Adaptación argentina de la Escala de Foco Temporal. Evidencias de validez de constructo, confiabilidad y validez externa

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Resumen

El foco temporal es la atención que las personas dedican a pensar en el pasado, presente y futuro. El objetivo de este estudio fue realizar la adaptación argentina de la Escala de Foco Temporal y analizar sus propiedades psicométricas. Se hicieron dos estudios. Primero, se puso a prueba la estructura factorial, consistencia interna y confiabilidad (n=190). Para evaluar la validez externa se utilizaron el ZTPI, la escala de autocontrol y la de malestar psicológico K-10. Entre los principales resultados, el análisis paralelo sugirió la estructura de tres factores que explicaron el 72% de la varianza total (KMO=.80; $\chi^2_{(66)}$=1261.7; p<.001) y el análisis factorial semi-confirmatorio arrojó medidas de ajuste adecuadas (CFI=.97, RMSEA=.05). La confiabilidad se probó utilizando los coeficientes omega de McDonald y alfa de Cronbach (valores de .81 a .89). Las correlaciones halladas permiten afirmar que el foco temporal pasado se relaciona con el ZTPI pasado negativo y K-10 (r=.58 y .46; p<.01); el foco presente con el ZTPI presente fatalista, K-10 y autocontrol (r=-.20, -.23 y .22; p<.01); y el foco futuro con la K-10 y ZTPI futuro (r=.21 y .22; p<.01). En el segundo estudio (n=660) se realizó un análisis factorial confirmatorio con la estructura de tres factores, aunque hubo problemas con el ítem 10. Después de eliminarlo, el modelo con once ítems mostró un ajuste aceptable (χ^2/gl=4.27, CFI=.95, GFI=.95, NNFI=.94, RMSEA=.07). Los coeficientes de consistencia interna fueron superiores a 0.76. En conclusión, este estudio proporciona una versión argentina aceptable de la Escala de Foco Temporal.

Palabras clave: tiempo, foco temporal, perspectiva temporal, adaptación, análisis factorial confirmatorio

Argentinian adaptation of the Temporal Focus Scale. Evidence of construct validity, reliability, and external validity

Abstract

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Temporal focus is the attention individuals devote to thinking about the past, present, and future. The goal of this study was to validate the Temporal Focus Scale for Argentina and analyze its psychometric properties. Two studies were carried out. Firstly, the factor structure, internal consistency, reliability, and external validity were tested (*n*=190). To assess external validity, the ZTPI, the self-control scale and the psychological distress scale K-10 were used. Among the main results, the parallel analysis suggested the structure of three factors that explained 72% of the total variance (KMO=.80; $\chi^2_{(66)}$=1261.7; *p*<.001) and the semi-confirmatory factor analysis yielded measures proper setting (CFI=.97, RMSEA=.05). Reliability was tested using McDonald's omega and Cronbach's alpha coefficients (values from .81 to .89). The correlations showed that past focus is related to ZTPI negative past and K-10 (r=.58 and .46; *p*<.01); present focus with ZTPI fatalistic present, K-10 and self-control (r =-. 20, -.23 and .22; *p*<.01); and future focus with K-10 and ZTPI future (r = .21 and .22; *p*<.01). In the second study (*n*=660) a confirmatory factor analysis was performed with the three-factor structure, although there were problems with item 10. After removing item 10, the model with eleven items showed an acceptable fit (χ^2/gl =4.27, CFI=.95, GFI=.95, NNFI=.94, RMSEA=.07). The internal consistency coefficients were higher than 0.76. In conclusion, this study provides an acceptable Argentinian version of the Temporal Focus Scale.

Keywords: time, temporal focus, time perspective, adaptation, confirmatory factor analysis

Introduction

The concept of time is fundamental to structure people´s lives. Objective time perception is related to the ability to anticipate future situations and plan behaviors (e.g.: driving behaviors, the calculation of time to be on time for an appointment, and career planning). Moreover, subjective time is related to the way in which people perceive time passing, this is, how short or long a certain period is perceived; also, time perspective, which includes the subjective attitude from which a person sees his current situation including his perception of past and future (Grondin, 2019). This study focuses on subjective time which is considered a personality aspect related to many variables and underlying other processes and dimensions of people´s lives. For example, it has been related to

academic efficacy (Chishima et al., 2017); anxiety and depression (McKay et al., 2017); psychological distress (Walg et al., 2020); and alcohol use (McKay et al., 2012). This background shows that subjective time has psychological consequences and should be studied deeply.

Consequently, time has been a relevant topic in psychological research. Nowadays there are a wide variety of theories and different kind of instruments to measure psychological time. Among the most well-known scales, we can find the Future Anxiety Scale (Zaleski, 1996), the Temporal Orientation Scale (TOS; Holman & Silver, 1998) and the Zimbardo Time Perspective Inventory (ZTPI; Zimbardo & Boyd, 1999). These questionnaires have been used widely, but there is still a long way to go because most of the literature focuses on one predominant time orientation and many studies focus on the future frame (Ortuño et al., 2017). Moreover, some scales have shown psychometric anomalies and there are some critics towards them (Adams, 2009).

In 2009 Shipp et al. developed a new measure: The Temporal Focus Scale (TFS). Temporal focus (TF) is defined as "the attention individuals devote to thinking about the past, present, and future, and the concept is important because it affects how people incorporate perceptions about past experiences, current situations, and future expectations into their attitudes, cognitions, and behavior" (p.1). It describes the extent to which people characteristically devote their attention to perceptions of the past, present, and future (Bluedorn, 2002). TF has a particular emphasis on cognitions and, although it may seem similar, it differs from the concepts of time perspective, which includes a combination of affect and cognition towards time frames (Zimbardo & Boyd, 1999); and temporal attitude, which is an affective component and refers to one's attitude towards the content of their past, present, and future (Nuttin, 1985).

The construct of TF is framed within the socio-cognitive theory. It refers to a cognitive aspect, thinking about a determine time, and affects attitudes, decisions, behaviors, affect, and motivation (Bandura, 2001; Carstensen et al., 1999; Fung & Carstensen, 2006). TF is related to time perspective, personality traits, life satisfaction and positive affect, career

adaptability job related behavior, and risk-taking behavior (Chishima, McKay, & Murakami, 2017; McKay et al., 2012; Rush & Grouzet, 2012; Shipp et al., 2009; Strobel et al., 2013; Zacher, 2016).

To develop the TFS Shipp et al. (2009) carried out four studies with four different samples. First, they evaluated the factor structure of TFS. Secondly, they confirmed the factor structure and compared TFS with another measures, analyzing TFS nomological validity. Third, they studied external validity relating TFS with another temporal measures. Gathered together, the studies resulted in a valid and reliable new measure of 12 items with a 7-point Likert scale. TFS measures three dimensions of temporal focus: past, current, and future. There are many benefits of this scale in relationship to previous measures of psychological time. Among them, the items are written in a simple way, avoiding positive or negative evaluations about the different time frames. Also, the scale is shorter than ZTPI (56 items) and TOS (28 items). Thus, avoiding practical obstacles resulting from long scales. Most importantly, previous scales showed psychometric weaknesses, such as low reliability estimates, but TFS has shown very good psychometric evidence.

Two adaptations of the TFS were made. The first, in Ireland by McKay et al. (2012), and the second in Japan by Chishima et al. (2017). The three versions, American, Irish, and Japanese reported acceptable psychometric evidence. A resume of the three studies is presented in table 1. Among the most relevant aspects, the American version has 12 items, but the other two have 11 items because in both studies there were problems with item 10 which was eliminated. Regarding internal consistency, the Irish version reported an unacceptable value of Cronbach Alpha for current focus (α=.58). The three studies did confirmatory factor analysis (CFA) that showed acceptable fit indices. Moreover, TFS has been used in Canada (Rush & Grouzet, 2012), Germany (Strobel et al., 2013) and Australia (Zacher, 2016).

Table 1.

Revision of the different versions of the Temporal Focus Scale

Authors, country, and language	Sample	Analyses	Internal consistency

- Shipp et al. (2009) - United States - English	Study 1: 476 adults from 25 to 52 years old	- CFA (3 factors, 12 items)	Past: α = .89 Current: α =.74 Future: α =.86
	Study 2: 389 adults from 18 to 47 years old	- CFA (3 factors, 12 items) - Convergent validity (ZTPI and Temporal Orientation Scale)	Past: α = .88 Current: α =.78 Future: α= .86
	Study 3: 195 adults from 19 to 55 years old	- Discriminant validity (temporal depth, polychronicity, hurriedness, and pacing)	Past: α = .91 Current: α =.80 Future: α =.82
	Study 4: 611 adults from 18 to 77 years old	- CFA (3 factors, 12 items) - Test-retest	Past: α = .90 Current: α =.83 Future: α =.89
- McKay et al. (2012) - Ireland - English	731 school students	- Principal component analysis - Parallel Analysis - CFA (3 factors, 11 items, item 10 was eliminated) - Associations with other scale (Adolescent Alcohol Involvement Scale)	Past: α = .77 Current: α = .58 Future: α = .73
- Chishima et al. (2017) - Japan - Japanese	977 adults from 18 to 24 years old	- CFA (3 factors, 11 items, item 10 was eliminated) - External validity (ZTPI and Time Attitude Scale) - Test-retest	Past: α = .89/ ω = .89 Current: α =.73/ ω = .74 Future: α =.79/ ω = .81

Current study

Up to our knowledge, there are not Spanish versions of the TFS. Considering all the goodness of this scale, we think it is relevant to have a version in Spanish language. Specifically, the justification of doing an Argentinian adaptation lies in the good psychometric properties reported in previous studies (Chishima et al., 2017; McKay et al., 2012; Shipp et al., 2009) in comparison to other measures of psychological time such as ZTPI or TOS which have shown psychometric problems (Adams, 2009). Moreover, the TFS could be used in applied psychology, for example with clinical purposes, because it has shown to be related to anxiety, depression, and alcohol use, among others. So, TFS may have practical implication which shows how useful and benefit it would be to have a local version of the scale.

The main objective of this article was to adapt the TFS for Argentina, including the translation and evidence of construct validity, reliability, and external validity. Regarding the last objective, this study intended to describe the association of temporal focus and time perspective, self-control, and psychological distress. It is hypothesized that the operationalization of the temporal focus proposed by Shipp et al.

(2009) is verified in Argentina. Also, referring to the external criteria measures, it is hypothesized there is an association between TFS and ZTPI, self-control and psychological distress. Specifically, past focus is positively and strongly related to ZTPI past negative and psychological distress, and positively and weakly related to ZTPI past positive. Current focus is positively related to ZTPI present hedonistic and present fatalistic, and negatively related to psychological distress. Future focus is positively related with ZTPI future, psychological distress, and self-control.

For these purposes, the International Test Commission (ITC, 2017) recommendations for translation and adaptation of questionnaires were followed. Firstly, permission to validate the questionnaire was given by the original author (A. Shipp, personal communication May 21, 2020). Then, for the linguistic adaptation, two independent translations were done and the agreement between evaluators was analyzed, arriving to a final version. After doing a pilot test with 50 university students, two studies were carried out. In Study 1 factor structure, internal consistency, reliability, and external validity were tested. In study 2 a new sample was tested, and CFA was conducted to confirm the structure of the scale. Reliability was also tested.

This study was part of a major project ran with a scholarship of *Consejo Nacional de Investigaciones Científicas y Técnicas* (CONICET) and was approved by its committee. There was absence of conflicts of interest.

Study 1

The aim of Study 1 was twofold: a) to obtain evidence of construct validity for the translated version of TFS; and b) to provide evidence of internal structure and external validity of Argentinian TFS.

Method

Participants

Intentional and non-probabilistic sampling was used. The final sample consisted of 190 participants (55% female), aged from 18 to 56 years old (M=36.68; SD=12.86), living in different zones of Argentina (34% from the city of Buenos Aires, 41% from the surroundings of Buenos Aires, and 25% from another cities from Argentina). Concerning the educational level, 42% completed the higher level, 36% the intermediate level and 22% had postgraduate studies. Exclusion criteria included people in psychiatric treatment

and people aged under 18 or above 65 years old. Also, participants should be living in Argentina. Participation was voluntary, participants did not receive any compensation, and the confidentiality of the responses was guaranteed.

Measures

Temporal Focus Scale (TFS; Shipp et al. (2009). To assess temporal focus we used an Argentinian translation of the TFS. It consists of 12 items rated on a 7-point Likert scale (*1*=never; *3*=sometimes; *5*=frequently; *7*=constantly). It has three subscales, each composed by 4 items: past focus, current focus, and future focus. The original version of the scale presented acceptable reliability of each subscale (α=.73 to α=.91) and showed a good fit in the CFA (RMSEA=.07; CFI=.96; TLI=.95; SRMR=.06).

Zimbardo Time Perspective Inventory (ZTPI*;* Zimbardo & Boyd, 1999). We used the short Argentinian version of the scale (Germano & Brenlla, 2020). It consists of 29 items that assess five domains of time perspective: present hedonistic, which reflects a hedonistic, risk-taking attitude toward life; present fatalistic, that is related to current experiences generating anxiety and fear; past negative, which reflects a general negative, aversive view of the past; past positive, that reflects a warm attitude towards the past; and future, which reflects a general future orientation. Responses include a five-point Likert scale (from *1*=very untrue to *5*=very true). The Argentinian adaptation of the inventory showed acceptable reliability of each domain (α=0.60 to α=0.84).

Brief Self-Control Scale (BSCS; Tangney et al., 2004). Self-control was assessed using the Argentinian BSCS (Garrido et al., 2018). The scale contains 13 items ranked on a five-point scale (from *1*=not at all to *5*=very much). It is a self-report unidimensional scale which assesses the global capacity of self-control. High scores indicate higher levels of self-control. The Argentinian BSCS showed acceptable reliability (ω=0.81).

Psychological Distress Scale (K-10; Kessler et al., 2002). We used the Argentinian version of the K-10 (Brenlla & Aranguren, 2010). Respondents are asked how much over the past month they experienced the symptoms presented in the 10 items ranked with a five-point Likert-type response format (from *1*=none of the time to *5*=all the time). It is a self-report unidimensional

scale which assesses the risk of presenting non-specific psychological distress - such as symptoms of anxiety or depression- during the last month. Low scores indicate lower levels of psychological distress. The Argentinian adaptation showed satisfactory evidence of reliability (α=.80).

Data Collection

Participants were contacted by e-mail or social media. They received a web link. After reading and accepting the informed consent, they were derived to the questionnaires. All the responses were anonymous. The data was collected between September and October 2019. Firstly, they were presented with an informed consent where the general purpose of the research was indicated, it was made explicit that their participation was anonymous and that the data would be used only for academic purposes. Also, they received an email from one of the researchers in charge for those participants who wanted more information. Once the person accepted the consent, he began to complete the self-report questionnaires in the following order: sociodemographic data questionnaire, TFS, K-10, BSCS, and ZTPI. All participants received the scales in the same order.

Statistical analyses

Firstly, to carry out the translation of the original version of the TFS into Spanish, the double translation procedure was used. It was oversaw by two specialists, a psychologist and an English teacher and translator. It consisted of: (1) translating each item from English to Spanish, (2) translating each item, again, from Spanish into English and (3) evaluate the terminological agreement between both versions of the scales. After the data was collected it was analyzed with the statistical software packages SPSS (v25) and Factor Analysis (Ferrando & Lorenzo-Seva, 2017).

To evaluate construct validity first an optimal parallel analysis was executed to explore the dimensionality of the set of variables, without establishing the number of dimensions (Timmerman & Lorenzo-Seva, 2011). Then a semi-confirmatory factor analysis was done. This kind of analysis allows to know a careful inspection of the residues, the RMSEA and the GFI, in addition to the indicators thrown in the classic exploratory factor analysis, such as KMO, Bartlett's sphericity test and factorial weight. This allows an ideal evaluation of the factor analysis

(Ferrando & Lorenzo-Seva, 2017). GFI values above .90 are taken as an acceptable fit and close to .95 as a good fit; RMSEA < .05 indicates good fit and values between 0.05-0.08 indicate an acceptable fit. KMO values above .80 are considered appropriate (Ferrando & Anguiano-Carrasco, 2010). Factor loading was evaluated as follows: values under 0.3 are considered insignificant; values between 0.3 and 0.5 are considered as minimum contribution, but are often accepted; and values between 0.5 and 0.7 are considered relevant (Martínez & Sepúlveda, 2012). For eigenvalues, only when values were above 1 the factor was kept (Pett et al., 2003).

Afterwards, following Raykov's recommendation (1997 cited in Viladrich et al., 2017), the reliability was tested using McDonald's omega and Cronbach alpha's coefficients. Values greater than .7 are considered acceptable when a new measure is being developed, the values greater than .8 when applied to research and higher values to .90 when scores are used to make decisions important issues that affect individuals (Nunnally, 1978 cited in Viladrich et al., 2017).

Then, external validity was evaluated by analyzing the correlation between TFS and ZTPI, BSCS, and K-10. An exploratory and descriptive analysis of all the variables included in the study was carried out calculating mean, deviation, skewness, and kurtosis. Also, the reliability of ZTPI, BSCS and K-10 was tested. It is essential to report the reliability index of the scales calculated with the current sample of the study to understand the scope of the results (Zimmerman & Zumbo, 2015).

Due to the sample size (N=190) and the fact that all the variables yielded values of skewness and kurtosis ± 2, the parametric Pearson r statistic was used (Fagerland, 2012). p <.05 was established as a criterion of significance. The effect sizes were considered following Cohen's criteria: small (≤0.10 and <0.30), medium (≤0.30 and <0.50) and large (≤.50 and <1.00) (Lalinde & Tarazona, 2018).

Results

Parallel analysis and semi-confirmatory factor analysis

The results of the optimal parallel analysis of the TFS indicated the presence of three dimensions. Then, a semi-confirmatory analysis was conducted. The Kaiser-Meyer-Olkin

(KMO) adequacy measure and Bartlett's sphericity test ensured the suitability of data for factor analysis (KMO=.80; $\chi^2_{(66)}$=1261.7; p<.001). These results suggest a good correlation among items and a good sampling adequacy, evidencing the pertinence of a factor analysis (Kaiser, 1970 cited in Ferrando & Anguiano-Carrasco, 2010). The principal axis method with direct oblimin rotation was used to extract the factors. Table 2 shows the factor loading for each item, eigenvalues, and total variance for each dimension of the scale. The three factors explained 72% of the total variance. All the items presented a factor loading above .47, except item ten which presented a psychometric anomaly because it loaded (>.30) in two factors, current and future. Eigenvalues were above 1 for the three factors. Goodness of fit statistics showed model adequacy (CFI=.97; RMSEA=.05).

Future focus correlated both with past focus (r=.32; p<.01), with a medium effect size; and present focus (r=.27; p<.01), with a small effect size. There was no significant correlation between past and present focuses (r=.103; p>.05).

Table 2.
Factor Analysis of the Temporal Focus Scale items

Item	Factor		
	Future focus	Current focus	Past focus
1. *Pienso en cosas de mi pasado.* [I think about things from my past.]			0.89
2. *Vivo mi vida en el presente.* [I live my life in the present.]		0.86	
3. *Pienso en lo que me deparará el futuro.* [I think about what my future has in store.]	0.78		
4. *Me concentro en lo que está sucediendo actualmente en mi vida.* [I focus on what is currently happening in my life.]		0.87	
5. *Me concentro en mi futuro.* [I focus on my future.]	0.74		
6. *Repito recuerdos del pasado en mi mente.* [I replay memories of the past in my mind.]			0.86
7. *Me imagino lo que me traerá el mañana.* [I imagine what tomorrow will bring for me.]	0.83		
8. *Mi mente está en el aquí y ahora.* [My mind is on the here and now.]		0.81	
9. *Reflexiono sobre lo que ha sucedido en mi vida.* [I reflect on what has happened in my life.]			0.47
10. *Pienso dónde me encuentro hoy.* [I think about where I am today.]	0.38	0.38	
11. *Pienso en mi infancia.* [I think back to my earlier days.]			0.69
12. *Pienso en los tiempos por venir.* [I think about times to come.]	0.90		
Variance (%)	34.64	22.28	15
Eigenvalue	4.15	2.67	1.80
Cronbach's α	.89	.81	.82
McDonald's ω	.89	.83	.83

Note. Loadings lower than absolute 0.30 were omitted.

Item analysis and reliability

Table 3 shows item analysis and internal consistency results. Coefficients for the three subscales were adequate (>.70) (Viladrich et al., 2017). The past focus dimension obtained an ω of .82 and α of .83. The current focus dimension obtained an ω of .81 and α of .83. The future focus dimension obtained an ω of 88 and α of .89. Thus, the three dimensions of the scale have good levels of reliability. However, it is important to note that in the current focus item 10 showed the lowest item-total correlation of all the scale, and, accordingly, its exclusion increases internal consistency indexes. Item 9 (past focus) also showed that if it is excluded internal consistency index could increase a little bit.

Table 3.
Analysis of Temporal Focus Scale items and internal consistency (*n* = 190)

						When item is excluded	
Item	Mean	SD	Skewness	Kurtosis	r IT-c (*)	Cronbach's α	McDonald's ω
Past focus							
1	3.60	1.93	0.63	0.13	.85	.73	.74
6	3.63	2.54	0.44	-0.56	.87	.72	.74
9	4.55	2.18	-0.13	-0.81	.69	.84	.84
11	3.61	2.73	0.43	-0.54	.81	.77	.81
Cronbach's α	.82						
McDonald's ω	.83						
Current focus							
2	5.08	1.54	-0.36	-0.30	.86	.71	.73
4	5.14	1.48	-0.34	-0.43	.87	.70	.73
8	4.72	1.81	-0.11	-0.71	.83	.74	.76
10	4.85	1.99	-0.44	-0.31	.66	.88	.88
Cronbach's α	.81						
McDonald's ω	.83						
Future focus							
3	4.85	2.26	-0.56	-0.10	.88	.84	.84
5	4.61	2.16	-0.23	-0.58	.82	.87	.87
7	4.44	2.42	-0.30	-0.55	.87	.84	.85
12	4.73	2.29	-0.33	-0.72	.88	.84	.84
Cronbach's α	.89						
McDonald's ω	.89						

(*) Item-total correlation.

External validity

Descriptive statistics and reliability for all the variables included in study are presented in Table 4. Regarding the TFS the media score of the current focus is the highest, followed by the future focus and the past focus which presented the lowest media score. The three dimensions presented values of skewness and kurtosis ± 1. On the other hand, the other variables included in the study presented values of skewness and kurtosis ± 2. Internal consistency, measured by Cronbach Alpha, showed values above .70 for all

variables, except for ZTPI past positive and ZTPI present fatalistic.

Table 4.
Descriptive statistics and internal consistency for TFS, ZTPI, BSCS and K-10

	M (SD)	Skewness	Kurtosis	α
TFS - Past focus	3.85 (1.23)	.53	.09	.82
TFS - Current focus	4.95 (1.04)	-.23	-.32	.81
TFS - Future focus	4.66 (1.31)	-.34	-.29	.89
ZTPI – Past positive	3.64 (.57)	-.54	.59	.58
ZTPI – Past negative	2.69 (.87)	.23	-.45	.84
ZTPI – Present hedonistic	3.05 (.71)	-.01	.01	.70
ZTPI – Present fatalistic	2.25 (.69)	.26	-.31	.61
ZTPI - Future	3.90 (.63)	-.93	1.99	.70
BSCS	46.06 (8.46)	-.21	-.24	.83
K-10	23.71 (8.05)	.72	.02	.91

To test external validity of the TFS each dimension (past, current and focus) was correlated with ZTPI, BSCS and K-10. Bivariate correlations are displayed in Table 5. The results indicated that past focus was positively associated with ZTPI past negative, with a large effect size; positively associated with ZTPI past positive, present hedonistic and present fatalistic, all with a small sizes effect; and positively associated with K-10, with a medium effect size. Regarding current focus, there was a positive association with ZTPI past positive and self-control, both with small effect sizes; and a negative association with ZTPI past negative and present fatalistic, and K-10, the three of them with small effect sizes. Finally, future focus showed a positive association with ZTPI past positive, past negative, future and K-10, all with small effect sizes; and a negative association with ZTPI present fatalistic, also with a small effect size.

Table 5.
Correlations between TFS, ZTPI, BSCS and K-10

	Past Focus	Current Focus	Future Focus
ZTPI Past Positive	.185*	.195**	.169*
ZTPI Past Negative	.582**	-.230**	.155*
ZTPI Present Hedonistic	.184*	-.021	.120
ZTPI Present Fatalistic	.164*	-.203**	-.149*
ZTPI Future	.078	.055	.221**
BSCS	-.101	.215**	.116
K-10	.463**	-.230**	.210**

* $p < .05$; ** $p < .01$

Study 2

The aim of Study 2 was to examine the factor structure of the original 12 items version of the TFS, and the internal structure of Study 1 by performing CFA.

Method

Participants and procedure

Intentional and non-probabilistic sampling was used. The final sample consisted of 661 participants (30% male) from 18 to 73 years old (*M* = 31.83; *SD* = 9.68) from different zones of Argentina (31% from the city of Buenos Aires, 47% from the surroundings of Buenos Aires, and 22% from another cities from Argentina). In relation to the educational level, 50% completed the higher level, 19% the intermediate level and 31% had postgraduate studies. Exclusion criteria included people in psychiatric treatment and people aged under 18 years old or above 65 years old. Also, participants should be living in Argentina. Participation was voluntary, participants did not receive any compensation, and the confidentiality of the responses was guaranteed. Procedure was similar of study 1, but participants only completed the TFS. The data was collected between February and March 2020.

Statistical analyses

Maximum likelihood estimation was employed for this analysis. Previous revision showed acceptable values of skewness for each item. To examine the fit of the models we used chi-square, and the following fit indices that are least affected by sample size: goodness-of-fit index (GFI), the comparative fit index (CFI), the non-normed fit index (NNFI), the root mean square error of approximation (RMSEA) and Aikake information criteria (AIC). GFI, CFI and NNFI values above .90 are taken as an acceptable fit and close to .95 as a good fit; RMSEA < .05 indicates good fit and values between 0.05-0.08 indicate an acceptable fit; AIC compare alternative models and lower values show a better fit (Ferrando & Anguiano-Carrasco, 2010; Schumacker & Lomax, 2015). CFA was carried by using AMOS 24. Reliability of the three subscales was also evaluated on this sample.

Results

Confirmatory factor analysis

Two models were carried out. Results can be seen in Table 6. Firstly, the results

showed that the three-factor model of the TFS with 12 items didn´t present a good fit. After revising the modification indices, item 10 was removed. Secondly, the new model with 11 items (four for past focus, three for current focus and four for future focus) presented acceptable fit indexes. Lower AIC values indicated that the three-factor model with 11-item provided a better fit than the 12-item model.

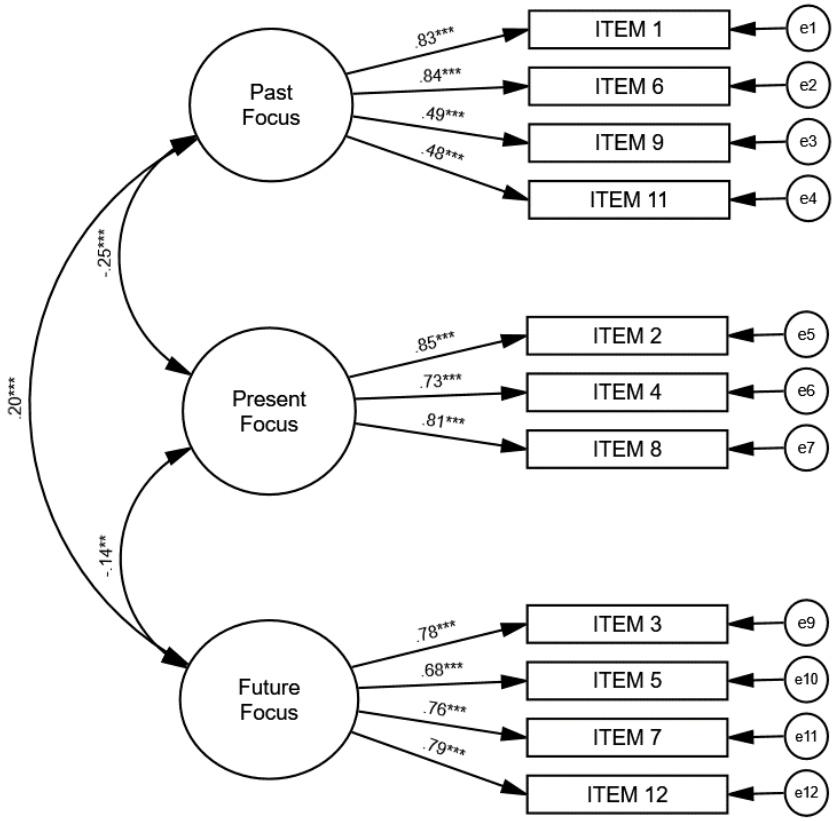
Table 6.
Fit indices for Temporal Focus Scale scores derived from confirmatory factor analysis

	$\chi 2$	df	$\chi 2$ /df	GFI	CFI	NNFI	RMSEA	AIC
Model 1 (12 items)	202,212***	52	3.889	.90	.88	.85	.10	254.212
Model 2 (11 items)	175,396***	41	4.278	.95	.95	.94	.07	225.396

*** $p < 0.001$

The standardized loadings indicated that the latent constructs were well represented by their indicators. Correlations between factors indicated a significant and negative relationship between current and past focuses (r = -.25, $p < .001$), and between future and current focuses (r = -.14, $p < .05$); and a significant and positive relationship between future and past focuses (r = .20, $p < .001$). The three correlations presented small effect sizes. The model is depicted in Figure 1. Regarding internal consistency, past focus presented an ω of .78 and an α of .76; current focus presented an ω of .84 and an α of .84; and future focus presented an ω of .84 and an α of .84. Thus, the three dimensions of the scale have good levels of reliability.

Figure 1.
The Path diagram of the Argentinian version of the Temporal Focus Scale.



Note. Standardized factor loadings are shown on the straight arrows, whereas factors' terms intercorrelations are shown on the curved arrows.
***p<.001; **p<.01

Discussion

This study aimed to validate the Argentinian version of the Temporal Focus Scale (Shipp et al., 2009) following the ITC recommendations (2017). To the best of our knowledge this is the third reported additional work on the factor structure of this scale: the first was Irish (McKay et al., 2012), and the second Japanese (Chishima et al., 2017). Furthermore, this is the first validation in Spanish, specifically done in Argentina.

Respecting the results of study one, the optimal parallel analysis indicated that the optimum number of components to be retained was three. The semi-confirmatory factor analysis showed adequate fit indices. Considering factor loadings, most of the items presented factor loadings above .5 in only one factor, which can be

considered relevant. Item 9 presented a factor loading of .47 which is considered as minimum contribution, but can be kept (Martínez & Sepúlveda, 2012). However, item 10 loaded in two factors, current (>.30) and future (>.30), presenting a psychometric anomaly. In addition, when calculating the reliability, it was seen that alpha and omega values increased when eliminating item 10. These findings are in concordance with the Japanese version in which item 10 was problematic because factor loading of this item was the lowest of all items (Chishima et al., 2017), and also with the Irish validation of the TFS in which the modification indices of the CFA suggested that item 10 was problematic (McKay et al., 2012).

Regarding reliability, both alpha and omega coefficients were calculated. It has been demonstrated that in many occasions α is lower than ω, so α can be used as an inferior limit of reliability (Raykov, 1997 cited in Viladrich et al., 2017). The three factors showed alpha and omega coefficient values above .80, which are acceptable for research purposes (Viladrich et al., 2017). This does not coincide with the Irish version in which current focus presented an alpha value lower than the accepted (α = .58) (McKay et al., 2012).

When considering external validity, we decided to use ZTPI because it had been used in previous studies and due to its high popularity among psychological time research. ZTPI assesses time perspective which refers to a non-conscious process from which people is not aware constantly (Zimbardo & Boyd, 1999), whereas temporal focus refers to an attentional process and so indicate awareness (Shipp et al., 2009). As seen, the two concepts are different, but they are supposed to be associated because both refer to psychological time, and include past, present, and future separately. It is to note that the correlations found with ZTPI in this study followed, in most cases, the findings of American TFS by Shipp et al. (2009) and Japanese version by Chishima et al. (2017). Past focus presented a strong and positive association with ZTPI past negative, and a small association with ZTPI past positive. These findings show that the attention to the past as measured by the TFS has a negative tone. Regarding current focus, we did not find a significant association with ZTPI present hedonistic which differs from the

Japanese and American versions in which current focus presented a relatively strong positive correlation with ZTPI present hedonistic. However, it is important to note that a negative significant association was found between current focus and ZTPI present fatalistic, which can enhance the theory that current focus as measured with TFS has a more positive than negative tone (Shipp et al., 2009). Lastly, future focus was positively associated with ZTPI future, like the two other versions of TFS. However, it is important to advise that reliability of ZTPI past positive and present fatalistic showed lower values than the accepted. This can affect the quality of the results of the correlations of TFS with these dimensions.

Two other scales were used to test external validity, BSCS and K-10. It was hypothesized that future focus would be related with the scores of BSCS because it assesses the global capacity of self-control which is conceptualized as the regulation of impulses to achieve long-term goals (Tangney et al., 2004). However, we found that current focus was the one related to BSCS. This can be due to how the items of the self-control scale are presented. They refer to a current situation related to self-regulation, and they are written in present verbal time. Only one item includes future goals ("I am able to work effectively towards long-term goals"). This finding gathered with the discordance between our study and the previous validations regarding current focus, provides evidence that further research is needed to clear out the difference between current and future focuses of TFS.

Regarding K-10, it was positively and strongly related to past focus, which increases the previous affirmation that past focus is related to a negative affect. Also, as hypothesized, K-10 related negatively with current focus and positively with future focus. K-10 refers to symptoms of anxiety, which are related to the future; and depression, which is related to the past (Kessler et al., 2002). This conceptualization is consistent with the results of the correlation analyses. Considering these results, some practical implications can derive. Future studies should explore this deeply and TFS can be used to assess psychological conditions and, together with other scores, can help to understand and/or predict psychological distress or psychological wellbeing.

In study two, a CFA was executed. As recommended, we used a different sample from the one used in the previous study (Ferrando & Anguiano-Carrasco, 2010; International Test Comission, 2017). Two models were proven. After considering the modification indices and consistently with the psychometric anomaly found with item ten in the first study, we decided to remove item ten. The fit of the data was better in this second TFS model. GFI, CFI, NNFI and RMSEA values increased, and AIC value was lower compared to the first model, indicating the 11-item model fitted better.

Item ten was also problematic in the previous three studies of the TFS. In the development of the scale in United States, and in the Irish and Japanese versions this item loaded onto all three factors. The former kept the 12-item version, but the two latter eliminated item ten, arriving to an 11-item version. The three versions presented a good fit to the data in the CFA (Chishima,et al., 2017; McKay et al., 2012; Shipp et al., 2009). Item ten, "I think about where I am today [*Pienso dónde me encuentro hoy*]", presents a difficulty because it may imply past and/or future situations, apart from the attention to the present time. Also, the item includes the word <<where>> which suggests a clear time-space relationship and can refer to how a person arrived at the situation he is in the present time, consequently referring to his past; or how he visualizes himself in a future perspective, consequently including the future. Therefore, this item is weak and, similarly to the two previous validations of the study, it was eliminated leaving an 11-item version of the TFS for Argentina.

Reliability was also calculated in study two. Coefficient values were above .76, acceptable following normative criteria (Viladrich et al., 2017). In this second study reliability of past focus (ω=.78/α=.76) decreased in relation to the values found in the first study (ω=.82/α=.83). The reliability of the other factors kept similar values. Internal consistency analyses showed equal or superior reliability values than previous studies (see table 1, Chishima et al., 2017; McKay et al., 2012; Shipp et al., 2009). These results contribute to the acceptance of the TFS as a reliable tool to assess temporal focus.

Future studies should also consider the possibility to do cross-cultural research including data from

Argentina. Research have recently shown some particular and interesting aspects of cultural differences towards psychological time (Callizo-Romero et al., 2020; Chishima, et al., 2017; de la Fuente et al., 2014). These studies did not include data from Latin American countries, which is a substantial aspect to arrive to more generalizable results. To do this it is essential to have valid and reliable measures of psychological time. Accordingly, this study provides the Argentinian version of the TFS.

This study is not exempt from limitations. Firstly, it does not present a test-retest which is fundamental to study the stability of punctuations over time and contributes to the psychometric reliability of the scale (Aldridge et al., 2017). Also, the sample used in the second study was mostly composed by women (70% of the total sample) and this may skew the results. Future studies should take these aspects into account. Third, all variables were measured by self-report questionnaires. Future studies should use several methods including objective assessments to avoid a common bias (Podsakoff et al., 2003).

In conclusion, the current research provides a reliable adaptation of the TFS for Argentinian population. Since internal consistency values were higher than those found in the Argentinian versions of ZTPI (Brenlla et al., 2019; Galarraga & Stover, 2016; Germano & Brenlla, 2020), and CFA presented good fit indexes, TFS seems to be a more reliable tool to assess psychological time and can contribute to reduce the critics that still exists to the measurement of time (Adams, 2009; Shipp et al., 2009). This study offers additional knowledge to those interested in the study of psychological time.

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