

Confirmatory Validation of the Factorial Structure of the Aversive Tribalism Scale: Confirmatory Analyses by Structural Equations

Gustave Adolphe Messanga* and Sylvestre Nzeuta Lontio

Department of Philosophy, Psychology, Sociology, University of Dschang, Dschang, West Cameroon

*Corresponding author: Gustave Adolphe Messanga, Department of Philosophy, Psychology, Sociology, University of Dschang, Dschang, West Cameroon, Tel: 237677878102; E-mail: messangaadolphe@gmail.com

Received date: June 11, 2022, Manuscript No. IPABS-22-13781; **Editor assigned date:** June 13, 2022, PreQC No. IPABS-22-13781 (PQ); **Reviewed date:** June 27, 2022, QC No IPABS-22-13781; **Revised date:** August 11, 2022, Manuscript No. IPABS-22-13781 (R); **Published date:** August 18, 2022, DOI: 10.36648/2471-7975.8.8.76

Citation: Messanga GA, Lontio SN (2022) Confirmatory Validation of the Factorial Structure of the Aversive Tribalism Scale: Confirmatory Analyses by Structural Equations. Ann of Behave Sci Vol:8 No:8

Abstract

The interest in evaluating aversive tribalism lies in the effort to understand indirect tribalism treatment conceived as a combination of subtle discriminatory attitudes and behaviors based on tribal categorization and close to systemic discrimination against members of different ethnic groups. In this vein, the present study adopts a psychometric approach. It analyzes the confirmatory factor structure of aversive tribalism, due to the shortcomings of the existing measurement instrument, not justifying a confirmatory factor structure. Churchill's paradigm achieves this goal. The initial two dimensional structure of the existing scale subjected to confirmatory analyses and comprising 32 items is validated with Cameroonians of both sexes (N=702), aged on average 23.97 years. The exploratory factor analyses and multiple correspondences are good (KMO=.744, $\lambda^2=73.407\%$ of the variance). The confirmatory factor analyses of the 7 items bi-factorial structure are satisfactory ($\chi^2/Df=1.498<5$, $p>.05$; NFI=.995, RFI=.992, IFI=.998, TLI=.997, CFI=.99; RMSEA=.027<.1, $p>.05$). The analysis of the reliability of the factors is conclusive ($\alpha_1=.731$; $\alpha_2=.977$; $\alpha_{global}=.728$). The predictive validity shows that participants subtly discriminate against individuals based on their tribal affiliation. Construct validity reveals negative (divergent) relationships between implicit tribalism, explicit tribalism in intergroup relations ($r=-.057$, $p>.05$) and political tribalism ($r=-.061$, $p>.05$). In conclusion, the aversive tribalism scale presents a valid, reliable and stable confirmatory factor structure.

Keywords: Aversive attitude; Aversive behavior; Indirect discrimination; Tribalism; Aversive tribalism

while the second is implicit or subtle. Classical and aversive racism are the respective illustrations of this [2]. Its origin would be a bias in the cognitive system linked to the fact that individuals develop prejudices and stereotypes towards out groups members. These intergroup cognitions, which materialize in discriminatory behaviors such as racism, sexism or homophobia, are the consequence of the categorization they carry out to order their social environment. This research focuses on discriminatory behaviors based on tribal affiliation, known as tribalism. More specifically, it follows on from the work of Messanga, et al. who conceptualized the aversive form of this discrimination and proposed a measure whose confirmatory factor structure has not been validated until now; thus calling into question the evaluations made of this construct through it.

Aversive tribalism

According to Bartlett, it is generally accepted that discrimination based on explicitly negative attitudes towards race and gender in particular has diminished over time, and that an increasing part of these social phenomena is unconscious and involuntary. This means that they change more than they actually diminish, since they have taken an implicit form now manifesting themselves in a subtle way [3]. This is also the case with tribalism. Indeed, because of the laws condemning it, this discrimination based on tribal affiliations has taken a more subtle and implicit form [4]. In Cameroon, among the factors likely to have impacted on this transformation, we can cite the fact that it is now criminally sanctioned, in addition to the fact that it is culturally condemned (Law n° 2019/2020 of December 24, 2019 of the Republic of Cameroon). Indeed, in the past, it referred to explicit discriminatory attitudes and behaviors towards the other tribes and to the tendency to assert the supremacy of the ethnic in group over the out groups [5]. It refers nowadays to more subtle, indirect and rationalized discriminatory attitudes and behaviors manifested against an ethnic group. This new form of tribalism could be called aversive tribalism. Aversive tribalism is a subtle form of bias, maintained by people who believe themselves to be free from any tribal prejudice, but who actually hold negative beliefs about other tribes [6]. Indeed, although most individuals openly support the principle of equality between tribes, they remain on average

Introduction

The differential treatment inflicted on an individual because of his group membership refers to the notion of intergroup discrimination. This belonging can be sexual, racial, religious, political or tribal. Concretely, this treatment is manifested by attitudes and behaviors favorable to in groups and unfavorable to out groups [1]. According to the specialized literature, it can be expressed in two ways, the first of which is explicit or direct,

rather reluctant to support government efforts that would achieve these goals [7]. Those who manifest this form of tribalism do so in a way that they will not be exposed, because they care about their unbiased image. For them, it is about not behaving overtly in a discriminatory way in situations where social norms would make discrimination obvious to others [8]. Thus, when an aversive tribalist finds himself in a clear situation, he may not manifest tribalism. On the other hand, in an ambiguous situation and where his behavior could not be associated with an act of tribalism, he may behave in a discriminatory manner towards the other tribes. Thus, aversive tribalists may engage in discriminatory behaviors, despite their conscious adherence to egalitarian values. Their egalitarian beliefs and tribal actions could therefore be seen as a mere lip service to a norm of equality. In this vein, the gap between egalitarian attitudes and everyday experiences of ethnic discrimination might cause dissonance in the aversive tribalist. This inconsistency results from the conflict between inter tribal egalitarian beliefs and prejudices against the other tribes. We can therefore suggest that since the aversive tribalist explicitly supports equality between tribes, the fact of having at the same time unconscious negative beliefs towards the other tribes can create a malaise in him, even a state of anxiety. To cope with this, like the aversive racist, he may avoid contact with the other tribes for fear of saying a word or unconsciously performing an act that could threaten their members [9].

The psychometric evaluation of aversive tribalism and its shortcomings

The psychometric literature on tribalism tends to offer only explicit measures: the scale of tribalism in intergroup relations and the scale of political tribalism for example. The first, Messanga, et al. have developed an instrument for measuring aversive tribalism. This psychometric method includes thirty two (32) items, six (6) of which are reverse coded and twenty six (26) right coded. These items are divided into two (2) dimensions. The attitudinal dimension has eighteen (18) items ($\alpha=.711$), while the behavioral dimension has fourteen (14) ($\alpha=.703$). The statistical indices constituting the metrological parameters of this psychometric method are satisfactory; thus confirming its reliability and validity. Its factorial structure consists of principal components having satisfactory communities. With regard to linear correlations, it is positively and significantly related to its dimensions, as required by the standards in this area. Similarly, the internal consistency measures are satisfactory, regardless of the reliability model applied [10]. From the point of view of its homological validity, we observe that the homological model shows that it makes it possible to establish empirical links between aversive tribalism and explicit tribalism. Thus, it quantifies and classifies typologically the individuals to whom it is administered, so that one can distinguish those who exhibit aversive tribalist attitudes and behaviors from those who have a propensity for explicit intergroup discrimination based on tribe. Despite the fact that the aversive tribalism scale has undeniable psychometric qualities, it does, however, have some limitations that need to be addressed. Indeed, it does not present a confirmatory factorial structure. Therefore, one can wonder if the factorial structure of this instrument is valid from the point

of view of statistical techniques of structural equation modeling and whether it can objectively measure implicit or indirect tribalism. This may call into question the relevance of the assessment made through this instrument. The statistical methods used to analyze the factor structure of the aversive tribalism scale are limited to exploratory factor and principal component analyses. They do not allow the fit of the data to an empirical model to be tested. This means that they do not validate the confirmatory factor structure of this measure. However, the factor model normally tests the adequacy of the data to a theoretical model. This concerns Structural Equation Modeling (SEM), which is an approach that puts into perspective the number of factors underlying the instrument, the possible relationships between these factors, the associations between these factors and the observed variables, the error terms that are attached to each observed variable and the correlations observed between the factors [11]. Confirmatory Factor Analysis (CFA) makes it possible to test a priori hypotheses relating to the number of factors extracted and whether each variable belongs to a factor. It is also possible, with SEM techniques, to test relationships between factors. Thus, based on all these shortcomings, the present study offers a new validation of the aversive tribalism scale. It uses finer statistical methods to test its confirmatory factor structure. The method of Multiple Correspondence Analysis (MCA), an extension of principal component analysis, is used in addition to CFA with the aim of extracting the most relevant items with the least possible loss of information [12].

Methodology

Participants

This study does not collect new data. It uses data collected by Messanga, et al. as part of the construction and validation of the aversive tribalism scale. The participants of this study were 702 individuals of both sexes from various ethnic groups in Cameroon. Their average age was 23.97 years ($SD=4.944$).

Data processing procedure

The criticism made of Messanga, et al. in the context of this study is based on the fact that they did not ensure the confirmatory validity of their instrument; which is a weakness of this measure. However, there are statistical procedures that make it possible to establish the structural and confirmatory validity of this instrument. This is why structural equation analyzes and factorial analyzes of multiple correspondences coupled with EFA-PCA are considered in order to reassess its metrological qualities.

Analysis of the psychometric properties of the scale of aversive tribalism

Exploratory and confirmatory analyzes are applied to the data collected in order to determine and confirm the dimensionality of aversive tribalism defined by Messanga, et al. Exploratory and Principal Component factor Analyzes (EFA-PCA) make it possible to synthesize information, extract the relevant latent variables of

aversive tribalism and simultaneously explore the relationships that exist between the observed variables [13]. EFA and PCA are applied under SPSS. 23 in addition to Multiple Correspondences Analysis (MCA). The MCA makes it possible to select the most relevant variables, by means of the optimal coding, since several variables (items) are measured and processed at the same time when it comes to processing surveys or questionnaires. This means that the MCA will make it possible to purify the Aversive Tribalism Scale. The Kaiser Meyer Olkin (KMO) and Bartlett's tests of sphericity (X^2) are applied to examine the fit of the empirical data according to the maximum likelihood method and to provide information on the quality of the correlations. Confirmatory Factor Analysis and Structural Equations (CFA-SEM) is performed under AMOS. 23 in order to confirm the dimensionality of the scale composed of the relevant latent variables extracted using the MCA. The adjustment, in the structural model, of the extracted variables is evaluated. The confirmatory analysis will make it possible to judge between the initial model made up of 32 items and the reduced final model, the one which best fits the data and which must, consequently, be retained [14]. The internal consistency model and the predictive and discriminant validities are also examined.

Data analysis of the predictive and construct validity of the scale and hypotheses

For predictive validity, due to the criminal and cultural condemnation of tribalism in Cameroon, this study predicts that participants will move towards the subtle or implicit form of tribalism. Thus, it is suggested that the data from the aversive tribalism scale will reveal, after analysis, the existence of high aversive tribal discriminatory tendencies among Cameroonians, regardless of gender (hypothesis 1). For construct validity, the study predicts that correlational analysis will reveal negative links between implicit tribalism and explicit tribalism that is criminally and culturally condemned (tribalism in intergroup relations and political tribalism) (hypothesis 2).

Results

The results of the confirmatory validation of the aversive tribalism scale are presented in several steps. First, the MCA and PCA methods are applied in order to extract relevant variables

explaining the attitudinal and behavioral dimensions of aversive tribalism. The indices of the normality test of the variables retained for the in-depth analysis are presented since they condition the confirmatory analysis of the factorial structure of a measurement scale [15]. The fit indices of the bifactorial structure model of aversive tribalism as well as the reliability indices of the 7 variable internal structure are presented. Second, the results of the predictive and construct validities are reported. The means of the items, the indices of intra item correlations and correlations between aversive tribalism and the concepts that are theoretically close to it (political tribalism and tribalism in intergroup relations) are presented (Figure 1).

Analysis of the metrological properties of the aversive tribalism scale

Extraction of relevant variables from the attitudinal dimension of the aversive tribalism scale

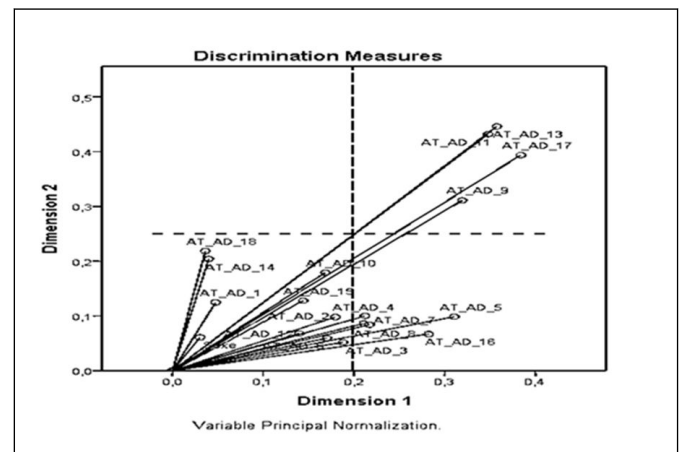


Figure 1: Graphic of discrimination measures of the variables of the attitudinal dimension according to their degree of relevance.

The projections located above the benchmark are those of the most relevant items (9, 11, 13 and 17) to retain for the confirmatory analysis of the internal structure of aversive tribal attitudes (Table 1).

Table 1: Validation indices of the 4 items resulting from the discriminatory analysis of the items of tribal aversive attitudes.

Dimension	Cronbach's Alpha	Variance taken into account for the 4 items retained			Discrimination measures			
		Total (Eigenvalue)	Inertia	% of Variance	AT-AD-9	AT-AD-11	AT-AD-13	AT-AD-17
					Granting positions of responsibility to members of other tribes	Non-discrimination of the members of the others tribes	Granting equal privileges to all tribes	Recognition of equality between tribes

1	0.778	2.401	0.6	60.018	0.472		0.57	0.706	0.652
2	0.66	1.979	0.495	49.471	0.368		0.477	0.563	0.57
Total		4.38	1.095						
Mean	.724a	2.19	0.547	54.744	0.42		0.524	0.635	0.611

a. Mean Cronbach's Alpha is based on the mean Eigenvalue.

KMO	Approx. χ^2	df	P	Total variance explained				Goodness of fit test		
				Factor extracted	Iterations required.	Total	Cumulative %	χ^2	Df	P
0.725	655.581	6	0	1	4	2.261	56.532	9.604	2	0.008

Normality test of the variables retained for the CFA

	N	Skewness		Kurtosis	
	Statistic	Statistic	Std. Error	Statistic	Std. Error
AT_AD_9	702	-1.513	0.092	1.334	0.184
AT_AD_11	702	-1.84	0.092	2.978	0.184
AT_AD_13	702	-2.109	0.092	4.058	0.184
AT_AD_17	702	-2.065	0.092	3.78	0.184
Valid N (list wise)	702				

The multiple correspondence analyses based only on the 4 extracted variables reveals that they have on average an acceptable reliability index based on the average eigenvalues. They present an average quantity of information estimated at 54.744%, with averages of the correlations of the variables with the dimensions varying between .420 and .635. Exploratory factor data reveal that these variables have strong validity (KMO=.725, Approx. χ^2 =655.581, $p<.05$) and explain 56.532% of the variance, with a good fit (χ^2 =9.604, $df=2$, $\chi^2/df=4.80$, $p<.05$). The values of the symmetry and kurtosis coefficients are correct [16]. CFA can therefore be applied to data from this dimension of aversive tribalism (Figure 2).

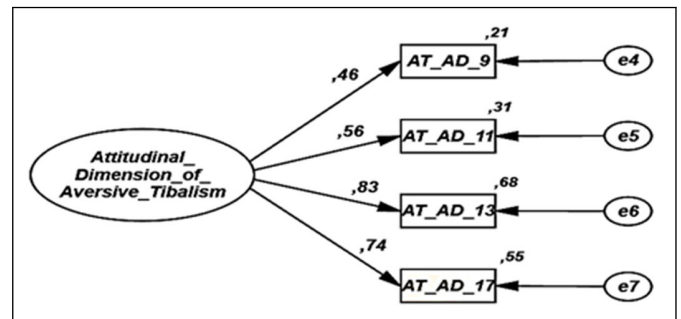


Figure 2: Structure model confirming the 4 items structure of the attitudinal dimension of the aversive tribalism scale (Model 1).

The variables observed, measured and presented in this structural model maintain positive and significant relationships with the latent variable that they represent in reality. The indices vary between .46 and .83 (Table 2).

Table 2: Fit indices of the unifactorial confirmatory structure of the attitudinal dimension of the aversive tribalism scale, descriptive statistics, intra-items correlations and items reliability.

χ^2/DF	NFI	RFI	IFI	TLI	CFI	RMSEA	P Close
4.822	0.985	0.956	0.988	0.965	0.988	0.074	0

Mean and standard deviation, correlation, reliability index of the items retained for the attitudinal dimension of the aversive tribalism

Items retained for the attitudinal dimension of the scale	M	SD	1	2	3	4	Cronbach's Alpha if item deleted
It is normal that members of other tribes also hold positions of responsibility in this country.	4.96	1.434	1				0.74
To comply with the laws of my country, I may in the future avoid discriminating against members of the other tribes.	5.11	1.26	.331 ⁺⁺	1			0.685
The government should extend equal benefits to all tribes in this country.	5.31	1.183	.360 ⁺⁺	.455 ⁺⁺	1		0.614
The citizens of this country must recognize that all tribes are equal and that no tribe is superior to another.	5.3	1.21	.328 ⁺⁺	.395 ⁺⁺	.621 ⁺⁺		0.642
Aversive attitude	20.67	3.794	.705 ⁺⁺	.725 ⁺⁺	.797 ⁺⁺	.767 ⁺⁺	
Cronbach's Alpha of the attitudinal dimension						0.731	
Note: ⁺⁺ . p<.01 (2-tailed).							

The adjustment of 4 items in the model is acceptable ($\chi^2=9.643$, $Df=2$, $CMIN/DF=4.822<5$; $p<.05$). The Comparative (CFI=.988), Normalized (NFI=.985), Relative (RFI=.956), Incremental (IFI=.988) fit indices and the Tucker Lewis coefficient (TLI=.965) are almost perfect, because they approach 1. The root mean square error of approximation (RMSEA=.074<.08, $pCLOSE>.05$) is less than or equal to .1, or 10%. It can be concluded that of the 18 items of the attitudinal dimension of the initial scale, only items 9, 11, 13 and 17 fit positively in the structural model in order to measure pertinently aversive tribal attitudes. Thus, this

dimension of the scale is essentially made up of the 4 items with reliability indices presented below. This matrix reveals acceptable item reliability indices ranging from .614 to .740 and an acceptable dimension reliability index ($\alpha=.731$). Each item presents an average above the average score of the item estimated at 3. This means that overall, the participants present aversive discriminatory attitudes ($M=20.67>14$; $SD=3.794$). The analysis of the inter item correlations reveals positive and significant links ($p<.01$) between the items (observed variables)

on the one hand and between the latent variable (evaluated dimension) and these items on the other hand (Figure 3).

Extraction of relevant items from the behavioral dimension of the aversive tribalism scale

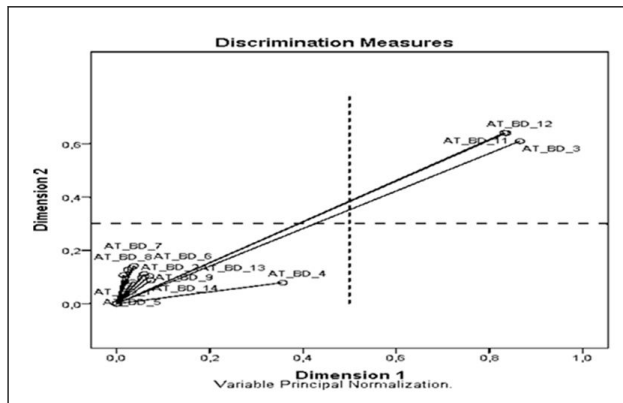


Figure 3: Graphic of discrimination measures of the items of the behavioral dimension according to their degree of relevance.

Projections of items on a two dimensional plan make it possible to extract 3 relevant items (3, 11 and 12) located on the ascending axis of the plan tending towards $+\infty$. These items are those included in the confirmatory analysis of the internal structure of tribal aversive discriminatory behaviors (Table 3).

Table 3: Validation indices of the 3 items resulting from the discriminatory analysis of the items of the tribal aversive discriminatory behavior.

Dimension	Cronbach's Alpha	Variance taken into account for the 4 items retained			Discrimination measures		
		Total (Eigenvalue)	Inertia	% of Variance	AT-BD-3	AT-BD-11	AT-BD-12
					Egalitarian treatment of all tribes political elites	Maintenance of the good relations with the members of other tribes	Non participation in protests against the members of the other tribes
1	0.991	2.945	0.982	98.154	0.982	0.986	0.976
2	0.972	2.839	0.946	94.627	0.925	0.958	0.955
Total		5.783	1.928				
Mean	.981 ^a	2.892	0.964	96.39	0.954	0.972	0.966

a. Mean cronach's alpha is based on the mean eigenvalue.

KMO	Approx. χ^2	df	P	Total variance explained				Goodness of fit test		
				Factor extracted	Iterations required.	Total	Cumulative %	χ^2	Df	P
0.753	3428.981	3	0	1	3	2.873	95.78	0	0	

Normality distribution of the variables retained for the CFA

	N	Skewness		Kurtosis	
	Statistic	Statistic	Std. Error	Statistic	Std. Error
AT_BD_3	702	-0.715	0.092	-0.907	0.184
AT_BD_11	702	-0.526	0.092	-1.189	0.184

AT_BD_12	702	0.077	0.092	-1.142	0.184
Valid N (list wise)	702				

The factorial analysis of multiple correspondences based on the three extracted variables indicates a total inertia of 96.40%, average information estimated at 96.39% and the means of the measures of discrimination of the extracted items varying between .954 and .972. They indicate an average internal consistency measure of .981 for the 3 items. The unifactorial information reveals that these 3 items have a strong validity (KMO=.753, Approx. $X^2=3428.981$, $p<.05$), explain 95.780% of the variance and have a very low adjustment index ($X^2=000$, $Df=0$, $X^2/Df=000$). The normality test of the variables is correct (Figure 4).

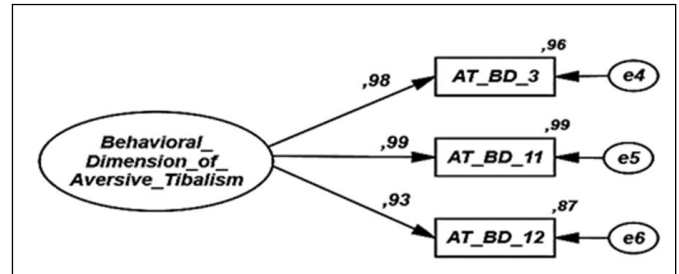


Figure 4: Structural model confirming the 4 items structure of the attitudinal dimension of the aversive tribalism scale (Model 2).

The variables observed, measured and presented in this structural model have positive and significant relationships with the latent variable. The related indices are very high, good and vary between .93 and .99 (Table 4).

Table 4: Goodness of fit indices of unifactorial confirmatory structure of the behavioral dimension of the aversive tribalism scale, descriptive statistics, inter items correlations and item reliability.

NFI	IFI		CFI		RMSEA		P Close
1	1		1		1.278		0
Items retained for the attitudinal dimension of the scale	M	SD	1	2	3		Cronbach's Alpha if item deleted
(1) In the appointments of officials within state institutions, political elites of all tribes should be treated equally.*	4.31	1.738	1				0.957
(2) I try to have good relations with the members of the other tribes despite everything.*	4.12	1.764	.974 ⁺⁺	1			0.952
(3) For fear of repression, I am no longer able to participate in	3.46	1.586	.912 ⁺⁺	.923 ⁺⁺	1		0.987

demonstrations against the members of the other tribes.*							
Aversive behavior	11.89	4.981	.984 ⁺⁺	.988 ⁺⁺	.964 ⁺⁺		
Cronbach's alpha of the attitudinal dimension	0.977						
Note: ⁺⁺ : p< .01; [*] : reverse-coded item							

The indices of normative, incremental and comparative adjustment of the 3 item confirmatory structure of the behavioral dimension of aversive tribalism is perfect (equal to 1). The reliability indices of these items are acceptable and vary between .952 and .987. The reliability index for this dimension is also good ($\alpha=.977$). Each item presents an average above the average score of the item estimated at 3. This means that overall, the participants present aversive discriminatory

behaviors ($M=11.89>9$, $SD=4.981$). The analysis of intra-item correlations shows positive and significant links ($p<.01$) between the observed variables (items) and between the latent variable and these variables (Table 5).

Confirmatory analysis of the final factor structure of the two dimensional aversive tribalism scale

Table 5: Total Correlations (TC) per item, Factorial Charge (FC), normality test of the 7 (seven) variables selected for the confirmatory validity of the aversive tribalism scale (N=702).

Aversive tribalism items	TC	FC	M.	S.D.	Skewness	Kurtosis
1. It is normal that members of other tribes also hold positions of responsibility in this country.	.408 ⁺⁺	0.458	4.96	1.43	-1.513	1.334
2. To comply with the laws of my country, I may in the future avoid discriminating against members of the other tribes.	.444 ⁺⁺	0.556	5.11	1.26	-1.84	2.978
3. The government should extend equal benefits to all tribes in this country.	.521 ⁺⁺	0.826	5.31	1.18	-2.109	4.058
4. The citizens of this country must recognize that all tribes are equal and that no tribe	.491 ⁺⁺	0.74	5.3	1.21	-2.065	3.78

is superior to another.						
5. In the appointments of officials within state institutions, political elites of all tribes should be treated equally.*	.782 ⁺⁺	0.981	4.31	1.73	-0.715	-0.907
6. I try to have good relations with the members of the other tribes despite everything.*	.792 ⁺⁺	0.993	4.12	1.76	-0.526	-1.189
7. For fear of repression, I am no longer able to participate in demonstrations against the members of the other tribes.*	.781 ⁺⁺	0.93	3.46	1.58	0.077	-1.142

Note: (++) .p<.01 level (2-tailed). (*): reverse-coded item

Each item contributes positively, significantly and adequately to the overall scale of aversive tribalism (TC: from .408 to .792). The factorial loads of the items are good (CF: from .458 to .993). The symmetry (skewness<3) and kurtosis (Kurtosis<8) coefficients are favorable for CFA and by SEM of the validated scale (Figure 5).

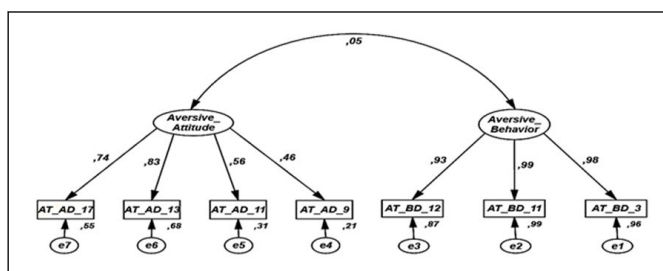


Figure 5: Model validating the final confirmatory factor structure of the aversive tribalism scale with 2 correlated factors (Model 3).

This structural model summarizes most of the variables of the 7 items aversive tribalism scale selected at the end of the factor analyses. The methods of factorial and Principal Component Analysis (EFA-PCA) and the structural model reveal acceptable indices. The scale has strong validity (KMO=.744) and the factor model fits the data ($\chi^2=4088.236$, $p<.000$). Confirmatory and structural equation factor analyses (CFA-SEM) support its factor structure. There is a good fit between the model and the empirical data, with a good minimum level of model fit ($\chi^2/Df=1.498$, $p>.05$) (Table 6).

Table 6: Exploratory and confirmatory factorial analysis of the 2 factors of aversive tribalism scale, reliability and correlations.

KMO and Bartlett's test				Total variance explained	Goodness of fit test		
KMO	χ^2	Df	p	Initial eigenvalues (Cumulative %, λ_a)	χ^2	Df	P
0.744	4088.236	21	0	73.407	12.709	8	0.122
Communalities, goodness of fit index and reliability of the aversive tribalism scale							

Factors					Factors				
Variables	1	2	h ²		Variables	1	2	h ²	
AT_AD_9	-0.02	0.458	0.249		AT_BD_3	0.981	-0.002	0.962	
AT_AD_11	0.006	0.556	0.309		AT_BD_11	0.993	0.013	0.986	
AT_AD_13	0.044	0.826	0.684		AT_BD_12	0.93	0.035	0.987	
AT_AD_17	0.031	0.74	0.643						
X2/DF	Df	p	NFI	RFI	IFI	TLI	CFI	RMSEA	P Close
1.498	13	0.109	0.995	0.992	0.998	0.997	0.998	0.027	0.953

Correlations between the parts of the aversive tribalism scale and the global scale (n= 7 items)					
	Cronbach alpha	M	SD	1 Aversive attitude	2 Aversive behavior
1. Aversive attitude (F ₂)	0.731 (4 items)	20.672 > 14	3.794	1	
2. Aversive behavior (F ₁)	0.977 (3 items)	11.89 > 10.50	4.981	0.029	1
3. Aversive tribalism scale	0.728 (7 items)	32.56 > 24.50	6.35	.621++	.802++

Note: ++ : p<.01 (2-tailed).

The main variables used in this measurement scale have strong validity (KMO=.744) and adapt to the factor model ($X^2=4088.236$, $p<.05$). The CFA-SEM show that the related two factor model fits the data best ($X^2=12.709$, $df=8$, $p>.05$). The 7 items selected have communalities (h^2) varying between .249 and .987. The loadings reveal that the items of aversive discriminatory attitudes correlate with the second factor (F₂) while the items that measure aversive discriminatory behaviors are related to the first factor (F₁). These factors explain 73.407% of the variance. This percentage is greater than 55.819% of the variance explained by the 8 principal components initially extracted. CFA and SEM reveal normalized (NFI=.995), relative (RFI=.992), incremental (IFI=.998), Turkey Lewis (TLI=.997) and comparative (CFI=.998) fit indices valid and close to 1, with an acceptable RMSEA (RMSEA=.027<.1, pCLOSE>.05). This attests that the observed variables of the model (the items) explain pertinently the aversive tribalism according to its attitudinal and behavioral factors. These factors are positively related on the global scale, thus denoting the fact that they evaluate the same construct, that of aversive tribalism. This factorial information validates and confirms the bi-factorial structure of the validated scale. The reliability measures of the factors and of the global scale are satisfactory (aversive discriminatory attitudes: $\alpha=.731$; aversive discriminatory behaviors: $\alpha=.977$; aversive tribalism: $\alpha=.728$) (Figure 6).

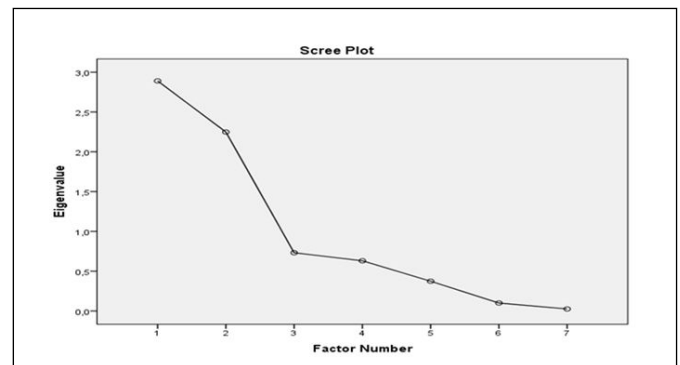


Figure 6: Graphic eigenvalue from the PCA of the aversive tribalism items (rotation varimax).

The Cattell test on the Initial Eigenvalues indicates a clear break between the first factor (Eigenvalue=2.890) and the second (Eigenvalue=2.248). Factor analysis reveals a different solution than the original version of the scale. Thus, the scale can now be used in the assessment of aversive tribal discrimination (Table 7).

Predictive and construct validity (convergent versus divergent) of the aversive tribalism scale

Predictive validity: Variance analysis of tribal discriminatory tendencies

Table 7: Predictive validity indices of aversive tribalism scale.

Compare means statistics										
Aversive tribalism	Mean square	f	Measures of Association		Paired Differences			t	df	p-value
					95% CI of difference					
			Eta	Eta2	Std.E.M	Lower	Upper			
Men* Women	290.23	18.188	0.773	0.598	0.231	-0.408	0.502	0.203	361	0.839
Tribalism in inter group relations* aversive tribalism	902.01	1.639	0.257	0.066	0.94244	75.46	79.16	82.035	700	0
Political tribalism* aversive tribalism	261.43	1.734	0.264	0.07	0.54091	17.1	19.22	33.577	701	0
Descriptive statistics (M. and S.D.)										
							M.	S. D.	N	
1. Aversive attitude							20.6724	3.7944	702	
2. Aversive behavior							11.8932	4.98113	702	
3. Aversive tribalism							32.5655	6.35005	702	
4. Pro in group attitude							25.89	6.758	701	
5. Pro in group behavior							36.21	8.249	702	
6. Anti out group attitude							22.09	6.532	702	
7. Anti out group behavior							25.65	8.772	702	
8. Tribalism in inter group relations							109.87	23.771	701	
9. Political tribalism							50.73	12.464	702	
10. Aversive tribalism women							32.85>21	5.89234	362	
11. Aversive tribalism men							32.81>21	5.91098	362	

The predictive validity hypothesis postulated the existence of high aversive tribal discriminatory tendencies in participants of both sexes. The results in this table support this prediction. They show that women (N=362, M=32.8591>21 (deviation 1=11.85), S.D.=5.892) and men (N=362, M=32.8122>21 (deviation 2=11.81), S.D.=5.91098) have a propensity to subtly discriminate against individuals on the basis of their tribal affiliations and that this discrimination does not differ significantly from one sex to another (f (1, N=362)=18.188, Std. E.M.=.231, CI (-.408 .502), t=.203, Df= 361, p>.05), because their scores are substantially equal (the difference between deviations 1 and 2 being very small=.04). We then conclude that under the normal conditions of passing this instrument, women and men will have the same tendencies to subtly discriminate against individuals based on their tribal affiliation. Overall, the results show that in addition to the participants' strong tendency towards aversive or implicit tribalism (N=702, M=32.56> 21 (difference=11.56), S.D.=6.35), they also have a strong propensity to explicit discrimination, in

particular tribalism in intergroup relations (N=701, M=109.87>108 (gap=1.87), S.D.=23.771) and political tribalism (N=702, M=50.73>48 (gap=2.73), S.D.=12.464). The general tendency towards tribalism in intergroup relations differs significantly from the tendency towards aversive tribalism (f(2, N=362)=1.639, Std. E.M.=.94244, CI (75.46 79.16), t=82.035, df=700, p<.05). The same is true for the tendency to political tribalism (f (3,N=362)=1.734, Std. E.M.=.54091, CI (17.10 19.22), t=33.577, Df=701, p<.05). The analysis of the differences between the scores of the participants on each of the three scales and the average scores of these scales shows that they are more likely to adopt implicit than explicit discriminatory attitudes and behaviors (aversive or implicit tribalism (N=702, M=32.56>21 (difference=11.56)); tribalism in intergroup relations (N=701, M=109.87>108 (difference=1.87)); and political tribalism (N=702, M=50.73>48 (difference=2.73)) (Table 8).

Construct validity: Links between aversive tribalism and theoretically related concepts

Table 8: Correlations between aversive tribalism, tribalism in intergroup relations and political tribalism.

	1	2	3	4	5	6	7	8
1. Aversive attitude	1							
2. Aversive behavior	0.029	1						
3. Aversive tribalism	.621++	.802++	1					
4. Pro in group attitude	-0.057	.077+	0.027	1				
5. Pro in group behavior	.106++	0.034	.090+	.515++	1			
6. Anti out group attitude	-.232++	0.021	-.122++	.499++	.399++	1		
7. Anti out group behavior	-.295++	0.004	-.173++	.457++	.402++	.656++	1	
8. Tribalism in inter group relations	-.152++	0.043	-0.057	.769++	.751++	.797++	.818++	1
9. Political tribalism	-.099++	-0.003	-0.061	.618++	.504++	.608++	.576++	.730++

Note: ++: $p < .01$ (2-tailed). +: $p < .05$ (2-tailed). Std.E.M.= Standard Error Mean

Construct validity requires demonstration that the scale measures the construct or characteristic it claims to measure. It is assessed by administering the scale with other measures developed on theoretically similar constructs and examining the correlation between the two (convergent validity) or by administering the scale at the same time as theoretically opposed tests and examining their correlation (divergent validity). Aversive or implicit tribalism and explicit tribalism are notions that converge (this is tribalism) and diverge (in the implicit versus explicit form) at the same time. The analysis of the relationships between these two forms of tribalism reveals negative and insignificant links. Indeed, implicit tribalism has a negative link with tribalism in intergroup relations ($r = .057$, $p > .05$) as well as with political tribalism ($r = -.061$, $p > .05$). This corroborates the discrepancies between implicit and explicit discrimination; one being the opposite of the other. However, the links are positive and significant between global aversive tribalism and its attitudinal ($r = .621++$, $p < .01$) and behavioral ($r = .802++$, $p < .01$) dimensions. We also observe a positive and significant link between political tribalism and tribalism in intergroup relations ($r = .730++$, $p < .01$). These results ensure the predictive and discriminant validity of the Aversive Tribalism Scale.

Discussion

The objective of the present study was to make a confirmatory validation of the factorial structure of the Aversive Tribalism Scale. The factor analysis methods (MCA and EFA) made it possible to extract seven (7) of the thirty two (32) items that constitute the initial scale. PCA was used to determine acceptable scaling factors, loadings and communities. CFA-SEM confirmed the one-factor structures of the dimensions of aversive tribalism and its final two factor structure. Cronbach's alpha method was used to analyze the reliability of the items retained and the reliability of the internal structure of the scale. The analyses of the differences in the trends observed on this scale and the linear associations ensured the predictive and construct validities respectively. The results obtained constitute the main evidence of confirmatory validity of the bi factorial structure of aversive tribalism. These empirical results reveal that in the evaluation of this form of tribalism, individuals are more inclined to subtly discriminate against other individuals on the basis of their tribal affiliation, that is, they discriminate against them less overtly. The calculated psychometric parameters respect the standards defined by the literature. Indeed, the MCA made it possible to appropriately select the most relevant variables of the scale, since several variables (items) were measured. Through the EFA-PCA methods, the Kaiser criterion based on initial eigenvalues greater than 1 is

respected [17]. The established sample adequacy indices are acceptable and Bartlett's sphericity tests are significant as required by the literature [18]. This therefore justifies the use of principal component analysis, which makes it possible to explain a large part of the variance by minimizing the number of factors and avoiding the loss of information as much as possible. These results then make it possible to conclude that the data can be factored each time. Statistical techniques also made it possible to verify whether the variables selected by means of the MCA explain a large part of the variance with the two factors. The results of this study indicate that the methods used in the extraction of the main factors of aversive tribalism made it possible to maximize the percentage of the explained variance at approximately 73%. However, the percentage of the variance explained by eight (8) principal components extracted was estimated at around 55% [19]. Reducing the number of variables in this measure has therefore made it possible to optimize the amount of information that this scale can collect. The indices resulting from the exploratory analyzes of the factors of the scale are satisfactory. Normality tests of the variables revealed conclusive information. Indeed, the values of the symmetry and kurtosis coefficients respect the standards defined by the literature. The results of the CFA and structural equations showed that the adjustment of the final scale to the data collected respects the standard norms, as well as the two models which test the dimensions of the scale separately [20]. The literature reveals that the CFA must make it possible to identify among several alternative models, the one that best fits the empirical data and which must therefore be the final structural model. Models 1, 2 and 3 meet the recommended fit quality standards. The confirmatory analysis therefore made it possible to retain model 4 with seven items and two components as being the model that best fits the empirical data and which is therefore the one retained in the study of aversive tribalism. This metric scale presents observed variables that best fit the identified dimensions, with acceptable fit indices according to the specialized literature. The Normalized, Relative, Incremental, Tucker Lewis and Comparative Fit Indices (NFI, RFI, IFI, TLI and CFI) reach the accepted values to provide a very good fit. The confirmatory factor structure of the aversive tribalism scale meets psychometric standards. In the sense of Churchill, we conclude that the confirmatory validation of this scale makes it possible to confirm the stability of its factorial structure. The reliability of the aversive tribalism scale is the criterion used to judge whether it is of good quality and represents its ability to reproduce similar results if administered several times to the same sample. The calculated Cronbach's alpha index complies with defined metric standards. Thus, the reliability and validity of the scale of aversive tribalism is ensured. According to the psychometric literature, validity gives meaning to test scores. Thus, evidence for the validity of a metric scale indicates that there is a relationship between the scores obtained on the scale and the scores obtained on another scale.

Conclusion

It informs about the degree to which it is possible to draw specific conclusions predictions about individuals based on their score on the administered scale. The scale of aversive tribalism

is positively related to its dimensions, as required by the standards in this area. Validity says how good the test is at assessing a particular situation. Thus, the scale typologically classifies the individuals to whom it is administered. It is negatively related to explicit tribalism, thereby ensuring its construct validity. Accordingly, this scale can be considered a standard measure in the assessment of aversive tribalism.

References

1. Bartlett KT (2009) Making good on good intentions: The critical role of motivation in reducing implicit workplace discrimination. *Va L Rev* 95:1893-1972
2. Ben Hanana E, Houfaïdi S (2016) People satisfaction: Validation of a measuring scale in the context of Moroccan public administrations. *Int J Res Sci Innov Appl Sci* 18:1056-1073
3. Bentler PM, Bonett DG (1980) Significance tests and goodness of fit in the analysis of covariance structures. *Psychol Bull* 88:588-600
4. Bobo L, Fox C (2003) Race, Racism, and Discrimination: Bridging Problems, Methods, and Theory in Social Psychological Research. *Soc Psychol Q* 66 :319-332
5. Bouvet C, Prime C, Camart N, Fouques D, Zebdi R (2020) Discriminant validity of the social cognition and object relationship scale (scors, French version) for rating TAT stories. Comparison between clinical and non-clinical groups. *Que J Psychol* 41:45-60
6. Byrne BM (1989) A primer of LISREL: Basic applications and programming for confirmatory factor analytic models. 1st edition. Springer-Verlag, New York. 7:184
7. Churchill GA (1979) A paradigm for developing better measures or marketing constructs. *J Mark Res* 16:64-73
8. Cronbach LJ, Meehl PE (1955) Construct validity in psychological tests. *Psychol Bull* 52:281-302
9. Dovidio JF, Gaertner SL (2004) Aversive racism. *Adv Exp Soc Psychol* 36:1-51
10. Dumont M, Sarlet M, Dardenne B (2010) Be too kind to a woman, she'll fell incompetent: Benevolent sexism shifts self construal and autobiographical memories toward incompetence. *Sex Roles* 62:545-553
11. Fabrigar LR, Wegener DT, Mac Callum RC, Strahan EJ (1999) Evaluating the use of exploratory factor analysis in psychological research. *Psychol Methods* 4:272-299
12. Fornell C, Larcker DF (1981) Evaluating structural equation models with unob servable variables and measurement error. *J Mark Res* 48:39-50
13. Kaiser H, Rice J (1974) Little Jiffy Mark 4. *Educ Psychol Meas* 34:111-117
14. Messanga GA, Kenne Tiotsop L, Nzeuta Lontio S (2020) Construction and validation of a psychometric method for assessing aversive tribalism. *Int Multiling J Sci Technol* 5:1896-1907
15. Messanga GA, Npiane Ngongueu S (2021) Tribalization of politics in authoritarian regimes: Analysis of the link between political tribalism and right wing authoritarianism in Cameroon. *Int J Res Sci Innov Soc Sci* 5:15-24

16. Messanga GA, Nzeuta Lontio S (2020) Construction and Validation of an Assessment Scale for Tribalism in Intergroup Relations. *Eur Sci J* 16:195-215
17. Molem CS (2007) Cultural Diversity in Conflict and Peace Making in Africa. *Afr J Confl Resolut* 7:193-218
18. Sage Tchagnéno CL, Wassouoa E, Minkoue Pira L, Doutreaet E (2018) Construction and validation of a scale for the measurement of informal work social representations. *Pratiques psychologiques* 25:399-417
19. Tiwari SK, Patel AK, Kumar D (2017) Development of Perceived Discrimination Questionnaire: A measure for Different Social Categories Students. *Psychol Res* 12:81-88
20. Tucker LR, Lewis C (1973) The reliability coefficient for maximum likelihood factor analysis. *Psychometrika* 38:1-10