

Feeling of Collective Historical Victimization and Attitude towards Clinical Trials of Covid-19 Vaccines in the African Context: The Moderating Role of Anti-Western Emotions and Cognitions

Gustave Adolphe Messanga^{1,*}, Achille Vicky Dzuetsou Mouafo²,
Sonia Npiane Ngongueu¹, Laurine Elvira Memou¹

¹Department of Philosophy-Psychology-Sociology, University of Dschang, Cameroon

²Department of Philosophy and Psychology, University of Maroua, Cameroon

Abstract The objective of this research is to analyze the link between the past of victimization and subsequent intergroup attitudes and behaviors in the specific field of health. It tests the hypothesis that anti-Western emotions and cognitions (hatred, anger, fear, mistrust, disgust, suspicion, discrimination, stereotypes and prejudices) have a moderating effect on the link between the feeling of collective historical victimization and the attitude towards clinical trials of vaccines relating to Covid-19 in the African context. To do this, the scales of feeling of collective victimization ($\alpha = .76$), mistrust ($\alpha = .76$), anger ($\alpha = .85$), fear ($\alpha = .74$), intergroup disgust ($\alpha = .50$), attitudes towards clinical trials of vaccines ($\alpha = .72$), hatred ($\alpha = .79$), suspicion ($\alpha = .78$), discrimination ($\alpha = .65$), prejudices ($\alpha = .36$), and stereotypes ($\alpha = .31$) were administered to 369 participants including 167 women and 205 men. Their age was between 17 and 45 years ($M = 22.05$; $SD = 3.32$). The observations made provide empirical support for this prediction. They contribute to the literature on explanatory factors of attitudes towards clinical trials of drugs and vaccines.

Keywords Feeling of historical victimization, Clinical trials of vaccines, Covid-19, Anti-Western emotions, Anti-Western cognitions

1. Introduction

Many diseases have wiped out entire populations around the world (Cartwright, 1977). Researches are usually conducted to find treatments and/or vaccines to reduce their spread. In this vein, the literature reveals that to recruit experimental subjects for clinical trials, Africa is constantly solicited by Westerners (Noko, 2020). That is why it has long been considered the *guinea pig* of Big Pharma who are attracted by low costs and controls. Their products can be tested there with disregard for patients' safety (Chipaux, 2005). It is therefore not surprising that these trials have caused the deaths of thousands of Africans or left many of them severely affected. This is particularly the case with clinical trials of Trovan, Tenofovir, Nevirapine or Combifivir (Weipzig & Schipper, 2008).

It can be suggested that the memory of deaths engendered by clinical trials could generate a feeling of collective

historical victimization among Africans. This feeling refers to a state of mind shared by members of a group, which results from intentional, unjust and immoral harm with serious and lasting consequences inflicted by one or more outgroups (Bar-Tal et al., 2009). It is caused by the sufferings experienced by ingroup in the distant past (Schori-Eyal et al., 2014). These sufferings are embedded in collective memory and guide groups' cognitions, emotions, attitudes and actions (Connerton, 1989). In the field of health, this feeling is fueled by conspiracy theories that generally arise with new pandemics and their vaccines (Van Prooijen & Douglas, 2017).

Conspiracy theories are defined as an attempt to explain the ultimate causes of a significant social and/or political event based on certain circumstances which highlight the existence of a plot hatched by two or more powerful actors (Douglas et al., 2019). In Africa, these theories are partly based on the foundation of real experiences that collective memory has not obscured (Cessou, 2020). They flourish in times of social crises such as the onset of illness, since they correspond to high periods of uncertainty and collective fear

* Corresponding author:

messangaadolphe@gmail.com (Gustave Adolphe Messanga)

Received: Oct. 13, 2021; Accepted: Nov. 1, 2021; Published: Nov. 15, 2021

Published online at <http://journal.sapub.org/ijap>

(Van Prooijen & Douglas, 2017). Indeed, conspiracy theories were quickly developed around HIV/AIDS (Minard, 2007). They argued that this disease was created by the West to exterminate the black population of the United States and Africa (Pipes, 1997). Likewise, during the polio vaccination campaign in northern Nigeria in 2003, strong opposition was noted among parents of children of age to be vaccinated, due to their adherence to conspiracy theories that propagated the idea according to which the said campaign was in fact a program designed to inject sterilants and HIV/AIDS virus into the Muslim community, with the aim of killing its members (Yahya, 2007). Likewise, during the Ebola epidemic in Liberia in 2014, very powerful and widely held conspiracy theories argued that the virus that caused it was a biological weapon invented in a laboratory by the Westerners to infect and kill Africans; hence the fear and mistrust of the population towards the government and international partners (Abramowitz et al., 2017). The consequence of adhering to these theories is that they generate hostile emotions in Africans towards rulers and Westerners (Yahya, 2007).

Research on collective victimization reports that when members of a group feel victimized or their group has been victimized in the past, they experience emotions, develop cognitions, and display negative actions towards the oppressive group (Kauff et al., 2017; Pennekamp et al., 2007). Indeed, collective victimization has a powerful impact on individuals' emotions and beliefs, even when events took place in the distant past (Volkan, 2001). In this vein, the literature reveals that collective victimization leads to stereotypes and discrimination against the group considered to be the perpetrator of the pain inflicted (Fouka & Voth, 2019; Rozenas et al., 2017). This effect may extend to members of the group who have not suffered directly from this victimization (Lickel et al., 2006) through media (Paluck, 2009), school (Angvik & von Borries, 1997) or family (Lupu & Peisakhin, 2017) who transmit the memory of collective trauma from one generation to another. By way of illustration, observations made in Rwanda, Burundi and the Democratic Republic of Congo reveal that collective victimization transmits trauma from previous to subsequent generations, thus perpetuating negative intergroup attitudes (Vollhardt & Bilali 2015). It also induces prejudice and intergroup hostility. This is the case of Holocaust-induced victimization which created an antagonistic view of Jews and which, in turn, fueled anti-Semitic prejudices (Antoniou et al., 2020; Dinas et al., 2021).

Prejudices against outgroups can induce different emotions (anger, fear, disgust, pity, and guilt) that direct and regulate intergroup behaviors (Mackie & Smith, 2018). In this vein, Barlow et al. (2012) suggest that the frequency of negative experiences predicts stigma and outgroup avoidance. These experiences can be damaging not only because they increase prejudice, but also because they reduce the tendency to interact with outgroup members in the future (Barlow et al., 2012; Hayward et al., 2017). In this vein, in relation to the clinical trials mentioned above, one can

suggest that Africans might experience an anti-Western feeling, that is to say a broad opposition, prejudice or hostility towards the people, culture or policies of the Western world, especially in the field of health (Merriam-Webster, 2021).

Anti-Western sentiment is fueled by anti-imperialism and is set against countries found guilty of colonial crimes in the past and/or present (Gettleman, 2006). For Africans specifically, this feeling results from the slave trade, colonization, racial discrimination, exploitation of resources that their communities suffered, as well as the many unethical clinical trials carried out by Westerners in the past that have caused mental and physical harm, and the death of thousands of Africans. In this vein, Lado (2005) underlines that white and black remain racial categories whose symbolic and emotional charge, nor the impact of the white man on the consciousness and attitudes of Africans, cannot be neglected. The latter reminds many Africans of the painful history of slavery, colonization, defeat, humiliation, domination and exploitation. This memory is associated with enslavement, subjugation, exploitation, humiliation, and even mass killings. This humiliating and disastrous memory caused an emotional shock among Africans which is reflected in the negative representations they now have of Westerners. These representations fuel the development of hostile cognitions and emotions towards them (anger, hatred or disgust) (Choma et al., 2013; Jasini et al., 2017).

The literature reports that hostile emotions greatly influence Africans' health behaviors as well as their attitudes towards clinical trials of new vaccines (Larson, 2019; Yahya, 2007). Indeed, the clinical trials of drugs that have taken place on the African continent have generated a fear of medicine even in countries where they did not take place. This fear resurfaces every time a medical project is initiated. This explains the low rate of medical research in sub-Saharan Africa (1.3% of the world total) when this region of the world contains almost 25% of diseases (Washington, 2007). Thus, Africans express mistrust of Western medicine. This has enormous consequences on their health behaviors. For example, the polio infection rate has increased in Nigeria, Chad and Burkina Faso. Negative emotions (anger, surprise) are at the origin of these attitudes (Noko, 2020). Attitudes towards clinical trials of Covid-19 vaccines are in this perspective. Their source is, in particular, the fact that the continent records fewer cases infected with Covid-19 compared to the European and American continents; indicating that Africa (8,465,147 cases of infection including 214,574 deaths as of October 11, 2021) is in a less worrying health situation than other continents such as Asia (77,234,756 cases of infection including 1,140,251 deaths on October 11, 2021), North America (54,402,296 cases of infection including 1,105,531 deaths on October 11, 2021) or Europe (60,524,778 cases including 1,246,446 deaths on October 11, 2021) (www.worldmeters.info/coronavirus/); hence the lack of understanding of populations as to the insistence on the need to resort to vaccination against this disease on the continent. This incomprehension was

concretely manifested at the announcement of the clinical trials of the BCG vaccine against Covid-19. Indeed, after a video relayed on social networks where researchers from the french National Institute of Health and Medical Research (INSERM) explained the project to reinject the BCG vaccine to Africans in order to see its effectiveness against Covid-19, strong opposition was noted within the African community residing in Africa and outside the continent (Le Monde, 08 May 2020, 9:38).

Covid-19 was discovered in December 2019 in Wuhan province in China (Roser et al., 2020). It is one of the components of a large family of viruses that cause illnesses ranging from a simple cold to more severe pathologies such as MERS (Middle East Respiratory syndrome) or SARS (Severe Acute Respiratory Syndrome). It is transmitted by the "Severe Acute Respiratory Syndrome Coronavirus 2" [SARS-CoV 2] (Murphy et al., 2021), which is transmitted mainly by postillons from sneezing and coughing. These symptoms (fever or feeling of fever, cough, and difficulty in breathing) can appear up to 14 days after contact. According to WHO (2020), most infected individuals recover without treatment. People who are elderly or have other conditions such as cardiovascular disease, diabetes and cancer are most likely to develop a severe form of this disease for which there is no cure yet (WHO, 2020). Faced with the growing number of people infected and the mortality rate, WHO has declared a public health emergency of international concern, thus raising Covid-19 to the rank of a pandemic (Cucinotta & Vanelli, 2020). The world currently totals more than two hundred and thirty-eight (238) million officially diagnosed cases of infection and nearly five (5) million deaths (data as of Monday, October 11, 2021; www.worldmeters.info/coronavirus/).

Several vaccines are currently being administered to populations to protect them against Covid-19. These include vaccines from Pfizer-BioNtech, Moderna, Janssen (Johnson & Johnson), and AstraZeneca (Centers for Disease Control and Prevention [CDC], 2021). Due to the fact that these vaccines are still in development, they are not yet in their universal and final versions. Indeed, WHO considers them to be "emergency vaccines" because with the growing number of cases, the spread of the virus responsible for the disease had to be limited. That is why it recommends that people who have been vaccinated continue to wear the mask and respect physical distancing. The reason for this is that ignorance of the scope of protection that vaccines provide against disease, infection and transmission does not guarantee that vaccination exempts individuals from complying with barrier measures enacted at the onset of the pandemic to limit its spread. Likewise, it should be noted that more than two hundred (200) vaccines are still under development, of which more than sixty are in the clinical trial phase (WHO, 2020). In this vein, after the announcement of the first clinical trial of the vaccine against Covid-19 in Africa (the clinical trial of the BCG vaccine), the populations expressed strong opposition to its unfolding on the continent (Noko, 2020), undoubtedly because of the

memory of the past experiences reported above and which fueled all kinds of conspiracy theories (Kouzy et al., 2020; Ngutjinazo, 2021).

There are several determinants of attitudes of reluctance of individuals towards vaccination and clinical trials (Centre Européen pour la prévention et le contrôle, 2015). We can cite social media, lack of awareness, disinformation, lack of confidence in the institutions involved in vaccination; historical, socio-cultural, environmental, economic, political, psychological or health system/institutional factors; personal perception of the vaccine, specific aspects directly linked to vaccines or vaccination, people's mistrust of the state and conspiracy theories (Damjanovic et al., 2018; Hornsey et al., 2018 ; Johnson, 2000; Ketterer et al., 2013; Olpiński, 2012; Patty et al., 2017; Rieger & He-Ulbricht, 2020; Yaqub et al., 2014).

For the specific case of Covid-19, the literature offers several explanatory factors for the attitudes of reluctance towards vaccination against this disease (Daisy & Steptoe, 2020). These include mistrust of vaccines, concerns about their unintended effects, preference for natural immunity, the media and communication environment, the perception of the pharmaceutical industries, the source of the vaccine, socio-demographic factors, lack of trust in governments, disinformation, psychological factors, past experiences, conspiracy theories, or the higher mortality rate in the West than in Africa (Islam, 2021; Kearney et al., 2021; Kouzy et al., 2020; Murphy et al., 2021; Ngutjinazo, 2021; Noko, 2020; Nyhalah et al., 2021; Roozenbeek et al., 2020; Van der Linden et al., 2020). However, no study, to our knowledge, evaluates the role that anti-Western cognitions and emotions play in the link between the feeling of collective historical victimization and the attitudes of individuals towards clinical trials of Covid-19 vaccines in the African context. In support of this research perspective, the literature on the feeling of collective victimization states that it generates negative intergroup emotions and cognitions which are the sources of hostile intergroup attitudes (Barlow et al., 2012; Hayward et al., 2017; Vollhardt, 2012). In this vein, the scientific project of the present research is to show that in the specific field of health, the feeling of historical collective victimization felt by Africans due to past experiences could lead them to develop anti-Western emotions and cognitions; which could affect their attitudes towards clinical trials of Covid-19 vaccines. It is this idea that is subjected to empirical verification.

2. Hypotheses

The present study proposes that: Anti-Western emotions and cognitions have a moderating effect on the link between the feeling of collective historical victimization and the attitudes towards clinical trials of Covid-19 vaccines in the African context. Concretely, it is expected that: hatred, anger, fear, mistrust, disgust, suspicion, stereotypes, prejudices and discrimination generated by the feeling of collective

historical victimization felt by Africans against Westerners because of the experiences of clinical trials of drugs and vaccines that have killed and severely disabled thousands of people on the continent since the colonial period, lead them to adopt a negative attitude towards clinical trials relating to vaccines against Covid-19.

3. Method

3.1. Participants

To conduct this study, 369 students of both sexes were selected by the simple random sampling technique in different faculties of the University Dschang. Their age is between 17 and 45 years old. The choice of students is due to the fact that they have a high level of education which allows them to analyze social reality critically. They all agreed to participate in the research on a voluntary basis.

3.2. Material and Measurement

Several psychometric instruments are used to assess the moderating effect of Intergroup Emotions (IE) and Cognitions (IC) on the link between the feeling of collective historical victimization (HFCV) and the attitude towards clinical trials of vaccines relating to Covid-19 in Africa (ATCTRCov-19V). The first is the HFCV scale (Schori Eyal et al., 2014). It has good reliability and a good factor structure ($\alpha = .767$; KMO = .773; $\lambda\alpha = 55.334$; $h^2 = .733$). The second, for its part, evaluates the ATCov-19VT (Leslie & Keith, 2017). It has satisfactory metric characteristics ($\alpha = .722$; KMO = .911; $\lambda\alpha = 59.793$; $h^2 = .789$). The first moderating variable, intergroup emotions, is evaluated by a scale comprising six (6) dimensions. These are: 1) Mistrust (Rusk, 2018; $\alpha = .767$; KMO = .812; $\lambda\alpha = 57.538$; $h^2 = .822$); 2) Fear (Giner-Sorolla & Russell, 2019; Sternberg & Sternberg, 2008; $\alpha = .740$; KMO = .714; $\lambda\alpha = 57.541$; $h^2 = .877$); 3) Anger (Giner-Sorolla & Russell, 2019; Sternberg & Sternberg, 2008; $\alpha = .853$; KMO = .815; $\lambda\alpha = 69.472$; $h^2 = .862$); 4) Disgust (Hodson et al., 2013; $\alpha = .500$; KMO = .643; $\lambda\alpha = 67.362$; $h^2 = .850$); 5) Suspicion (León et al., 2002; $\alpha = .789$; KMO = .764; $\lambda\alpha = 61.49$; $h^2 = .810$); and 6) Hatred (Sternberg & Sternberg, 2008; $\alpha = .793$; KMO = .769; $\lambda\alpha = 55.21$; $h^2 = .828$). The second moderating variable, intergroup cognitions, is evaluated on three (3) dimensions. The first addresses stereotypes (Tiwari et al., 2014; $\alpha = .310$; KMO = .551; $\lambda\alpha = 54.971$; $h^2 = .788$). The second concerns prejudices (Tiwari et al., 2014; $\alpha = .363$; KMO = .572; $\lambda\alpha = 49.417$; $h^2 = .804$). The third measures discrimination (Tiwari et al., 2017; $\alpha = .658$; KMO = .638; $\lambda\alpha = 65.777$; $h^2 = .696$). Overall, the Intergroup Cognitions scale is reliable ($\alpha = .693$; KMO = .727; $\lambda\alpha = 58.66$; $h^2 = .677$). The same is true for the Intergroup Emotions scale ($\alpha = .910$; KMO = .716; $\lambda\alpha = 82.651$; $h^2 = .890$). All of these self-administered measures have acceptable sampling adequacy indices (KMO), good factor contributions ($\lambda\alpha$), and the items have good saturations. They are rated on a Likert scale ranging from 1 (Strongly disagree) to 7

(Strongly agree).

4. Results

The results of this research are presented in three phases. The first puts into perspective the preliminary tests of the effects of interactions and covariations between the variables of the study and leads to the model of individual prediction (without moderation) of ATCTRCov-19V by IC, IE and HFCV and covariances (Figures 1, 2 and 3). The second is the first level of verification of the moderation of the interaction effect between HFCV and ATCTRCov-19V by IC and IE in the Multiple Linear Regression Model resulting in a model (Figure 4). The third phase is the second level of verification or confirmatory analysis of the hypothesis (Figure 5). It confirms the moderation of the postulated interaction effect by applying the Structural Equation Modeling, with the Robust Maximum Likelihood method under AMOS 23.0.

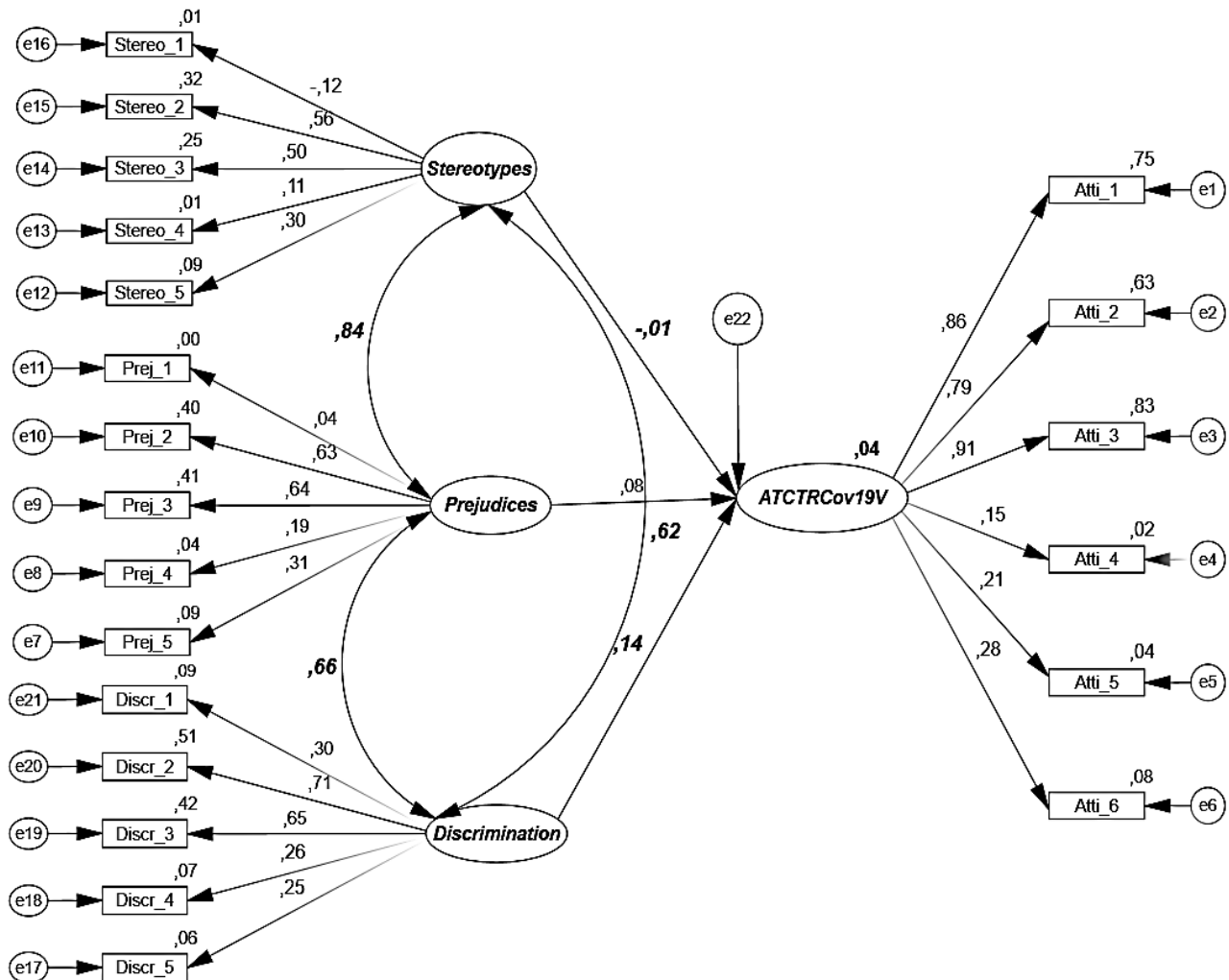
4.1. Covariations between Latent Variables Underlying Intergroup Cognitions and Their Interaction Effects with Attitudes towards Clinical Trials of Covid-19 Vaccines (ATCTRCov-19V)

IC and IE are latent factors underlying the interaction effect between feeling of collective victimization and attitude towards clinical trials of Covid-19 vaccines. Structural equation models are analyzed in order to estimate the interaction effects between these variables and the levels of covariation and to attest to their validity. To do this, the Robust Maximum Likelihood (RML) method in AMOS, an extension of SPSS 23.0 is used. A number of parameters meet the quality criteria of the model, as they make it possible to judge the quality of the statistically valid model from the point of view of the interaction effects between the latent and principal variables of the model. For a good model, the CMIN/DF index must be either below 5% (Byrne, 1989; Civelek, 2018) or below 3% (Civelek, 2018; Meydan & Şen, 2011). The index χ^2/df must be insignificant with the ratio χ^2/df and must be close to 5 (Wheaton et al., 1977); the Root-Mean-Square Error of Approximation (RMSEA) must be less than or equal to .1 (10%) (Browne & Cudeck, 1993) and the PCLOSE strictly less than .5 (5%) (Lomax, 2010).

The model in Figure 1 first indicates that the latent variables constituting IC (Stereotypes: $M = 23.66$, $SD = 4.335$; Prejudices: $M = 23.47$, $SD = 4.565$; Discrimination, $M = 23.63$, $SD = 5.280$) covariate positively, with indices ranging from .08 to .84. They correlate positively with each other (Stereotypes \leftrightarrow Prejudice: $r = .435^{**}$, $p = .000$; Stereotypes \leftrightarrow Discrimination: $r = .245^{**}$, $p = .000$; Prejudice \leftrightarrow Discrimination: $r = .481^{**}$, $p = .000$) and with ATCTRCov-19V (Stereotypes \leftrightarrow ATCTRCov-19V: $r = .392^{**}$, $p = .000$; Prejudices \leftrightarrow ATCTRCov-19V: $r = .318^{**}$, $p = .000$; Discrimination \leftrightarrow ATCTRCov-19V: $r = .200^{*}$, $p = .000$). Then, it reveals negative and very weak interaction effects between stereotypes and ATCTRCov-19V ($\beta = -.01$) and

positive effects between prejudices and ATCTRCov-19V ($\beta = .62$) and between discrimination and these attitudes ($\beta = .14$). Finally, the analysis of the Model Fit Index reveals some acceptable model fit parameters (with RMSEA = .10 < .10 (or 10%); PCLOSE = .000 < .5 and PRATIO = .871 close to 1). However, other parameters are not (with $\chi^2 = 965.50$, Df = 183, $p = .000 > .5$, $\chi^2/\text{Df} = 5.275 > 5$; CMIN = 965.505; CMIN/DF = 5.276 > 5; the NFI = .548;

RFI = .481; IFI = .599; TLI = .534; CFI = .594 and PCFI = .517 moving away from 1). These data partially support this model by underpinning the ability of variables underlying IC to predict ATCTRCov-19V. There are other unobservable latent variables underlying stereotypes, prejudices and discrimination that would justify the full validity of the model.



Note: ATCTRCov-19V = Attitudes Towards Clinical Trials Relating to Covid-19 Vaccines; HFCV = Feeling of Collective Historical Victimization; Cov. = Covariation; **: p-value estimate to .01

Figure 1. Analysis of the effects of latent variables constituting IC on ATCTRCov-19V

4.2. Covariations between Latent Variables Underlying Intergroup Emotions and Their Interaction Effects with Attitudes towards Clinical Trials of Covid-19 Vaccines (ATCTRCov-19V)

Figure 2 first reveals that the latent variables constituting IE (Hate: M = 22.82, SD = 6.29; Suspicion: M = 20.45, SD = 5.13; Disgust: M = 16.96, SD = 5.55; Anger: M = 13.78, SD = 5.92; Fear: M = 16.43, SD = 5.25; and Mistrust: M = 34.45, SD = 7.90). These variables covariate positively and the indices range from .33 to .91. The correlation model presents positive and significant indices (Hate \leftrightarrow Suspicion: $r = .550$

**, $p = .000$; Hate \leftrightarrow Disgust: $r = .410$ **, $p = .000$; Hate \leftrightarrow Anger: $r = .505$ **, $p = .000$; Hate \leftrightarrow Fear: $r = .569$ **, $p = .000$; Hate \leftrightarrow Mistrust: $r = .532$ **, $p = .000$; Suspicion \leftrightarrow Disgust: $r = .190$ **, $p = .000$; Suspicion \leftrightarrow Anger: $r = .316$ **, $p = .000$; Suspicion \leftrightarrow Fear: $r = .435$ **, $p = .000$; Suspicion \leftrightarrow Mistrust: $r = .505$ **, $p = .000$; Disgust \leftrightarrow Anger: $r = .612$ **, $p = .000$; Disgust \leftrightarrow Fear: $r = .420$ **, $p = .000$; Disgust \leftrightarrow Mistrust: $r = .225$ **, $p = .000$; Anger \leftrightarrow Fear: $r = .576$ **, $p = .000$; Anger \leftrightarrow Mistrust: $r = .369$ **, $p = .000$; Fear \leftrightarrow Mistrust: $r = .492$ **, $p = .000$). These factors latent in IE are positively and significantly related to ATCTRCov19V (Hate \leftrightarrow ATCTRCov19V: $r = .280$ **, $p = .000$;

$p = .000$; Suspicion \leftrightarrow ATCTRCov19V: $r = .315^{**}$, $p = .000$; Disgust \leftrightarrow ATCTRCov19V: $r = .101$, $p = .051 > .01$; Anger \leftrightarrow ATCTRCov19V: $r = .172^{**}$, $p = .000$; Fear \leftrightarrow ATCTRCov19V: $r = .219^{**}$, $p = .000$; Mistrust \leftrightarrow ATCTRCov19V: $r = .311^{**}$, $p = .000$).

The model reports very weak interaction effects both positive (ATCTRCov-19V \leftarrow Hate, $\beta = .00$; ATCTRCov-19V \leftarrow Suspicion, $\beta = .13$; ATCTRCov-19V \leftarrow Disgust, $\beta = .22$; ATCTRCov-19V \leftarrow Fear, $\beta = .06$; ATCTRCov-19V \leftarrow Mistrust, $\beta = .07$) and negative between these factors and ATCTRCov-19V (ATCTRCov-19V \leftarrow Anger, $\beta = -.25$).

Finally, the Model Fit Index reveals valid model fit indices (with RMSEA= .073<.10 (i.e. 7.3%<10%; PCLOSE= .000<.5) with indices such as: PRATIO= .906, IFI= .778, TLI= .752, CFI= .776, NFI= .699, RFI= .668 and PCFI= .703 close to 1, that is, they are acceptable. The indices like the CMIN= 1592.106, the ratio CMIN/DF= 2.954, the $\chi^2 = 1592.106$ (Df= 539, $p = .000 < .05$) and the ratio $\chi^2/\text{Df} = 2.953$ tending towards 5 are acceptable. These data validate the Model Fit Index and the ability of IE latent factors to predict ATCTRCov-19V.

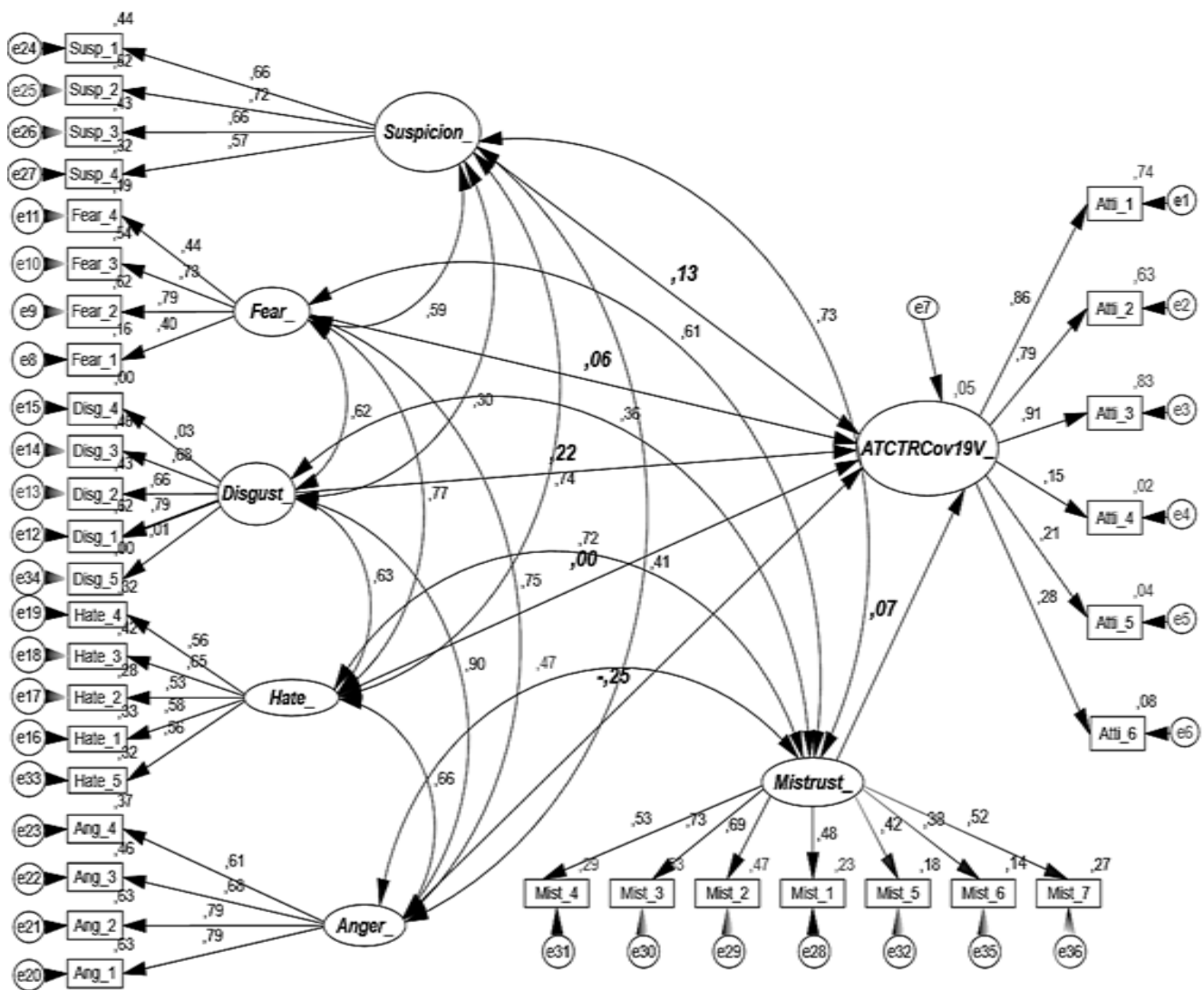


Figure 2. Analysis of the effects of the latent variables constituting IE on ATCTRCov-19V

4.3. Analysis of Covariations between Predictors of ATCTRCov-19V (HFCV, IE and IC) and Their Individual Interaction Effects on ATCTRCov-19V

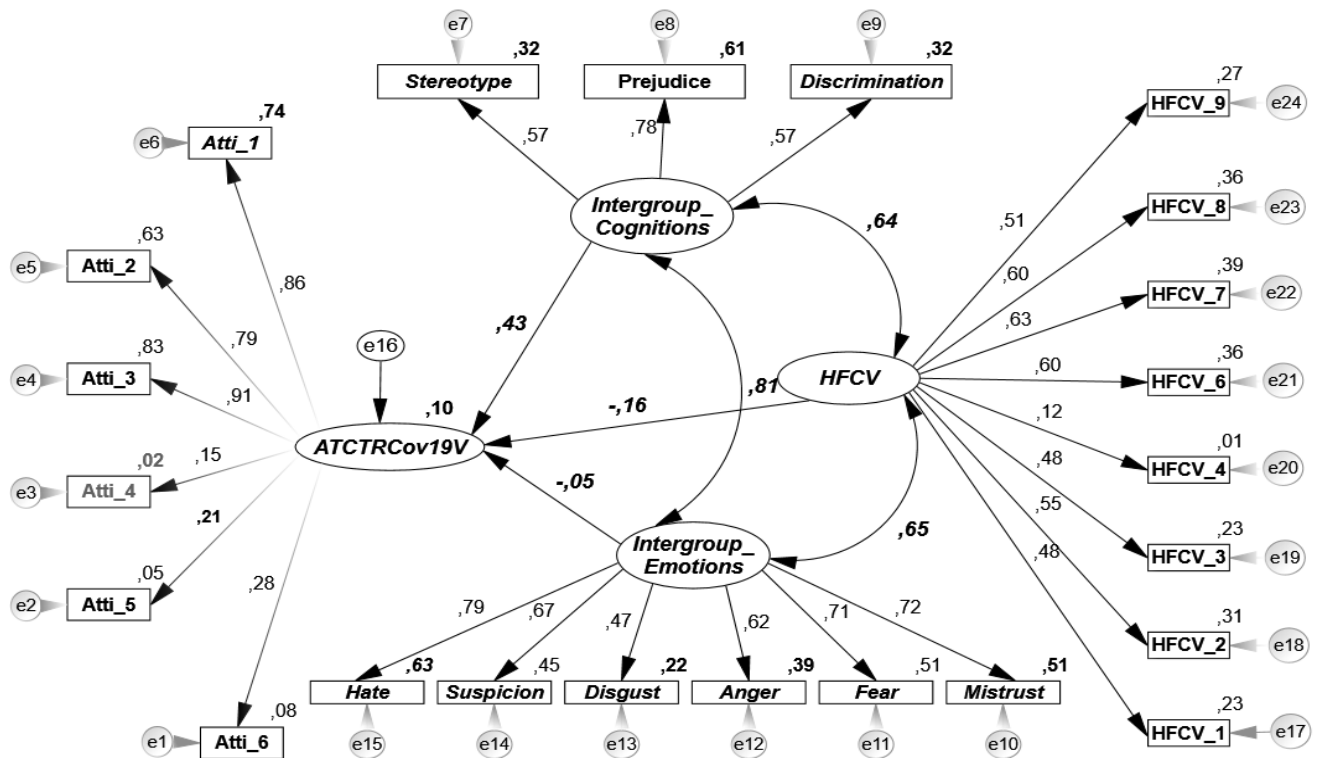
In fact, the Model Fit reveals a CMIN/DF index= 3.82<5; $p = .000$. In view of the data collected, we note that the fit index of the hypothetical model is partially acceptable

because only the p-value criterion is not respected (χ^2 (1, N= 369)= 856.92; df= 224 ; ratio $\chi^2/\text{df} = 3.825$ close to 5; $p = .000 < .05$) while the other parameters are reasonably acceptable (RMSEA= .08<.1; PCLOSE= .000<5%) (see Table 1 in appendices). This means that the hypothetical model can be accepted. Other goodness-of-fit indices obtained are acceptable. Indeed, the normalized adjustment

index or delta 1 is valid and tends towards 1 (NFI or $\Delta 1 = .732$). It is the same for delta 2 (IFI or $\Delta 2 = .787$).

The TLI or Rhô 1 coefficient (Tucker-Lewis coefficient) and the Relative Goodness Index (RFI) are valid and close to 1 (RFI or $\rho 1 = .669$; TLI or $\rho 2 = .733$; See Table 1). The comparative adjustment index is determined and also approaches 1 (CFI = .783) and the Parsimony-Adjusted Measures are approximately acceptable (PRATIO = .812; PNFI = .594; PCFI = .636; See Table 1). All of these values

attest to a substantially good fit of the statistical model for predicting attitudes towards clinical trials for Covid-19 vaccines by latent variables, including HFCV, IC and IE. However, the predictive indices of the model reveal negative standardized coefficients between HFCV and attitudes ($\beta = -.16$), IE and ATCTRCov-19V ($\beta = -.05$) on the one hand; a positive standardized index between IC and attitudes ($\beta = .43$), as indicated by the above model on the other hand (See Table 1).



Note: ATCTRCov-19V= Attitudes Towards Clinical Trials Relating to Covid-19 Vaccines; HFCV= Feeling of Historical Collective Victimization

Figure 3. Individual prediction model (without moderation) of ATCTRCov-19V by HFCV, IE and IC and covariances (preliminary test)

Following this logic, the SEM reveals “Regression Weights index” independently attesting to a positive and significant interaction between IC and attitudes towards clinical trials ($ATCTRCov-19V \leftarrow IC$, $Es. = .09$; $SE = .04$; $CR = 2.36$; $p = .018$). In contrast, these indices are all the more negative as they reveal non-significant asymmetric interactions between ED and attitudes towards clinical trials ($ATCTRCov-19V \leftarrow IE$, $Es. = -.005$; $SE = .01$; $CR = -.363$; $p = .717$) and between HFCV and these attitudes ($ATCTRCov-19V \leftarrow HFCV$, $Es. = -.10$; $SE = .06$; $CR = -1.53$; $p = .125$). Positive and significant linear covariations and associations are observed between the predictors ($IC \leftrightarrow IE$, $r = .81$; $Es. = 11.22$; $SE = 1.53$; $CR = 7.32$, $p (***) < .001$; $HFCV \leftrightarrow IC$, $r = .64$; $Es. = 1.33$; $SE = .23$; $CR = 5.57$, $p (***) < .001$; $HFCV \leftrightarrow IE$, $r = .65$; $Es. = 3.11$; $SE = .50$; $CR = 6.19$, $p (***) < .001$). In conclusion of this model, the data reveal that HFCV, IC and IE positively covariate and independently have different interaction effects with ATCTRCov-19V.

Only IC positively impact ATCTRCov-19V, while IE and HFCV act negatively on ATCTRCov-19V. This gives rise to the moderation model analysis of the interaction between HFCV and ATCTRCov-19V by IC and IE (see multiple linear regression model (Figure 2) and SEM (Figure 3)). Do they partially (semi-moderating effect) or totally, positively or negatively, significantly or not significantly moderate this link?

4.4. First level of Verification: Moderation Test of the Interaction Effect between HFCV and ATCov-19VT by IC and IE in the Multiple Linear Regression Model under SPSS 23.0

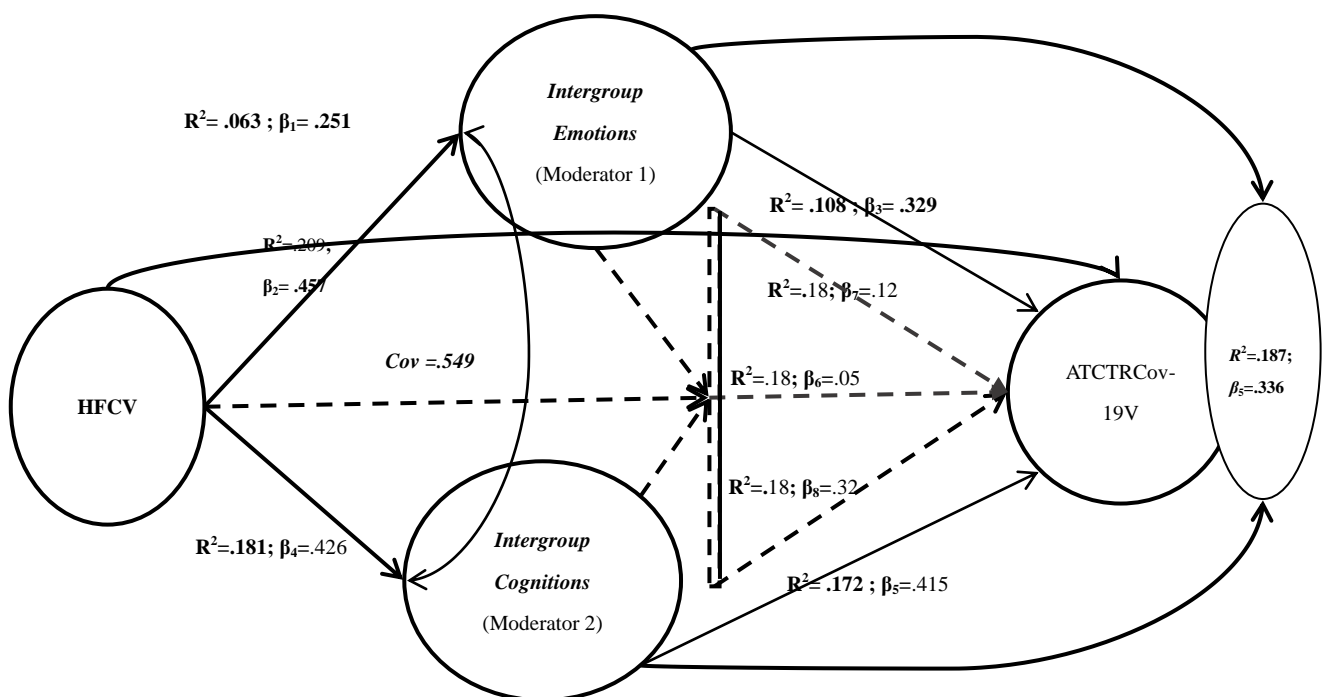
The model in Figure 2 is based on the analysis of the single and multiple linear regression model testing the interaction effects between the variables of the study. It defines the coefficients of determination (R^2) and the standardized linear regression indices (β) on the basis of

which the validity of the hypothesis is based. It reveals positive coefficients underlying symmetrical interactions between the latent and explained variables. In fact, participants manifest a strong HFCV (8 items; $M=39.95>28$; $SD=8.547$) and strongly negative attitudes towards clinical trials of vaccines against Covid-19 (6 items; $M=29.19>21$; $SD=7.10$). The simple linear regression coefficients attest that HFCV very weakly and significantly determines ATCTRCov-19V ($r=.251^{**}$, $p=.000$; $R^2=.063$; $\beta_1=.251$; $t=4.96$; $SE=.04$; $CI_e[.12 .29]$; $p=.000$). This effect of a rate of 6.3% is all the more positive and weak as it legitimizes the use of moderating variables of this interaction by IC and IE and the statistical technique using SEM.

Analysis of the effect of IE on the link between HFCV and ATCTRCov-19V first reveals that HFCV induces 20.9% of IE (29 items; $M=103.04>101.5$; $SD=24.68$; $r=.457^{**}$; $p=.000$; $R^2=.209$; $\beta_2=.457$; $t=9.86$; $SE=.13$; $CI_e[1.05 1.58]$; $p=.000$) which, in turn, rather generate 10.8% ($>6.3\%$) of ATCTRCov-19V ($r=.329^{**}$; $p=.000$; $R^2=.108$; $\beta_3=.329$; $t=6.68$; $SE=.01$; $CI_e[.06 .12]$; $p=.000$). The moderation assumption tends to be reliable, as IE increases the level of the positive effect by 4.50%. Then, HFCV acts positively up to 18.1% on IC (16 items; $M=57.00>56$; $SD=9.37$; $r=.426^{**}$; $p=.000$; $R^2=.181$; $\beta_4=.426$; $t=9.02$; $SE=.05$; $CI_e[.36 .56]$; $p=.000$) which, in turn, induce ATCTRCov-19V at a rate of 17.2%, slightly less than 18.1% with a deviation of .9 % ($r=.415^{**}$; $p=.000$; $R^2=.172$; $\beta_5=.415$; $t=8.75$; $SE=.03$; $CI_e[.24 .38]$; $p=.000$). These simple linear regression model results show that IE and IC significantly moderate the interaction between HFCV

and ATCTRCov-19V, hence the effect rates of varying interactions.

Multiple regression analysis reveals insignificant effects between these latent factors (IE and IC), HFCV and ATCTRCov-19V. Indeed, the analysis of the canonical correlation between IE, IC and ATCTRCov-19V reveals a positive index ($r=.433$; Eigenvalue=.230; Wilks Stat.=.813). The joint effect of said latent factors reveals a positive coefficient of determination of 18.7%, predicting the explained variable (ATCTRCov-19V \leftarrow IC \leftrightarrow IE; $R^2=.187$; $\beta_5=.336$; $t=5.96$; $SE=.04$; $CI_e[.17 .33]$; $p=.000$). The multiple regression proposes, for its part, indices of determinations which together indicate that HFCV, IE and IC simultaneously predict ATCTRCov-19V to the tune of approximately 18.9%. It means that when these variables are put together, their interaction effects with ATCTRCov-19V stabilize at this rate, revealing a non-significant effect of HFCV (ATCTRCov-19V \leftarrow IE, $R^2=.18$; $\beta_7=.127$; $t=2.15$; $CI_e[.00 .07]$; $SE=.01$; $p=.032$; ATCTRCov-19V \leftarrow IC, $R^2=.18$; $\beta_8=.322$; $t=5.55$; $CI_e[.15 .330]$; $SE=.04$; $p=.000$; ATCTRCov-19V \leftarrow HFCV, $R^2=.18$; $\beta_6=.056$; $t=1.02$; $CI_e[-.04 .13]$; $SE=.04$; $p=.307$). All these simple and multiple linear regression indices reveal the existence of the moderating effects postulated in the hypothesis of the study. However, an in-depth analysis of this moderation from a confirmatory perspective of the interaction effects between the variables as postulated in the hypothesis seems to be enriching. This justifies a second validation of the hypothesis, using statistical data from the analysis of moderations via structural equations model.



Note: ATCTRCov-19V = Attitudes Towards Clinical Trials Relating to Covid-19 Vaccines; HFCV = Feeling of Collective Historical Victimization

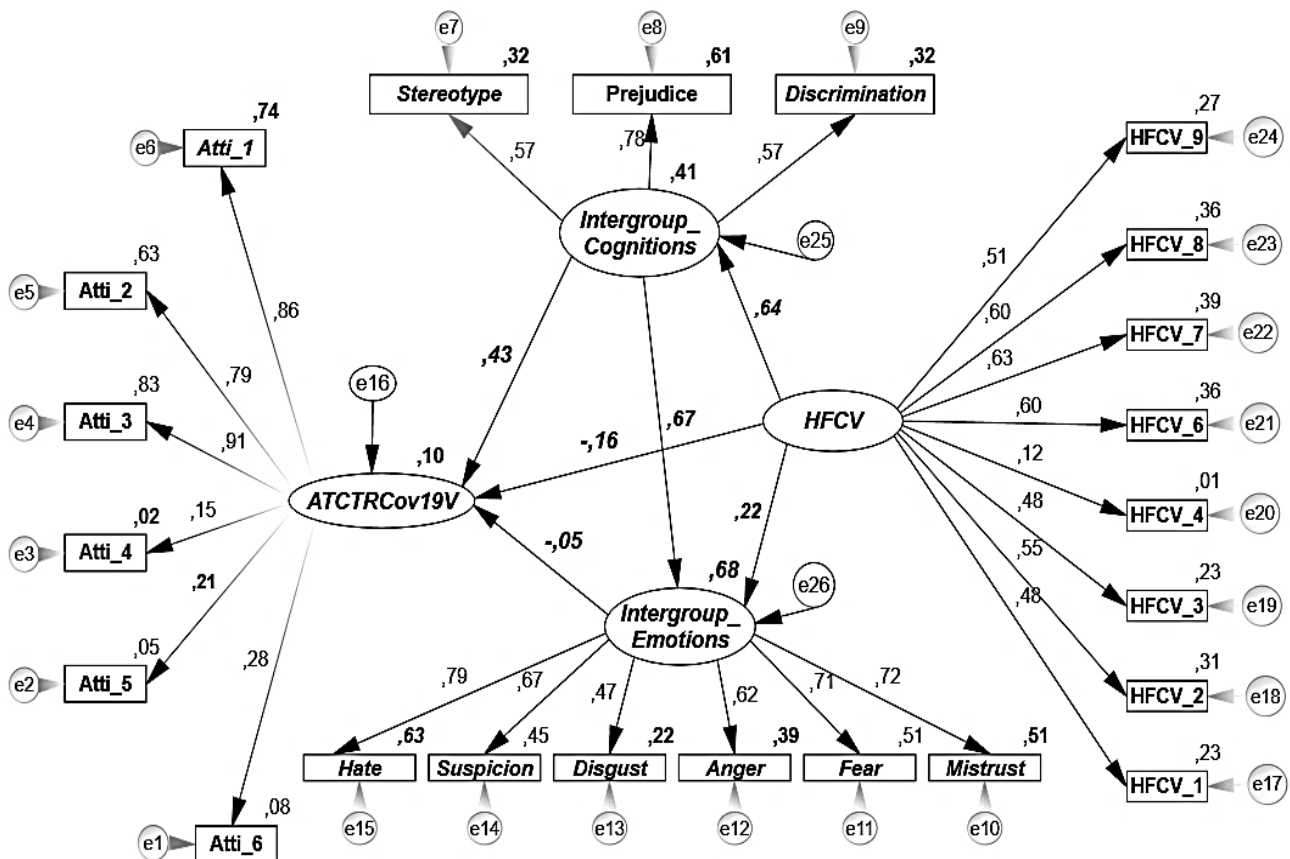
Figure 4. Moderation of the interaction effect between HFCV and ATCTRCov-19V by IC and IE

4.5. Second Level of Verification (Confirmatory): Moderation Test of the Interaction Effect between HFCV and ATCTRCov-19V by IC and IE in Structural Equation Modeling

SEM reveal interesting results from the point of view of moderations of the link between HFCV and ATCTRCov-19V. These results differ from those analyzed in the linear regression model in Figure 2 in that they suggest negative and positive predictive indices, indicating that IE and IC moderate the relationship postulated in the hypothesis differently. This new result revealed by SEM shows that HFCV negatively predicts ATCTRCov-19V ($\beta = -.16$, ie a prediction rate of -16%). However, HFCV positively predicts IE ($\beta = .22$, i.e. a prediction rate of IE of 22%) and IC ($\beta = .64$, ie a prediction rate of IC of 64%). A positive interaction is observed between IC and IE ($\beta = .67$, or 67% interaction between these two latent factors). Following the logic of moderation, we note, however, that IC positively moderate the link between HFCV and ATCTRCov-19V ($\beta = .43$, i.e. a moderation of 43%), while IC moderates this link rather negatively ($\beta = -.05$, i.e. a negative moderation of 5%). The AMOS MLR method determined statistical parameters that attest to the good quality of the integrative model of the moderating factors of the postulated link.

Table 2 (see appendices) of the Model Fit Index shows a significant CMIN/DF (CMIN/DF= 3.826<5%, $p = .000$). But

the index χ^2 is acceptable despite the p-value <5% ($\chi^2 = 856.92$; $df = 224$; $\chi^2/df = 3.825$ close to 5; $p = .000 < .05$), which is not favor of an acceptable model. However, some clues may provide information on the reliability of the ATCov-19VT prediction model. Indeed, the RMSEA index is less than or equal to .1, i.e. 10% with a very good PCLOSE index (RMSEA= .088<.1, i.e. 8.8%<10% and PCLOSE= .000<.5, i.e. 0%<5%). The normalized adjustment index is valid and tends towards 1 (NFI or $\Delta 1 = .732$). This is also the case for delta 2 (IFI or $\Delta 2 = .787$). Likewise, the coefficients Rhô 1, Rhô 2, CFI, PRATIO, PNFI and PCFI (see Table 2 in appendices) resulting from the model of moderations of the link between HFCV and ATCTRCov-19V are similar to the coefficients resulting from the preliminary model of Figure 1 and Table 1. Beyond these reasonably acceptable additional data, it can be said that the SEM model of moderation of the interaction between HFCV and ATCTRCov-19V by IC and IE is valid. All these indices attest to a substantially good fit of the model. We conclude that IC positively and significantly moderates the link postulated in the hypothesis (ATCTRCov-19V \leftarrow IC, $\beta = .293$; SE= .112; CR= 2.61; $p = .009$), while IC moderates negatively and not significantly this link, by reducing the strength of the negative effect between HFCV and ATCTRCov-19V (ATCTRCov-19V \leftarrow IE, $\beta = -.016$; SE= .044; CR= -.364; $p = .716$) as noted in the model of Figure 3 (see Table 2).



Note: ATCTRCov-19V = Attitudes Towards Clinical Trials Relating to Covid-19 Vaccines; HFCV = Historical Feeling of Collective Victimization

Figure 5. SEM model of moderation of the interaction between HFCV and ATCTRCov-19V by IC and IE

5. Discussion

The present study tested the hypothesis that anti-Western emotions and cognitions have a moderating effect on the link between the feeling of historical collective victimization and the attitudes towards clinical trials of Covid-19 vaccines in the African context. Concretely, it was expected that: hatred, anger, fear, mistrust, disgust, suspicion, stereotypes, prejudices and discrimination generated by the feeling of historical collective victimization felt by Africans against Westerners because of the experiences of clinical trials of drugs and vaccines that have killed and severely disabled thousands of people on the continent since the colonial period, lead them to adopt a negative attitude towards clinical trials relating to vaccines against Covid-19. The data collected provides empirical support for this prediction.

The observations made in this research are in agreement with the propositions of the theory of intergroup emotions (Smith, 1993), which postulates that when a social identity is salient, related situations or events produce intergroup emotions (Frijda, 2007). These emotions determine intergroup attitudes and behaviors (Mackie & Smith, 2015; Spanovic et al., 2010). They are better predictors of collective action than the perception of objects and events (Van Zomeren et al., 2008). Concretely, depending on the perception that individuals have of the situation or event, they experience specific emotions which will in turn trigger tendencies to action or particular behaviors (Frijda et al., 1989; Roseman et al., 1990). In this vein, Esses and Dovidio (2002) point out that when members of a group experience anger, it generates impulse and desire or intention to act against its source. Tausch et al. (2011) also claim that anger predicts support for normative forms of confrontation. On the other hand, hatred generates a negative assessment of outgroup members as being inherently bad and as a serious, lasting and intractable threat to ingroup (Mackie & Smith, 2015). The behavioral consequence of hatred is not a confrontation or aggression aimed at changing or correcting a situation. Rather, it is prejudice or annihilation (Fischer & Roseman, 2007; Halperin, 2008). On the other hand, those who experience fear tend to flee from its source and not to confront or attack the offending outgroup (Dumont et al., 2003). In addition, disgust towards an outgroup predicts the desire to attack it (Mackie et al., 2000). It generates more extreme and aggressive intergroup behavior in individuals, which may consist of violent attacks (Spears et al., 2009).

In the specific field of health, the literature notes that negative intergroup emotions (mistrust, fear, anger towards vaccines or clinical trials) are one of the reasons for the refractory attitudes of certain populations (Africans in particular) towards clinical trials of vaccines and vaccines which are developed in the West in most cases (Cara, 2020; Desclaux et al., 2020). In this vein, Larson (2019) reports that the Ebola hemorrhagic fever vaccination campaign has been hampered by deep mistrust in eastern Congo. In communities where public health campaigns were carried out by Westerners, vaccination was viewed with suspicion

and hostility. In this wake, Cara (2020) reveals that the announcement of the first tests of the Covid-19 vaccines has aroused fear, mistrust and anger among Africans. Desclaux et al. (2020), going in the same direction, note that in Cameroon, Senegal, Benin as well as in Burkina Faso, between 60 and 70% of people say that they would not accept the anti-Covid-19 vaccine if it was offered to them. These authors indicate that this reluctance can be explained by a complex assemblage of arguments and social representations which arouse doubt and suspicion. Added to this are mistrust of health workers, social spread of false information, and myths that Africans are protected against Covid-19, which generate mistrust and suspicion around clinical trials of vaccines and drugs against this disease (Samarasekera, 2021).

The specialized literature reveals that in Africa, the negative emotions manifested in the area of vaccines can be explained by the past medical experiences that Westerners have carried out on the continent (Noko, 2020; Yahya, 2017). In other words, they stem from the past of victimization of Africans in the domain of health. This past is the source of a feeling of collective historical victimization; that is, a state of mind that results from one group perceiving itself as the target of harm intentionally inflicted by another group (Bar-Tal et al., 2009). This arises from an experience of considerable harm, entrenched in the collective memory of a society as serious and unfair (Paez & Liu, 2011). It generates negative intergroup behaviors that can be concretely manifested by a reduced empathy towards the suffering of outgroups, the decrease in the will to forgive them for the harm committed, the increase in their level of dehumanization and the justification of the aggression of their members (Schori-Eyal et al., 2014; Wohl & Branscombe, 2008).

The results of this research also reveal that intergroup cognitions (prejudice, stereotypes and discrimination) impact on the link between the feeling of collective historical victimization and attitudes towards clinical trials of covid-19 vaccines in Africa. Indeed, the past of victimization of Africans in the health sector, the sources of which are the various fraudulent clinical trials carried out by Westerners on the African continent, generates a set of anti-Western representations which, in turn, push populations to be reluctant towards western medicine. Clearly, collective victimization manifests itself in hostile intergroup behavior (Belmonte & Rochlitz, 2019). More concretely, Aberson (2015) asserts that past experiences, positive and negative, predict the affective dimensions of prejudice, while uniquely negative experiences explain cognitive dimensions of prejudice such as stereotypes. The latter have long been associated with negative outgroup expectations (Spencer-Rodgers & McGovern, 2002). These expectations influence both information and social judgment (Ybarra et al., 1999). Because negative stereotypes generate negative expectations of the outgroup, they appear with negative emotions (Stephan & Stephan, 1996). It is in this logic that the hostile intergroup cognitions and emotions

For the literature, the history of collective victimization is likely to reinforce intergroup anxiety and perceptions of threat; thus reducing empathy towards the threatening outgroup (Techakesari et al., 2015; Visintin et al., 2016; 2017). It predicts intolerance as well as a high level of perception of threat (Skritka et al., 2006). In the specific case of this study, Westerners are seen by Africans as a source of threat. However, the perception of threat reinforces intergroup prejudices, negative stereotypes and leads to discrimination and opposition to pro-outgroup policies (Ramos-Oliveira & Pankalla, 2019; Renfro et al., 2006). Thus, the negative attitudes of Africans towards clinical trials carried out by Westerners can be explained by the fact that the latter constitute a threat to their physical and psychological well-being; hence the anger, mistrust, and even fear they arouse. This is the source of avoidance reactions and self-protective behaviors that manifest themselves, for example, in the refusal of clinical trials and vaccines.

To limit the spread of diseases, pharmaceutical companies, most of them Western, must find drugs and vaccines. To do this, they must go through clinical trials involving humans. This is the case with Covid-19 pandemic. However, the announcement of the first trials on the BCG vaccine in Africa generated strong opposition to this project. The main basis for this opposition was the previous clinical trials of vaccines and drugs carried out on the continent, which have resulted in thousands of deaths and left profound consequences for hundreds of thousands of people. In this vein, the present research hypothesized that anti-Western emotions and cognitions (hatred, anger, fear, mistrust, disgust, suspicion, discrimination, stereotypes and prejudices) have a moderating effect on the link between the feeling of collective historical victimization and attitude towards clinical trials of vaccines relating to Covid-19 in the African context. The data collected support this prediction. They thus contribute to the understanding of the explanatory factors of the attitudes of individuals towards clinical trials of vaccines or even vaccines by revealing that to impact on the willingness of Africans to participate in clinical trials or to be vaccinated, it is necessary first to address the reluctance linked to the past of victimization to which they are subjected by the promoters of the said tests and vaccines. The reason is that the anti-Western emotions and cognitions which result from it strongly condition their health behaviors.

Table 1. Model Fit Index using Robust Maximum Likelihood method and descriptive statistics (Means=M.; Standard deviation=SD)

Regression Weights: (Group number 1 - Default model)						
			<i>Estimate</i>	<i>S.E.</i>	<i>C.R.</i>	<i>p</i>
ATCov-19VT	<--	IC	.094	.040	2.363	.018
ATCov-19VT	<--	IE	-.005	.014	-.363	.717
ATCov-19VT	<--	HFCV	-.100	.065	-1.536	.125
Covariances index						
			<i>Estimate</i>	<i>S.E.</i>	<i>C.R.</i>	<i>p</i>
IC	<-->	IE	11.222	1.531	7.328	***
HFCV	<-->	IC	1.335	.239	5.578	***
HFCV	<-->	IE	3.115	.503	6.191	***
Correlations index			<i>r</i>	Descriptive Stat.	M	SD
IC	<-->	IE	.810	IC	57.00	9.37
HFCV	<-->	IC	.642	IE	103.04	24.68
HFCV	<-->	IE	.649	HFCV	39.95	8.54
				ATCov-19VT	29.19	7.10
Model Fit Summary						
RMSEA index						
<i>Model</i>		<i>RMSEA</i>	<i>LO 90</i>	<i>HI 90</i>	<i>PCLOSE</i>	
Default model		.088	.081	.094	.000	
Independence model		.170	.164	.175	.000	
CMIN index						

<i>Model</i>	<i>NPAR</i>	<i>CMIN</i>	<i>DF</i>	<i>P</i>	<i>CMIN/DF</i>
Default model	75	856.926	224	.000	3.826
Saturated model	299	.000	0		
Independence model	23	3194.427	276	.000	11.574
<i>CFI index</i>					
<i>Model</i>	<i>NFI/A1</i>	<i>RFI/p1</i>	<i>IFI/A2</i>	<i>TLI/p2</i>	<i>CFI</i>
Default model	.732	.669	.787	.733	.783
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000
<i>Parsimony-Adjusted Measures index</i>					
<i>Model</i>	<i>PRATIO</i>	<i>PNFI</i>	<i>PCFI</i>		
Default model	.812	.594	.636		
Saturated model	.000	.000	.000		
Independence model	1.000	.000	.000		

Table 2. Model Fit Index using Robust Maximum Likelihood method

Model Fit Summary						
RMSEA index						
Model	RMSEA	LO 90	HI 90	PCLOSE		
Default model	.088	.081	.094	.000		
Independence model	.170	.164	.175	.000		
CMIN index						
Model	NPAR	CMIN	DF	P	CMIN/DF	
Default model	75	856.926	224	.000	3.826	
Saturated model	299	.000	0			
Independence model	23	3194.427	276	.000	11.574	
CFI index						
Model	NFI/A1	RFI/p1	IFI/A2	TLI/p2	CFI	
Default model	.732	.669	.787	.733	.783	
Saturated model	1.000		1.000		1.000	
Independence model	.000	.000	.000	.000	.000	
Parsimony-Adjusted Measures index						
Model	PRATIO	PNFI		PCFI		
Default model	.812	.594		.636		
Saturated model	.000	.000		.000		
Independence model	1.000	.000		.000		
Regression Weights: (Group number 1 - Default model)						
			Estimate	S.E.	C.R.	p
IC	<---	HFCV	1.854	.306	6.056	***
IE	<---	HFCV	1.459	.562	2.596	.009
IE	<---	IC	1.546	.243	6.356	***
ATCTRCov-19V	<---	IC	.293	.112	2.616	.009
ATCTRCov-19V	<---	HFCV	-.312	.195	-1.599	.110
ATCTRCov-19V	<---	IE	-.016	.044	-.364	.716

affective dimensions of prejudice. *Group Processes & Intergroup Relations*, 18(6), 743-760.
<https://doi.org/10.1177/1368430214556699>.

REFERENCES

- [1] Aberson, C. L. (2015). Positive intergroup contact, negative intergroup contact, and threat as predictors of cognitive and

- [2] Abramowitz, S., McKune, S. L., Fallah M., Monger J., Tehoungue K., & Omidian, P. A. (2017). The Opposite of Denial: Social Learning at the Onset of the Ebola Emergency in Liberia. *Journal of Health Communication*, 22(sup1),

- 59-65. doi: 10.1080/10810730.2016.1209599.
- [3] Angvik, M & von Borries. (1997). Youth and History: A Comparative European Survey on Historical Consciousness and Political Attitudes among Adolescents. <https://www.amazon.com/Youth-history-comparative-consciousness-adolescents/dp/3896840053>.
- [4] Antoniou, G., Dinas, E., & Kosmidis, S., (2020). Collective Victimhood and Social Prejudice: A Post-Holocaust Theory of Anti-Semitism. <https://doi.org/10.1111/pops.12654>.
- [5] Barlow, F. K., Paolini, S., Pedersen, A., Hornsey, M. J., Radke, H. R., Harwood, J., & Sibley, C. G. (2012). The contact caveat negative contact predicts increased prejudice more than positive contact predicts reduced prejudice. *Personality and Social Psychology Bulletin*, 38(12), 1629-1643. <https://doi.org/10.1177/0146167212457953>.
- [6] Bar-Tal, D., Chernyak-Hai, L., Schori-Eyal, N., & Ayelet, G. (2009). A sense of self-perceived collective victimhood in intractable conflicts. *June international review of Red Cross*, 91 (874). <http://dx.doi.org/10.1017/S1816383109990221>.
- [7] Belmonte, A. & Rochlitz, M. (2019). The Political Economy of Collective Memories: Evidence from Russian Politics. *Journal of Economic Behavior & Organization*, 168, 229-250. <https://doi.org/10.1016/j.jebo.2019.10.009>.
- [8] Browne, M. W. & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen and J. S. Long (Eds.), *Testing structural equation models* (pp.136-162). Sage. <https://doi.org/10.4236/tel.2016.64070>.
- [9] Cara, A. (2020). La manifestation contre le premier test de vaccin COVID-19 en Afrique du Sud. *The Associated Press*.
- [10] Cartwright, F. F. (1977). A social history of medicine. *Medical history*, 22(2). <https://doi.org/10.1017/s0025727300032464>.
- [11] Centers for Disease Control and Prevention (2021). Different Covid-19 vaccines. <https://www.cdc.gov/coronavirus/2019-nCoV/vaccines/different-vaccines.html>.
- [12] Centre Européen pour la prévention et le control. (2015). Rapid literature review on motivating hesitant population groups in Europe to vaccinate. <https://doi.org/10.2900/702238>.
- [13] Cessou, S. (2020). L'Afrique, perpétuel cobaye de «big pharma»? <https://www.monde-diplomatique.fr/2005/06/CHIPPAAUX/12513>.
- [14] Chipaux, J-P. (2005). L'Afrique, cobaye de big Pharma. *Le Monde Diplomatique*, 14.
- [15] Choma, L. M., Hodson, G., Boisvert, J., Hafer, L. C., MacInnis, C. C., & Costello, K. (2013). The role of intergroup disgust in predicting negative outgroup evaluations. *Journal of Experimental Social Psychology*, 49(2), 195-205. <https://doi.org/10.1016/j.jesp.2012.11.002>.
- [16] Civelek, M. E. (2018). Essentials of Structural Equation Modeling. *Zea E-Books*, 64. <https://digitalcommons.unl.edu/zeabook/64>.
- [17] Connerton, P. (1989). *How societies remember*. Cambridge University Press. <https://doi.org/10.1017/CBO9780511628061>.
- [18] Cucinotta, D., & Vanelli, M. (2020). WHO declares Covid-19 a pandemic? <https://doi.org/10.23750/abm.v9i1i1.9397>.
- [19] Daisy, F., & Steptoe, A. (2021). *Anti-vaccines attitudes and risk factors for not agreeing to vaccination against Covid-19 amongst 32, 361 UK adults: Implications for public health communications*. Medrxiv. <https://doi.org/10.1101/2020.10.21.20216218>.
- [20] Damjanović, K. et al. (2018). Parental decision-making on childhood vaccination. *Frontiers in Psychology*, 9, 735. <https://doi.org/10.3389/fpsyg.2018.00735>.
- [21] Desclaux, A., Bila, B., Sow, K., Varloteaux, M., & Houginihin, R. A. (2020). Les populations d'Afrique sont-elles prêtes à accepter le vaccin anti-Covid-19? <https://theconversation.com/les-populations-dafrique-sont-elles-pretes-a-accepter-le-vaccin-anti-covid-19-149104>.
- [22] Dinas, E., Fouka, V., & Schlapfer, A. (2021). Recognition of Collective Victimhood and Outgroup Prejudice. *Public Opinion Quarterly*, nfab024. <https://doi.org/10.1093/poq/nfab024>.
- [23] Douglas, K. M., Uscinski, J. E., Sutton, R. M., Cichocka, A., Nefes, T., & Ang, C. S. (2019). Understanding conspiracy theories. *Political Psychology*, 40, 3-35. <https://doi.org/10.1111/pops.12568>.
- [24] Dumont, M., Yzerbyt, V., Wigboldus, D., & Gordijn, E. H. (2003). Social Categorization and Fear Reactions to the September 11th Terrorist Attacks. *Personality and Social Psychology Bulletin*, 29, 1509-1520. <https://doi.org/10.1177/0146167203256923>.
- [25] Esses, V. M., & Dovidio, J. F. (2002). The Role of Emotions in Determining Willingness to Engage in Intergroup Contact. *Personality and Social Psychology Bulletin*, 28, 1202-1214. <https://doi.org/10.1177/01461672022812006>.
- [26] Fischer, A. H., & Roseman, I. J. (2007). Beat them or ban them: The characteristics and social functions of anger and contempt. *Journal of Personality and Social Psychology*, 93, 103-115. <https://doi.org/10.1037/0022-3514.93.1.103>.
- [27] Fouka, V. & Voth, H.-J. (2019). *Collective Remembrance and Private Choice: German-Greek Conflict and Consumer Behavior in Times of Crisis*. Mimeo Stanford University.
- [28] Frijda, N. H. (2007). *The laws of emotion*. Lawrence Erlbaum Associates.
- [29] Frijda, N. H., Kuipers, P., & Ter Schure, E. (1989). Relations among emotion, appraisal, and emotional action readiness. *Journal of Personality and Social Psychology*, 57(2), 212-228. <https://doi.org/10.1037/0022-3514.57.2.212>.
- [30] Gettleman (2006). Anti-Western sentiment. https://www.owlapps.net/owlapps_apps/articles?id=30443666&lang=en.
- [31] Giner-Sorolla, R., & Russell, P. S. (2019). Not Just Disgust: Fear and Anger Also Relate to Intergroup Dehumanization. *Collabra Psychology*, 5(1), 56. <https://doi.org/10.1525/collabra.211>.
- [32] Halperin, E., Canetti-Nisim, D., & Hirsch-Hoefler, S. (2009). The central role of group-based hatred as an emotional antecedent of political intolerance: Evidence from Israel. *Political Psychology*, 30, 93-123.

<https://doi.org/10.1111/j.1467-9221.2008.00682.x>.

5_3212.html.

- [33] Hayward, L. E., Tropp, L. R., Hornsey, M. J., & Barlow, F. K. (2017). Toward a comprehensive understanding of intergroup contact: Descriptions and mediators of positive and negative contact among majority and minority groups. *Personality and Social Psychology Bulletin*, 43(3), 347-364. <http://doi.org/10.1177/0146167216685291>.
- [34] Hodson, G., Choma, B. L., Boisvert, J., Hafer, C., MacInnis, C. C., & Costello, K. (2013). The role of intergroup disgust in predicting negative outgroup evaluations. *Journal of Experimental Social Psychology*, 49, 195-205. <https://doi.org/10.1016/j.jesp.2012.11.002>.
- [35] Hornsey, M. J., Harris, E. A., & Fielding, K. S. (2018). The psychological roots of anti-vaccination attitudes: A 24-nation investigation. *Health Psychological*, 37, 307-315. <https://doi.org/10.1037/hea0000586>.
- [36] Islam, M. S. (2021). *Knowledge, attitudes and perception towards Covid-19 vaccinations: a cross sectional community survey in Bangladesh*. Medrxiv. <https://doi.org/10.1101/2021.02.16.21251802>.
- [37] Jasini, A., Delvaux, E., & Mesquita, B. (2017). Collective victimhood and ingroup identity jointly shape intergroup relations, even in a non-violent conflict: The Case of the Belgians. *Psychologica Belgica*, 57(3), 98-114. <https://doi.org/10.5334/pb.334>.
- [38] Johnson, M. O. (2000). Personality correlates of HIV vaccine trial participation. *Personal Individual Differences*, 29, 459-467.
- [39] Kauff, M., Asbrock, F., Wagner, U., Pettigrew, T. F., Hewstone, M., Schäfer, S. J., & Christ, O. (2017). (Bad) feelings about meeting them? Episodic and chronic intergroup emotions associated with positive and negative intergroup contact as predictors of intergroup behavior. *Frontiers in Psychology*, 8, 1449. <https://doi.org/10.3389/fpsyg.2017.01449>.
- [40] Kearney, A., Hamel, L., & Brodie, M. (2021). Attitudes towards Covid-19 vaccination among black women and men. <https://www.kff.org/coronavirus-covid-19/poll-finding/attitudes-towards-covid-19-vaccination-among-black-women-and-men/>.
- [41] Ketterer, F., Trefois, P., Miermans, M., Van Meerbee K., M., & Giet, D. (2013). Les réticences à la vaccination: Approche du phénomène à travers les données de la littérature. *Revue médicale de Liège*, 68(2), 74-78.
- [42] Kouzy, R., Abi Jaoude, J., Kraitem, A., El Alam, M. B., Karam, B., & Adib, E. (2020). Coronavirus goes viral? : Quantifying the COVID-19 misinformation epidemic on twitter. <http://dx.doi.org/10.7759/cureus.7255>.
- [43] Lado, L. (2005). L'imagination africaine de l'occident : entre ressentiment et séduction. *Etudes*, 403, 17-27.
- [44] Larson, K. (2019). Ebola vaccine hampered by deep distrust in eastern Congo. *The Association press*. <https://www.apnews.com>.
- [45] Le Monde (2020, 08 Mai). Coronavirus : en Afrique, la défiance contre les vaccins nourrie par le souvenir des scandales médicaux. https://www.lemonde.fr/afrique/article/2020/05/08/covid-19-en-afrique-la-defiance-contre-les-vaccins-nourrie-par-le-souvenir-des-scandales-medicaux_603905.
- [46] León, G. A., Gustavo A. R., Vila, J., Nieves P., Humbelina R., & Manuel, M. (2002). The Aggression Questionnaire: A Validation Study in Student Samples. *The Spanish Journal of Psychology*, 5(1), 45-53.
- [47] Leslie R. M., & Keith J. P. (2017). Understanding the Dimensions of Anti-Vaccination Attitudes: the Vaccination Attitudes Examination (VAX) Scale. *The Society of Behavioral Medicine*. <http://dx.doi.org/10.1007/s12160-017-9888-y>.
- [48] Lickel, B., Norman, M., Douglas M. S., Denson, T. & Schmader, T. (2006). Vicarious Retribution: The Role of Collective Blame in Intergroup Aggression. *Personality and Social Psychology Review* 10(4), 372-390.
- [49] Lupu, N. & Peisakhin. L. (2017). The Legacy of Political Violence across Generations. *American Journal of Political Science* 61(4), 836-851. <https://doi.org/10.1111/ajps.12327>.
- [50] Mackie, D. M., & Smith, E. R. (2018). Intergroup emotions theory: Production, regulation, and modification of group-based emotions. In J. M. Olson (Ed.), *Advances in experimental social psychology*, 58, 1-69. Academic Press. <https://doi.org/10.1016/bs.aesp.2018.03.001>.
- [51] Merriam-Webster. (2021). Definition of anti-western. <https://www.merriam-webster.com/dictionary/anti-Western>
- [52] Meydan, C. H., & Şen, H. (2011). *Yapısal Eşitlik Modellemesi AMOS Uygulamaları*. Detay Yayıncılık.
- [53] Minard, A. (2007). Perception du Sida et théories du complot dans la population afro-américaine. *Sciences sociales et santé*, 25(4), 115-122. <https://doi.org/10.3917/sss.254.0115>.
- [54] Murphy, J., & Vallières, F., Bentall, R., Shevlin, M., McBride, O., Hartman, P., Todd, K., McKay, R., Bennett, K., Mason, L., Gibson-Miller, J., Levita, L., Martinez, A., Stocks, T., Karatzias, T., & Hyland, P. (2021). Psychological characteristics associated with COVID-19 vaccine hesitancy and resistance in Ireland and the United Kingdom. *Nature Communications*, 12(29). <https://doi.org/10.1038/s41467-020-20226-9>.
- [55] Ngutjinozo, O. (2021). Why many Africans are wary of Covid-19 vaccines. <https://www.dw.com/en/why-many-africans-are-wary-of-covid-19-vaccines/a-56774599>.
- [56] Noko, K. (2020). Medical colonialism in Africa is not new. <https://www.aljazeera.com/opinions/2020/4/8/medical-colonialism-in-africa-is-not-new>.
- [57] Nyhalah, J. D., Sinda, L.K., & Titanji, V. P. K. (2021). Assessment of Vaccine Hesitancy to a COVID-19 Vaccine in Cameroonian Adults and Its Global Implication. *Vaccines*, 9, 175. <https://doi.org/10.3390/vaccines9020175>.
- [58] Olpinski, M. (2012). Anti-Vaccination Movement and Parental Refusals of Immunization of Children in USA. *Pediatrica Polska*, 87, 381-385. <https://doi.org/10.1016/j.ppepo.2012.05.003>.
- [59] Paez, D., & Liu, J. H. (2011). Collective memory of conflicts. In D. Bar-Tal (Ed.), *Intergroup conflicts and their resolution: A social psychological perspective* (pp. 105-124). Psychology Press.

- [60] Paluck, E. L. (2009). Reducing Intergroup Prejudice and Conflict using the Media: A Field Experiment in Rwanda. *Journal of Personality and Social Psychology* 96(3), 574-587. <https://doi.org/10.1037/a0011989>.
- [61] Patty, J. S. N., Van Dijk, H. M., Wallenburg, I., Bal, R., Helmerhorst, T. J. M., Van Exel, J., & Cramm, J. M. (2017). Vacciner ou ne pas vacciner? Perspectives sur la vaccination contre le VPH chez les filles, les garçons et les parents aux Pays-Bas: une étude Q-méthodologique.
- [62] Pennekamp, S. F., Doosje, B., Zeibel, S., & Fischer, A. H. (2007). The past and the pending: The antecedents and consequences of group-based anger in historically and currently disadvantaged groups. *Group Processes and Intergroup Relations*, 10, 41-55. <https://doi.org/10.1177/1368430207071339>.
- [63] Pipes, D. (1997). *Conspiracy. How the paranoid style flourishes and where it comes from*. Free press.
- [64] Ramos-Oliveira, D. & Pankalla, A. (2019). Negative stereotypes: an analysis of Social Cognition in different ethnic groups. Social cognition of stereotypes. *Psicogente*, 22(42), 1-15. <http://doi.org/10.17081/psico.22.42.3501>.
- [65] Renfro, C. L., Duran, A., Stephan, W. G., & Clason, D. L. (2006). The role of threat in attitudes toward affirmative action and its beneficiaries. *Journal of Applied Social Psychology*, 36(1), 41-74. <https://doi.org/10.1111/j.0021-9029.2006.00003.x>.
- [66] Rieger, O. M., & He-Ulbricht, Y. (2020). *Ensemble de données allemande et chinoise sur les attitudes concernant les politiques du Covid-19, la perception de la crise et la croyance en les théories du complot*. Elsevier.
- [67] Roozenbeek J., Schneider C. R., Dryhurst, S., Kerr, J., Freeman, A. L. J., Recchia, G., Van Der Bles, A. M., & Van Der Linden, S. (2020). Susceptibility to misinformation about COVID-19 around the world. <http://dx.doi.org/10.1098/rsos.201199>.
- [68] Roseman, I. J., Spindel, M. S., & Jose, P. E. (1990). Appraisals of Emotion-Eliciting Events: Testing a Theory of Discrete Emotions. *Journal of personality and social psychology*, 59(5), 899-915. <https://doi.org/10.1037/0022-3514.59.5.899>.
- [69] Roser, M., Ritchie, H., Ortiz-Ospina, E., & Hasell, J. (2020). Coronavirus pandemic (COVID-19). Our World Data. <https://ourworldindata.org/coronavirus>.
- [70] Rozenas, A., Sebastian S., & Yuri, Z. (2017). The Political Legacy of Violence: The Long-Term Impact of Stalin's Repression in Ukraine. *Journal of Politics*, 79(4). <https://doi.org/10.1086/692964>.
- [71] Rusk, J. D. (2018). Trust and distrust scale development: Operationalization and instrument validation. Doctor of Business Administration Dissertations. https://digitalcommons.kennesaw.edu/dba_etd/42.
- [72] Samarasekera U. (2021). Feelings towards COVID-19 vaccination in Africa. *The Lancet Infectious Diseases*, 21(3), 324. <https://www.ncbi.nlm.nih.gov/pubmed/33639125>.
- [73] Schori-Eyal, N., Halperin, E., & Bar-Tal, D. (2014). Three layers of collective victimhood: effects of multileveled victimhood on intergroup conflicts in the Israeli-Arab context. *Journal of Applied Social Psychology*, 44, 778-794. <https://doi.org/10.1111/jasp.12268>.
- [74] Skritka, L. J., Bauman, C. W., Aramovich, N. P., & Morgan, G. S. (2006). Confrontational and preventative policy responses to terrorism: Anger wants a fight and fear wants "Them" to go away. *Basic and Applied Social Psychology*, 28, 375-384. https://doi.org/10.1207/s15324834basps2804_11.
- [75] Smith, E. R. (1993). Social identity and social emotions: Toward new conceptualizations of prejudice. In D. M. Mackie & D. L. Hamilton (Eds.), *Affect, cognition, and stereotyping: Interactive processes in group perception* (pp. 297-315). Academic Press.
- [76] Spanovic, M., Lickel, B., Denson, T., & Petrovic, N. (2010). Fear and anger as predictors of motivation for inter-group aggression: Evidence from Serbia and Republika Srpska. *Group Processes and Intergroup Relations*, 13, 725-739. <https://doi.org/10.1177/1368430210374483>.
- [77] Spears, R., Jetten, J., Scheepers, D., & Cihangir, S. (2009). Creative distinctiveness: Explaining in-group bias in minimal groups. In S. Otten, T. Kessler & K. Sassenberg (Eds.), *Intergroup Relations: The role of motivation and emotion* (pp.23-40). Psychology Press.
- [78] Spencer-Rodgers, J. & McGovern, T. (2002). Attitudes toward the culturally different: The role of intercultural communication barriers, affective responses, consensual stereotypes, and perceived threat. *International Journal of Intercultural Relations*, 26, 609-631. [https://doi.org/10.1016/S0147-1767\(02\)00038-X](https://doi.org/10.1016/S0147-1767(02)00038-X).
- [79] Stephan, W. G., & Stephan, C. W. (1996). Predicting prejudice. *International Journal of Intercultural Relations*, 20, 409-426. [http://dx.doi.org/10.1016/0147-1767\(96\)00026-0](http://dx.doi.org/10.1016/0147-1767(96)00026-0).
- [80] Sternberg, R. J., & Sternberg, K. (2008). *The nature of hate*. Cambridge University Press.
- [81] Tausch, N., Becker, J. C., Spears, R., Christ, O., Saab, R., Singh, P., & Siddiqui, R. N. (2011). Explaining radical group behavior: Developing emotion and efficacy routes to normative and non normative collective action. *Journal of Personality and Social Psychology*, 101, 129-148. <https://doi.org/10.1037/a0022728>.
- [82] Techakesari, P., Barlow, F. K., Hornsey, M. J., Sung, B., Thai, M., & Chak, J. L. (2015). An investigation of positive and negative contact as predictors of intergroup attitudes in the United States, Hong Kong, and Thailand. *Journal of Cross-Cultural Psychology*, 46(3), 454-468. <https://doi.org/10.1177/0022022115570313>.
- [83] Tiwari, S. K., Patel, A. K., & Kumar, D. (2017). Development of Perceived Discrimination Questionnaire: A measure for Different Social Categories Students. *Journal of Psychosocial Research*, 12, 1, 81-88.
- [84] Tiwari, S. K., Kumar, D., & Pandey, V. (2014). Group favoritism and perceived discrimination among student of different social categories. *International Journal of Education and Management Studies*, 4(2), 138-141. http://www.iahrw.com/index.php/home/journal_detail/21#list.
- [85] Van Der Linden, S., Panagopoulos C., Azevedo F., & Jost, J. T. (2020). The paranoid style in American politics revisited: Evidence of an ideological asymmetry in conspiratorial thinking. *Political Psychology*, 42(1), 23-51. <https://doi.org/10.1111/pops.12681>.

- [86] Van Prooijen, J.-W., & Douglas, K. M. (2017). Conspiracy theories as part of history: The role of societal crisis situations. *Memory studies*, 10(3), 323-333. <https://doi.org/10.1177/1750698017701615>.
- [87] Van Zomeren, M., Postmes, T., & Spears, R. (2008). Toward an integrative social identity model of collective action: A quantitative research synthesis of three socio-psychological perspectives. *Psychological Bulletin*, 34, 504-535. doi:10.1037/0033-2909.134.4.504.
- [88] Visintin, E. P., Green, E. G., Pereira, A., & Miteva, P. (2017). How positive and negative contact relate to attitudes towards Roma: Comparing majority and high-status minority perspectives. *Journal of Community & Applied Social Psychology*, 27(3), 240-252. <https://doi.org/10.1002/casp.2309>.
- [89] Volkan, V. D. (2001). Transgenerational transmissions and choosen traumas: An aspect of large-group identity. *Group Analysis*, 34, 79-97. <http://dx.doi.org/10.1177/05333160122077730>.
- [90] Vollhardt, J. R. (2012). Collective victimization. In L. R. Tropp (Ed.), *The Oxford handbook of intergroup conflict* (pp. 136-157). Oxford University Press. <https://doi.org/10.1093/oxfordhpb/9780199747672.013.0009>.
- [91] Vollhardt, J. R., & Bilali, R. (2015). The role of inclusive and exclusive victim consciousness in predicting intergroup attitudes: Findings from Rwanda, Burundi, and DRC. *Political Psychology*, 36(5), 489-506. <https://doi.org/10.1111/pops.12174>.
- [92] Washington, A. H. (2007). Why Africa fears western medicine. *The New York Times*, 1-10. <https://www.nytimes.com/2007/07/31/opinion/31washington.html>.
- [93] Weipzig, F., & Schipper, I. (2008). Ethics in clinical trials: Examples of unethical trials. *Somo*.
- [94] Wheaton, B., Muthen, B., Alwin, D. F., & Summers, G. (1977). Assessing Reliability and Stability in Panel Models. *Sociological Methodology*, 8, 84-136. <http://dx.doi.org/10.2307/270754>.
- [95] WHO (2020). *Coronavirus*. https://www.who.int/health-topics/coronavirus#tab=tab_.
- [96] WHO (2020). *Impact of Covid-19 on people's livelihoods, their health and our food systems*.
- [97] Wohl, M. J. A., & Branscombe, N. R. (2008). Remembering historical victimization: Collective guilt for current ingroup transgressions. *Journal of Personality and Social Psychology*, 94(6), 988-1006. <http://dx.doi.org/10.1037/0022-3514.94.6.988>.
- [98] Yahya, M. (2007). Polio vaccines-"no thank you!" Barriers to polio eradication in Northern Nigeria. *African Affairs*, 106, 423, 185-204. <https://doi.org/10.1093/afraf/adm016>.
- [99] Yaqub, O., Castle, S., Clarke, Sevdallis, N., & Chataway, J. (2014). Attitudes to vaccination: A critical review. *Social Science & Medecine*, 112, 1-11. <https://doi.org/10.1016/j.socscimed.2014.04.018>.
- [100] Ybarra, O., Schaberg, L., & Keiper, S. (1999). Favorable and unfavorable target expectancies and social information processing. *Journal of Personality and Social Psychology*, 77, 698-709. <http://dx.doi.org/10.1037/0022-3514.77.4.698>.