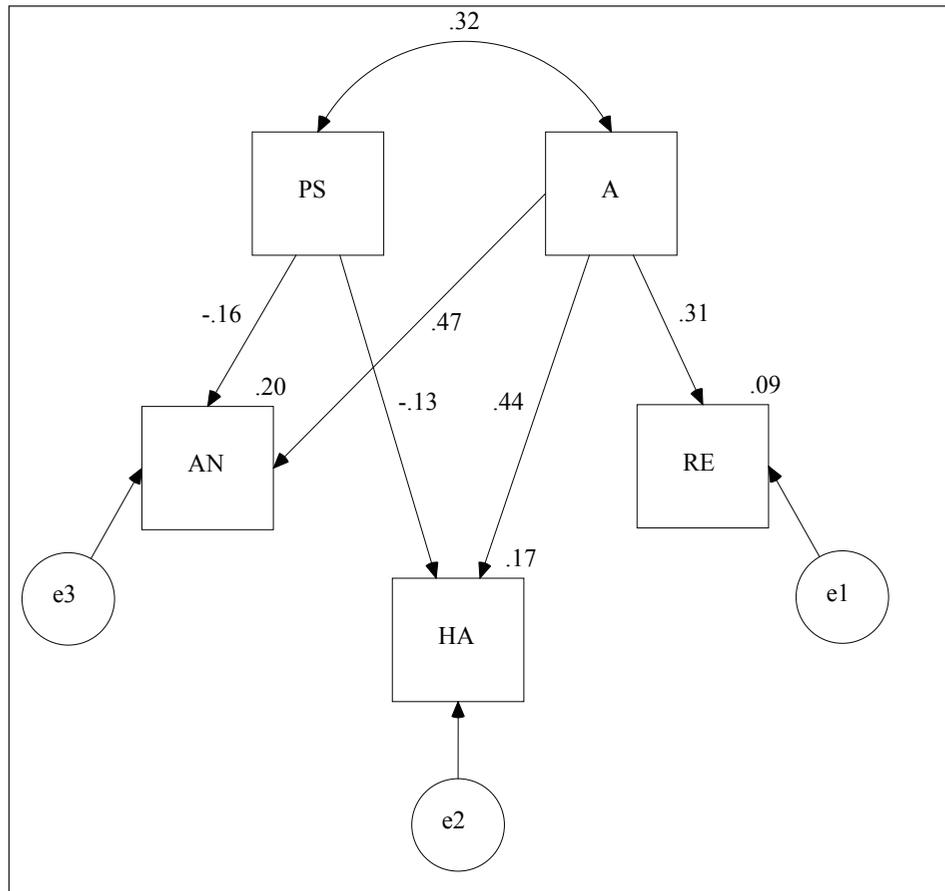
Considering this and to propose explanatory models, the important is to estimate the behavior of all variables together in function of the PTSD symptoms, and this is possible through the MLR. The validity of the models also support the correlations existing between the total of the DST scale and the 3 types of symptoms observed with its predicted versions, as all are significant ($p<.01$): $r=.443$ to Total DST; $r=.309$ to RE; $r=.309$ to AN; y $r=.402$ to HA.

These formulas have an interesting applied value. For instance, through the knowledge of the strategy types people use to cope with stressing events it is possible to know at first hand the probability of developing PTSD before the traumatic events actually occur. In this sense, performing psychosocial interventions so that those people can develop coping strategies based in the planning and not avoidance is an interesting technological tool that might be applied in clinical, social and educational environments.

However, the practical applications are not valid if there isn't a theoretical model supporting them. From this perspective, it is possible to explain the previous results by integrating the stress coping theory (Folkman, Lazarus, Gruen & DeLongis, 1986; Lazarus, 2000; Lazarus &

Folkman, 1984) with neuroscience findings regarding the creation of traumatic memories (Peres, McFarlane, Nasello & Moores, 2008), with the characteristics of the PTSD symptoms (López-Ibor & Valdés, 2008) and with the covert conditioning theory (Cautela, 1986; Leiva & Gallardo, 2011; Wolpe, 1958). Folkman et al., (1986) pointing that the cognitive assessment performed on the stressing situation and the way to cope with the event has two stages: in the first, the stressing event is perceived as a threat, damaging, loss or challenge; in the second, the person analyses its resources to cope with the issue and determines if they are enough or not; in a third stage the person analyses in more depth the environment information, generating a change in the event assessment, which can be perceived not as a threatening situation but rather as a personal challenging situation.

However, for the PTSD case, the stressing event (in this case, traumatic) is no longer present; in fact, one of its diagnostics criteria is the existence of symptoms a month after the traumatic event has taken place (López-Ibor & Valdés, 2008). So, what might be happening? Neuroscience findings based on neuroimages show that traumatic events

are not processed in the same way any other event in the daily life of a person is.

They go directly to the situationally accesible memory (SAM; Hellawell & Brewin, 2002) which is a system that does not depend on the hippocampal-frontal as the verbally accessible system (VAM) does. This system stores the autobiographic memories and is responsible for integrating them and also for the awareness (Schacter & Buckner, 1998; Verfaellie & Keane, 1997). The fact that traumatic memories are registered by the SAM makes its representation to be disintegrated; this is also followed by an intense emotional activity and by the amygdala. Hence, they are stored as difficult emotional memories to tell and integrate in the personal history, to an extent that they can be deleted or blocked through amnesia episodes (Loftus & Polage, 1999; Peres, McFarlane, Nasello & Moores, 2008; Peres, Mercante & Nasello, 2005).

The above explains why the PTSD symptoms act as the cognitive system´s internal or covered stimulus, that is, images or memories coming from the conscience and that

person is able to control (RE), without the presence of the traumatic event that created them. These RE are kept and increased by the SAM intense emotional activity, evidenced by the efforts that the person makes to keep them away from the conscience and its subsequent numbing mood (AN) as well as the generalized hyper-activation state (HA). In terms of covert conditioning (Wolpe, 1958), the covert stimulus AN and HA, produce a covert response, the RE.

The role of the WOC in this symptom system is important, as it increases or decreases the PTSD symptomatology. This was proposed by Lazarus and Folkman (1984) regarding the WOC-A: coping with the stressing event avoiding, denying or getting away from it could bring psychological problems to the person, as this strategy is centered in emotions and not in the problem. In this sense, the person may apply the WOC-A as well as the WOC-PS to cope with the stimulus and covert answers which make up the symptoms. By using the first strategy, the person carries out cognitive efforts to not think in the RE and do not increase the psychophysiology activation and dullness responses.

Figure 2. Second SEM based on MLR results and hypothetical causal relations (standardized version).
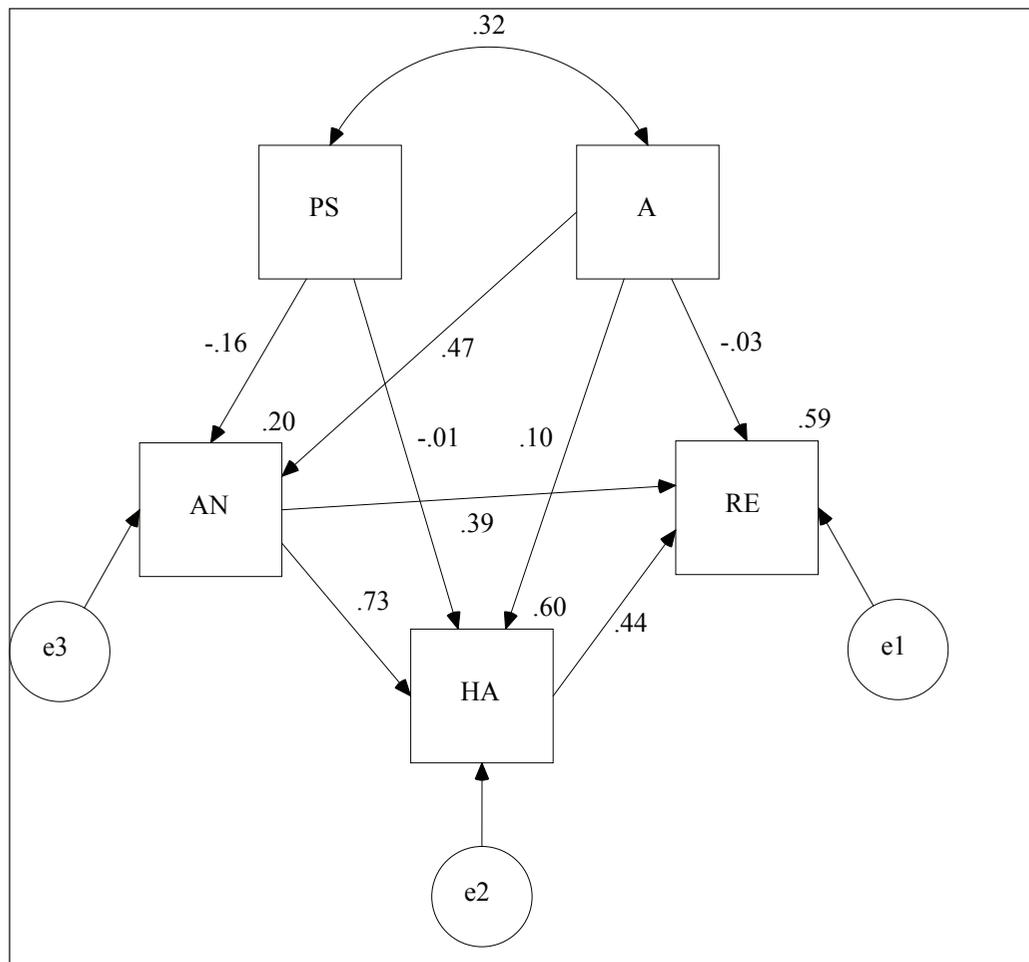
This would then increase the PTSD symptomatology. In turn, by applying the PS strategy the person stops avoiding the RE, accepting them, and making them more objective, diminishing emotional responses. This could facilitate the SAM and VAM emotional memories step, thus decreasing the frequency and intensity of the symptoms.

The explanation above is shown graphically in figure 2 of the model. And it is confirmed empirically by its adjustment indicators, much better than the ones proposed in figure 1: *CMIN/DF*=.058, *RMSEA*=.000, *NFI*=.999, *CFI*=.999 and *PNFI*=.100. However, there are two regression parameters which did not result significant: the PS over HA (β=−.011; p>.05) and A over RE (β=−.031; p>.05).

Further to this, the WOC based in PS would solely have a mitigation effect on the AN symptoms group, whilst the strategy based in A would have effects on both the AN and HA symptoms, but not on the RE. Based on the content of WOCQ items applied to the explanation of the three types of PTSD symptoms, the stimulus and the covert responses would be organized within the cognitive system of each person as follows. The AN and HA symptoms are covert stimulus which produce RE covert responses. On this system, the WOC-PS says that having type thoughts "I will think about this to understand it better", "I will plan to do something and then will do it" or "I will search a new way to understand this feeling I have", will diminish the AN symptoms. While the WOC-A indicates that to have thoughts like "it is better to wait for time to heal my pain", "to not think about what is happening to me I will sleep, eat, drink, use drugs or get away from the others" or "what is happening to me is not important", will increase the AN and HA symptoms. Moreover the explanations, as they are still attempts, it is clear that the second model is an interesting start point to explore possible causal relations between the types of PTSD symptoms and how do the WOC affect them.

And as for the descriptive statistics of the sample of people analyzed, there are two important observations from a mental health perspective. On the one hand, there are no major differences between the average of the 3 types of symptoms and the 8 WOC averages, which indicate a general behavior with a similar way of the variables without considering what they have in common. On the other hand, by analyzing the DST scale total, 29% of the people who answered the questionnaire would present PTSD, that is, they have over 40 points in the scale. This data related to the prevalence of PTSD in the Chilean population 6 months after the 27-F is similar to what has been found in other studies (Leiva-Bianchi, 2011; MIDEPLAN, 2011) and highlights again the PTSD as a public health issue in Chile. Hence, the advancements in knowledge regarding strategies to mitigate it are very important, and as such, this study may be considered as a supporting effort.

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