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ARTICLES

# PLANNING OF PERSONALIZED PSYCHOLOGICAL INTERVENTION IN VICTIMS OF THE ARMED CONFLICT IN COLOMBIA THROUGH ARTIFICIAL INTELLIGENCE

Constant Anthony Millan De Lange[1], Carmen Margarita Molinares Brito[2], Karim Hussein Dasuki Garcia[3], Stefany Baena Valencia[4*]

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**ABSTRACT.** This paper describes the psychometric validation procedure for the creation of an Artificial Intelligence (AI) engine based on the theory of precision psychology and expert system-type machine learning algorithms. The focus is on individual coping strategies and the factor of reconciliation in victims of armed conflict in Colombia. A non-experimental methodology with a cross-sectional design was used, with a total of 363 participants. The results highlight that elements related to economic factors, individual condition, and political concerns in the victims explain the conditions required to generate a reconciliation process in the context of reintegrating into civilian life. It is concluded that the use of artificial intelligence enhances the process of psychological care by providing precision in the etiological information of the illness and the data, which enables discrimination between the health status, symptoms, and disease of the victims.

**Keywords**: psychological intervention, simulator, armed conflict, victims, artificial intelligence.

## 1 INTRODUCTION

In Colombia, peace agreements with Armed Groups Outside the Law and the current post-agreement scenario present negotiation as the first step in the search for peace, an essential step that must be accompanied by other processes to ensure its effectiveness and long-term continuation. For authors like Long & Brecke (2003), negotiation and negotiation actions are common elements in conflict de-escalation, but they are not sufficient for the restoration of social order.

*Corresponding author
[1]Universidad del Norte, Barranquilla, Colombia – E-mail: delangea@uninorte.edu.co – https://orcid.org/0000-0002-4187-8835
[2]Universidad del Sinú, Cartagena, Colombia – E-mail: cmolinares@unsinucartagena.edu.co – https://orcid.org/0000-0003-4493-7113
[3]Universidad del Sinú, Cartagena, Colombia – E-mail: kdasuki@unisinucartagena.edu.co – https://orcid.org/0009-0009-7707-9830
[4]Secretaría de Educación Distrital de Barranquilla, Colombia – E-mail: stefy.baena.valencia@hotmail.com – https://orcid.org/0000-0002-5346-500X

In this regard, Kelman (2008) proposes reconciliation as a different process, a process of pacification, referring to a path where societies learn to live together in a post-conflict environment. Pacification requires a much deeper change that can only be achieved through reconciliation, as this process builds a stable and lasting peace (Pearce, 2021). These changes are defined in structure and guidelines through the reconciliation process, as they promote peace as a new form of intergroup relationship and serve as stable foundations for acts of social cooperation. Thus, in the field of post-conflict, reconciliation has been defined as a step that goes beyond the formal conflict resolution agenda, aiming at changing the motivations, goals, beliefs, attitudes, and emotions of the majority of society members.

The nature of the relationship between parties and the parties themselves constitutes what is understood as relational levels (Bar-Tal & Bennink, 2004, p. 12). Reconciliation implies, among other things, the re-categorization of the adversary at the narrative, spatial, and temporal levels (Bar-Tal & Bennink, 2004). It is a process that allows the analysis of intergroup relations from a broader perspective, using mixed methodologies (qualitative or quantitative) or implementing measurement models, where a more inclusive category of "us" and "them" systematically includes victims, a broader group of victims, perpetrators, and civil society, as well as those perceived as belonging to diverse groups (Pettigrew, 2003).

In the same line of work, Cortés, Torres, López-López, Pérez, & Pineda-Marín (2019) identified factors that contribute to an operational definition of the variable reconciliation, including the establishment of superordinate goals, overcoming group categorization, and facilitating cooperative intergroup relations. Therefore, it is possible to recognize that reconciliation is the variable that best defines the construction of a pathway based on a measurement model that facilitates the constructive transformation of a conflict.

On the other hand, humanitarian crises, such as armed conflicts, are linked to higher levels of psychological distress and an increased risk of various mental disorders. The complexities further increase when unstable situations result in large-scale displacement and migration, exposing populations to stressful events before departure, during transit, and after arrival while facing integration in a new environment or country (Trujillo, Giraldo, López, Acosta & Trujillo, 2021).

The aftermath of armed conflicts and wars is a complex and intricate process characterized by efforts to reconstruct and reorder social and political life at all levels. Governments, multilateral and bilateral agencies, and civil society organizations play a vital role in implementing interventions as part of medical and humanitarian initiatives. Their actions are largely based on the premise that not only combatants, but the entire civilian population exposed to the adversities of armed conflicts and war, which turn them into victims of criminal acts, will need some form of humanitarian assistance, which may include the provision of medical and/or psychosocial services, such as psychological intervention and emotional support (Cuartas-Ricaurte, Karim, Martínez-Botero & Hessel, 2019).

Humanitarian assistance has taken on a new identity, no longer aiming to be palliative and politically neutral, but actively contributing to addressing structural problems and improving the qual-

ity of life, including, whenever possible, consolidating the peace process. While the provision of food and control of communicable diseases were the main focus of humanitarian assistance programs until the early 1990s, psychological trauma and the consequences for mental health resulting from human rights abuses gradually emerged as a more prominent feature and have since received increasing attention as an area deserving effective collective interventions (Giebel et al., 2022).

The above justifies the need to provide psychological care to victims of armed conflict for their reintegration into civilian life, based on a primary health and mental health care strategy grounded in precision medicine. This approach seeks to individualize care by understanding that individuals have specific cognitive processes, diverse cultures, and diverse experiential narratives. Precision medicine is based on three well-defined pillars: disease prediction, which involves predicting the likelihood of disease development; health problem prevention; and personalized treatment for already developed diseases in patients. The starting point for the three pillars is DNA analysis, which allows the identification of genetic alterations that may suggest a predisposition to certain diseases or even aid in the diagnosis and treatment of pre-existing conditions. In disease prediction, genes that can be predictive of different pathologies are identified by analyzing DNA from a blood sample. For disease prevention purposes, the information collected in the analysis helps implement specific strategies to prevent the problem from developing or enable early diagnosis in cases where the disease is latent in the body.

Similarly to medicine, there is the concept of precision psychology, which can be defined as an approach that integrates biological, social, and cultural assumptions, as explained by Eysenck & Eysenck (1980), and seeks to understand and treat mental health problems in a more precise and personalized manner. Like precision medicine in the medical field, precision psychology recognizes that each individual is unique and aims to adapt psychological treatments and approaches based on the specific characteristics and needs of each person. Eysenck (1952, 1967, 1982) proposed a personality theory based on biological factors, arguing that individuals inherit a type of nervous system that affects their ability to learn and adapt to the environment; each aspect of personality can be traced back to a different biological cause. Personality depends on the balance between the excitation and inhibition processes of the autonomic nervous system [ANS].

CONSTANCE AI is a simulator created under the concept of expert systems or expert assistants, which are used to create systems that simulate medical diagnoses, known as one of the applications of reasoning techniques with facts and rules that incorporate human knowledge of medicine, engineering, or business, as outlined in the studies by Duda, Hart & Nilsson (1976). Programs like CONSTANCE AI, created at an expert level in problem-solving by reproducing a body of knowledge, are called systems, where the main components are the knowledge base and the inference engine. The knowledge base is composed of facts and calculations, while the inference engine consists of all the processes that manipulate the knowledge base to deduce the information requested by the user, agent, or researcher.

Based on the above, this research is justified as an attempt to scale AI and its techniques to be used as practical applications that address and solve intervention problems in the mental health of

victims of armed conflict and contribute to the creation of reconciliation, the long-awaited action of the post-conflict period. Additionally, the inclusion of these topics in psychology was sought to develop precision psychology, which requires much more knowledge about individuals and their application, allowing the behavior of expert agents in tasks such as diagnosis, design, and analysis of personalized psychological interventions for victims of armed conflict to be mimicked.

### 1.1 Psychological intervention in victims of the armed conflict

When formulating proposals for psychological interventions conducted by mental health professionals for victims of armed conflict, the most relevant aspects are those that define the intervention framework. The essential purpose is to address a relational context marked by potential risks of collapse or significant intrapsychic and interrelational ruptures. Furthermore, the relevant modes of action that have been developed in the field based on experiences are also significant (Gómez-Restrepo, Tamayo-Martínez, Buitrago, Guarnizo-Herreño, Garzón-Orjuela, Eslava-Schmalbach, de Vries, Rengifo, Rodríguez & Rincón, 2016).

It is believed that situations of violence have an impact on individuals' adaptive capacities, taking into account their own resources and those of their environment. The whole issue of psychological intervention lies in identifying these resources, adopting a systemic position in addressing the reality of these situations. The objective is to proceed with the implementation of supports that co-construct the intervention aimed at revitalizing the resources of both individuals and the community (Cortés, Torres, López-López, Pérez & Pineda-Marín, 2016).

In such situations, it is essential to intervene as early as possible to restore connections between people and institutions, with a proximity approach and a notion of sufficient duration to be maintained over time until the recovery of care actions. These actions can be renewed within the framework of deferred intervention during regular care if the need arises. This is the most significant challenge of the guidelines, as most mental health interventions implemented worldwide take place in societies in conflict or post-conflict (Soto-Triana, Venegas-Luque & Rincón-Oñate, 2023).

Therefore, before intervening, it is crucial to fully understand the difference in the dynamics of psychological conditions developed by populations living in contexts of armed conflict or post-conflict. This leads us to the well-known cycle of conflict among divided populations that blame each other as victims or perpetrators. The individual identity adopted will depend on the level of psychological and social identification that individuals or communities have developed with the political or religious precepts of the armed factions (Arciniegas & Santiago, 2019).

This self-identification is reinforced through their involvement in various levels of armed action, such as combat, intelligence, logistics, political support, economic activities, and more. Another way to express intentionality is through the reasons given by the armed factions to justify their actions against civilian populations, such as being sympathizers of the enemy, belonging to a different ethnic group, residing in disputed territory, or having different religious beliefs (Garzón-Borray & Yate-Ramírez, 2022). Intentionality removes neutrality from the populations

and imposes imaginary or factual roles that transform communities into the "other side" of the conflict: the enemy. Even though the involved communities are not actively engaged in the conflict, in the perception of the armed factions, the target population is seen as a threat that must be eliminated or subdued. In other words, the armed factions actively shape the affective space where social, familial, and personal relationships are created and nurtured, thereby undermining the very essence of any lasting psychological stability or sanity (Martín-Baró, 1998).

In addition to the aforementioned dynamics, armed factions often employ psychological warfare as part of their strategies. The main objective of this component is to directly target the psychology of individuals to deactivate the population's psychological adaptation process to the conflict. In this way, the armed actors ensure that individuals do not develop resilience or take actions to protect their rights and contribute to peacebuilding. The component of psychological warfare allows the armed factions to maintain their power by disrupting the psychological continuity of the population.

In armed conflicts, once again, time and space are not stable. Conflicts can last for over fifty years with successive transformations of the same armed group: from regular armies to militias, including warlords, fighters belonging to specific ethnicities, and criminal gangs (Martín-Baró, 1988). Entire generations are involved, sometimes actively, other times as victims, but always in a succession of social roles that compel populations to develop parallel moral and ethical values, creating strong cognitive dissonance and extremely contradictory personality traits (Martín-Baró, 2003).

In contexts of armed conflict, space is also constantly changing. Depending on the activity, living and production spaces can become dangerous and must be abandoned or avoided (Fisher, 2006). Consequently, people flee their homes, fields, towns, or cities. In the best cases, they remain, but they have to live with the risk of armed confrontations, kidnappings, and extortion. In these circumstances, individuals cannot perceive their space as a refuge where they can lead a normal life. A safe and stable space is an essential psychological factor for developing an intense sense of identity, belonging, and community. Without it, individuals and communities are unable to develop and maintain their mental health (Galtung, 1996).

### 1.2 Panorama of the victims of the armed conflict in the city of Barranquilla

The panorama of the victims of the armed conflict in the city of Barranquilla, Colombia is complex and multifaceted. The city has experienced various forms of violence and conflict, including clashes between armed groups, drug trafficking-related violence, and urban crime. These factors have contributed to the displacement of populations, the loss of lives, and the disruption of communities. One significant aspect of the conflict's impact on Barranquilla is the displacement of populations. Many residents have been forced to flee their homes due to threats and violence, seeking refuge in other parts of the city or in neighboring municipalities. This displacement has led to a strain on resources and services in host communities, as well as the loss of homes and livelihoods for those affected.

Another consequence of the conflict is the loss of lives. Many individuals in Barranquilla have been killed as a result of violence related to the conflict, including targeted attacks, crossfire, and assassinations. These deaths have left families and communities grieving, with long-lasting impacts on mental health and social cohesion. Additionally, the armed conflict has had a significant impact on the social fabric of Barranquilla. Communities have been divided along lines of allegiance to different armed groups, leading to mistrust and tension among residents. This has also created challenges for community cohesion and reconciliation efforts. Overall, the panorama of the victims of the armed conflict in Barranquilla is one of loss, displacement, and social upheaval. Addressing the needs of these victims and rebuilding communities will require comprehensive and sustained efforts from both government and civil society.

Having said that, it is important to express that psychological intervention processes in victims of armed conflict in Colombia, are based on Laws 1448 of 2011 and 1592 of 2012, and the Peace Agreements of 2016. These laws state that the state must guarantee and comply with "providing and developing guidelines for the design, formulation, management, and socialization of guarantees of non-repetition, in their preventive and reparatory dimension," "encouraging and sensitizing territorial entities to include actions for reconciliation through the tool of the National Reconciliation Conditions Index," "formulating collective guarantees aimed at society in conjunction with territorial entities, aimed at deconstructing the cultural patterns that reinforced the reproduction of victimizing events," and finally "leading, in conjunction with the Colombian Agency for Reintegration, the mainstreaming of the reconciliation approach within the reintegration and reparation processes" (The Victims Unit, 2023, p. 1).

In Barranquilla, as of the 2024 cutoff date of 31/03/2024, there are 15.366 victims by occurrence, referring to "individuals recognized under Law 1448/2011 who were victims of victimizing events in Colombian territory"; 156.837 victims by declaration, referring to "individuals recognized under Law 1448/2011 who made declarations to the Public Ministry in the territory"; 80.340 victims by location, referring to "individuals recognized under Law 1448/2011 who, according to the last known location, reside in the territory"; 68.328 subjects of attention, referring to "individuals recognized under Law 1448/2011 who can effectively access care/reparation measures"; and 17.955 events, referring to the "occurrence of a victimizing event to an individual in a specific place" (Peace Data, 2024).

In the face of this bleak panorama, the social reintegration of victims represents a process of utmost importance in the post-conflict framework. Intervention with the conflict actors enables and protects them, providing them with the necessary tools for their reintegration into society while contributing to the overall sustainability of the person returning. This influences processes such as peacebuilding, reconciliation, and more (Bar-Tal, 2000). Currently, there is a strategy for mitigating violence, such as the General Agreement for the Termination of the Conflict defined by the National Government and the FARC. It includes the cessation of violent acts and the end of the conflict. The third point addresses the surrender of weapons and the civil, political, social, and economic reintegration of the guerrilla, encompassing the first formal discussion on aspects

associated with a Disarmament, Demobilization, and Reintegration DDR process (Revollo-Pardo et al., 2021).

## 2 METHODOLOGY

### 2.1 Population and sample

The incidental sample consisted of 363 participants who met the following inclusion criteria: 1) individuals registered with the National System for Comprehensive Care and Reparation of Victims (SNARIV), 2) independent and unique in terms of age, gender, marital status, socioeconomic level, or place of displacement, 3) related to each other as they belonged to the same government programs, and 4) their relocation time in Barranquilla coincided.

Access to the population was facilitated by the Social Management Office of the Barranquilla City Hall, with support from the Mario Santodomingo Foundation. The study focused on victims located in the Villas de San Pablo neighborhood for reasons of accessibility, location, security, and in support of the mental health program of the Corporación Universitaria Minuto de Dios. Participants were intentionally selected from those relocated in Superblock 15 and Superblock 19 of the community, and the only intentional criterion was registration in the National Information Network (RNI) of The Victims Unit of Colombia.

### 2.2 Research type and design

The research was non-experimental, which, according to Hernández-Sampieri & Mendoza-Torres (2018), can be defined as an investigation where the variables under study are not deliberately manipulated, but rather observed in their natural context. However, since the manifestations of the variables occurred without manipulation of the sample, it is considered ex post facto research, as the participants were already in the situation of displacement or poverty, and probable causes are being explored. Additionally, this study was conducted using a cross-sectional design, as the samples were obtained from the population at a specific point in time.

### 2.3 Data collection instruments and analysis

#### 2.3.1 Coping Strategies

For the analysis of coping strategies, the Modified Coping Strategies Scale [EEC-M] validated by Londoño et al. (2006) was used. This scale was constructed with 98 items using Likert-type response options, ranging from 1 to 6, indicating frequency from “Never” to “Always”. Twelve scales were constructed, each evaluated based on seven statements. The dimensions of the scale are: Alternative seeking; Conformity; Emotional control; Emotional avoidance; Behavioral avoidance; Cognitive avoidance; Aggressive reaction; Positive reappraisal; Social support seeking; Professional support seeking; Religion; Coping inhibition.

### 2.3.2 Psychosocial Disposition Factors

For the factors associated with psychosocial disposition, the Psychosocial Disposition to Conflict Questionnaire [CDPC] validated by Álzate et al. (2009) was used. This questionnaire was used to measure Reconciliation, and its psychometric indices confirm thirteen dimensions that adhere to the initial theoretical proposal to explore a set of psychosocial variables that could contribute to the constructive transformation of a violent sociopolitical conflict. Based on various authors in social and political psychology, these authors propose an analysis of the conflict through thirteen variables, which are presented from the perspective of the non-combatant population within a context of real armed conflict. These variables correspond to beliefs about the actors of the conflict, perceptions of threat, trust and costs, ethnocentric attitudes, and preferences for interaction with adversaries (Álzate et al., 2009).

The CDPC aims to evaluate, through these 13 variables, the psychosocial processes present in the civilian population exposed to a violent sociopolitical conflict, and their disposition towards its constructive transformation. This questionnaire consists of 46 items, with 5 response options that could be answered on a range from total agreement to total disagreement, or on a scale from 1 to 5, where 1 is low and 5 is high. The questionnaire includes the following dimensions:

1. Perceptions: threat was assessed with items 11 to 13.
2. Trust with items 14 to 16; and costs with items 41 to 46.
3. Ethnocentric attitude: five statements about ethnocentrism were developed, corresponding to items 22 to 26, and item 21 was introduced as a statement about polarization.
4. Competitive approach: perception of differences between ordinary citizens and non-state armed groups was evaluated through items 1 to 4.
5. Intergroup legitimacy was measured with items 6 and 7, evaluating the sociopolitical ends and strategies of the insurgents.
6. Cognitive processes about the outgroup: negative image of the adversary was measured through homogenization and infrahumanization statements, items 17 and 18; perception of knowledge was evaluated through items 19 and 20.
7. Cognitive processes about the leader: the advantage given by the Government to violent groups and the way in which it satisfies the basic needs of the population were questioned through items 5, 9, 10, and 8.
8. Interactions for conflict transformation: authoritarian imposition was assessed with three statements about the use of armed strategies to end the conflict, items 27, 38, and 39.
9. Preference for negotiation: 5 items were used, inspired by Fisas' proposal (2004), and collected in items 37, 40, and 28 to 30; to assess the preference for reconciliation, items 31 to 36 were used, based on Wilder's proposal (1986).

### 2.3.3 Personal Networks

For the assessment of personal networks, the Arizona Social Support Interview Schedule [ASSIS] questionnaire from Barrera (1980), adapted by Maya (2001) and used for Colombia by Ávila-Toscano & Madariaga-Orozco (2010), was used. This instrument facilitates the generation of names of individuals who constitute the social network of the evaluated participants, also establishing the type of social support perceived by them. The ASSIS allows for the identification of the social network based on the description of six specific dimensions of support, including: Personal feelings; Material aid; Advice; Positive feedback; Physical assistance; Social participation. The ASSIS shows a test-retest reliability of 0.88 upon reevaluation within a three-day period, and 0.70 upon repetition of the test within a one-month period; likewise, internal consistency offers a range of scores between 0.32 and 0.52 (López et al., 2007 cited by Amar-Amar et al., 2010).

### 2.3.4 Statistical Analysis

The information that was collected was transcribed into a Microsoft Excel 2003 file and then migrated in an automated manner to the following systems: Analysis of Moment Structures AMOS, version 6.0, as part of the Statistical Package for the Social Sciences SPSS package, version 18, and Linear Structural Relations Lisrel, version 8.8, in order to maintain equivalence between the databases.

To determine the reliability of the instruments used, the internal consistency method was employed, with the most representative statistic being Cronbach's Alpha [$\alpha$], calculated using SPSS 18 software. The minimum expected value according to the criteria established by the International Test Commission ITC, the European Federation of Professional Psychologists EFPPA, and the Test Commission of the General Council of Psychology of Spain COP, should be greater than 0.70 points (Prieto & Muñiz, 2000).

To confirm the construct validity of the Psychosocial Disposition to Armed Conflict Factors Questionnaire, the Arizona Social Support Interview Schedule ASSIS for Personal Networks, and the Coping Strategies Questionnaire, the adequacy of the absolute fit indicators of the empirical factorial structure was verified with the structure validated by previous research by Cardozo et al. (2015), Amaris et al. (2013) & Manrique et al., (2008). The fit indicators were interpreted according to the benchmark established by Hair et al. (1999) and Batista & Coenders (2000) for any statistic belonging to the structural equation's family, which applies to both the AFC of each instrument, calculated using Lisrel 8.0 software, and the path analysis, calculated using AMOS 16.0 software, for each of the explanatory models tested in this study and already described in the hypothesis section of this document. Their interpretation follows the following rules:

Indicators associated with absolute fit:

1. Non-centrality parameters ($\chi^2$ - df): Applies only for the comparison of rival models calculated in AMOS 6.0, and the one with the lowest value is chosen.

2. Non-centrality parameter on a scale or standardized ($\chi^2$ - df)/n: Applies only for the comparison of rival models calculated in AMOS 6.0, and the one with the lowest value is chosen.

3. Goodness of Fit Index [GFI]: Applies in AFC, calculated using Lisrel 8.8; it should tend to 1.

4. Root Mean Square Error of Approximation [RMSEA]: Applies for both AFC calculated using Lisrel 8.8, and path analysis calculated using AMOS 6.0; it should be between 0.05 and 0.08.

5. p-value of RMSEA: Applies for both AFC calculated using Lisrel 8.8, and path analysis calculated using AMOS 6.0; it should be less than 0.05.

Indicators associated with incremental fit:

1. Normed Fit Index NFI: Applies only for the comparison of rival models (Path Analysis) calculated in AMOS 6.0; it should be greater than 0.90.

Parsimony:

2. Normed Fit Index of Parsimony PNFI: Applies only for the comparison of rival models (Path Analysis) calculated in AMOS 6.0, and the one with the highest value is chosen.

Once the factorial structure was confirmed, the scores for the Psychosocial Disposition to Armed Conflict Factors Questionnaire CDCP, the Arizona Social Support Interview Schedule ASSIS for Personal Networks, and the Coping Strategies Questionnaire were calculated. For the CDCP, the items of the subscales (Factor 7 subscale of reconciliation) were reorganized, as established in the original manual of the test (Álzate et al., 2009) and the validation conducted in Colombia in 2007 by the same authors. Subsequently, the items were summed according to the reorganization of the factors, categorizing the Reconciliation factor. Then, the score was calculated for the factor corresponding to each of the instruments (CDCP and Coping Strategies), according to the regression coefficient that establishes the relative weight of each item for each of the component factors of the test.

Since the scores in the Coping Strategies Questionnaire and the Arizona Social Support Interview Schedule for Personal Networks were standardized, the comparison between factors could be done directly, as all of them were on the same Z scale (($\mu$=0; $\delta$=1)). Therefore, to ensure this possibility among the dimensions of the CDCP (since all of them maintain a different scale due to the inequality in the number of items they contain), a linear transformation of the scores to a percentile scale was performed (see Equation 1 from Álzate et al., 2009 below):

$$PuntajePercentilar = (\Sigma ItemFactornItems\ in\ the\ Factor * K\ Escala\ Likert) \quad (1)$$

In the context of the Coping Strategies Questionnaire and the Personal Network ASSIS Questionnaire, standardizing the scores to the Z scale allows for easier comparison between varied factors or dimensions, as all scores are on the same scale with the same mean and standard deviation. This makes it possible to compare scores directly, even if the factors have different numbers of items or different original scales.

To determine the prevalence level of each variable in the CDCP, the following cut-off points were used: 85th percentile, 65th percentile, 35th percentile, and 15th percentile, in the normative data to establish the Very High, High, Medium, Low, and Very Low levels respectively for each variable under study. Once all variables were calculated and coded, univariate, and bivariate descriptive analysis was performed, based on reconciliation, which is the variable to be explained by the study. In this regard, for the univariate analysis of qualitative variables (life cycle, sex, marital status, level of completed studies, employment situation and occupation, victim typology, place of origin, socioeconomic level, number of children), each of these variables was related to their relocation condition.

The victims of armed conflict and the level of assessment of each condition were analyzed based on the proportion of cases grouped in each of their categories. The mode [Mo] was used as a statistic for central tendency, and the nominal dispersion index [O] was used as a dispersion statistic, which was calculated using Equation (2) from De Peña (2005, p.33) below:

$$0 = \left[\frac{(1 - h_{mode}}{1 - \left(\frac{1}{k}\right)}\right] * 100\% \tag{2}$$

For quantitative variables (age, occupation and employment situation, victim typology), they were analyzed using the following central tendency indicators: arithmetic mean [$\bar{X}$], median [$Md$], and mode [$Mo$]; as dispersion indicators, the standard deviation [$S$] and the coefficient of variation around the mean [$CV\bar{X}$] were calculated. The interpretation of the coefficient of variation is similar to the O coefficient, as, according to Salcedo (2005), the closer its value is to 100%, the greater the heterogeneity in the distribution, and if it approaches 0%, the homogeneity will be maximum.

As for the shape indicators of each distribution, kurtosis [Ku] and skewness [As] were used. Regarding kurtosis [Ku], Pardo & Ruiz (2005) indicate that when its value tends to zero, it indicates that the amount of extreme data is similar to that of a normal distribution (and therefore its level of peakedness). However, they recommend verifying this using the standard error of the kurtosis index [$\delta Ku$], which allows the value [Ku] to be standardized and interpreted as a Z-Score, and therefore with 95% confidence, when the values of $\delta Ku$ are between -1.96 and 1.96, it can be concluded that the peakedness level of the distribution tends to resemble that of a normal distribution (i.e., mesokurtic). If, on the contrary, it is determined that these values are outside this range, the sign [Ku] is checked; when it is positive, it indicates that the peakedness level represents a leptokurtic distribution, whereas when its value is negative, it indicates that the peakedness level represents a platykurtic distribution.

Data normality was only evaluated in the indicators of Personal Networks, the CDCP, and Coping Strategies, since this is an assumption that requires subsequent path analysis, which was evaluated following recommendations using the Kolmogorov-Smirnov statistic [K-S], which must be greater than the critical value of the p-value of 0.05 points for the data distribution to be considered normal, because the established confidence is 95%.

## 3 RESULTS

### 3.1 Description of individual coping strategies of victims of the armed conflict

Regarding the results of the individual coping strategies of victims of the armed conflict relocated in Barranquilla, the first process conducted was the correlation analysis, followed by exploratory and confirmatory analyses. In Table 1, it is observed that covariance defines a type of symmetrical relationship between variables. That is to say, if variable V1 (reconciliation) correlates (positively or negatively) with variable V2 (coping strategies), as we see in the analysis, the coping strategies variable correlates (positively or negatively) with the reconciliation variable. This is analyzed from the norms of regression, the causal effect of V1 on V2 under the assumption that the relationship between them is linear.

In identifying the individual coping strategies used by victims of armed conflict, the Pearson correlation analysis was initially conducted. The dimensions of the scale are: (1) Problem-solving; (2) Social support; (3) Religion; (4) Emotional avoidance; (5) Professional support; (6) Cognitive avoidance; (7) Cognitive reappraisal; (8) Coping difficulty; (9) Denial; (10) Autonomy (see Table 1). The correlation of reconciliation with the exogenous variable coping strategies was compared, as shown in Table 2, where although most correlations are statistically significant, coping strategies such as “Coping difficulty” (Sig. = 0.877); “religion” (Sig. = 0.086); “professional support” (Sig. = 0.413); and “problem-solving” (Sig. = 0.432) show correlations that only represent a significant level of association with reconciliation. On the other hand, “social support” (r= 0.037); “expectancy” (r= 0.013); “emotional avoidance” (r= 0.002) are interpreted as indicating that as coping strategies increase, the possibility of reconciliation also increases, based on strategies with significant value (Sig. = 0.05), presenting a high causality relationship with coping strategies.

**Table 1 –** Correlation Analysis between Coping Strategies and Reconciliation.

| | **(1)** | **(2)** | **(3)** | **(4)** | **(5)** | **(6)** | **(7)** | **(8)** | **(9)** | **(10)** |
|---|---|---|---|---|---|---|---|---|---|---|
| **Reconciliation Pearson Correlation** | ,041 | ,109 | ,130 | ,090 | ,166 | ,043 | ,060 | -,008 | ,114 | ,061 |
| **Sig. (two-tailed)** | ,432 | ,037 | ,013 | ,086 | ,002 | ,413 | ,256 | ,877 | ,029 | ,250 |
| **N** | 363 | 363 | 363 | 363 | 363 | 363 | 363 | 363 | 363 | 363 |

After discriminating the degree of correlation between the variables, it was proceeded with the exploratory (EFA) and confirmatory (CFA) factor analyses, beginning by verifying the absence of structural zeros, which could lead to the appearance of non-positively defined matrices in the

EFA and CFA, constituting an invalid solution as an example of a Heywood case (Lloret-Segura et al., 2014).

The factorial structure (see Table 2) was established based on the EFA and CFA, which allowed for a comprehensive identification, minimizing the factorial indeterminacy and confirmatory biases. First, the existence of a possible factorial structure was determined (Hair et al., 1999), based on the interpretation of the Determinant [D], the Kaiser-Meyer-Olkin sample adequacy coefficient [KMO], and the p-value of Bartlett's Sphericity [p-valueBartlett]. This was followed by verifying the assumption of multivariate normality based on Mardia's Multivariate Kurtosis [RMK], to ensure there were no factorial models implying an improper solution (Cuttance, 1987; Freiberg-Hoffmann et al., 2013) or the presence of residual factors, and to identify and describe the set of possible factorial models, using criteria such as: $\lambda > 1$; at least 60% of cumulative explained $\delta^2$ [$\delta^2$ Explained>60%]; Kaiser's drop-off (1960); Velicer's Minimum Average Partial (1976), and parallel analysis, both the classic version (Horns, 1965) and its optimal implementation (Timmerman & Lorenzo-Seva, 2011). Finally, the a priori criterion, obtained from previous studies' results or theoretical conceptualization of how the factorial solution should be structured, was applied.

All these results were obtained using the Principal Components [PC] and Minimum Residual [MINRES] methods, according to Pearson inter-item correlation matrices [MCPearson] and Polychoric matrices [MCPolychoric], with Varimax rotation to fulfill the independence assumption required by measurement models. Similarly, it is possible to determine which model has a percentage of cumulative explained variance [% $\delta^2$Explained] higher than random by analyzing the value of the Chi-square coefficient [$\chi^2$].

**Table 2 –** Absolute fit measures for the evaluated factors.

| **Model N°** | **$\chi^2$/ gl GFI** | | 0 | **7** | **6** | **0** | **9** | **9** | **0** | **15** | **3** | **0** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Factors N°** | **ECVI** | 2,21 | | ML | | | | ULS | | ML | | ULS |
| | **NCP** | | | 2.195 | | | | 2.241 | | 2.274 | | 2.222 |
| **Estimation method** | **RMSR** | 13.655 | | 9.431 | | | | 8.309 | | 13.572 | | 7.698 |
| | **RMSEA** | 0.00 | | 0.00 | | | | 0.00 | | 0.00 | | 0.00 |
| | **RMSEA** | 6.19 | | 4.30 | | | | 3.71 | | 5.97 | | 3.46 |
| | | 0,65 | | 0,73 | | | | 0,75 | | 0,65 | | 0,92 |
| **gl** | **p value** | 18,9 | | 13,21 | | | | 11,75 | | 18,8 | | 11,3 |
| $\chi^2$ | | 11.448 | | 7.236 | | | | 6.068 | | 11.298 | | 5.746 |
| | | 0,085 | | 0.075 | | | | 0.067 | | 0.085 | | 0.061 |
| **$\chi^2$p value** | | 0,08 | | 0,067 | | | | 0,061 | | 0,082 | | 0,06 |

Table 3 shows the comparison between the distribution of the current study and the normative study by Londoño et al. (2006), with a 95% confidence level. After identifying, through the Levene's test, the absence of homoscedasticity and applying the correction in the Student's t-test required for these cases, it was found that there are statistically significant differences between

the coping strategies: social support, expectancy, and emotional avoidance, as their p-value [Sig] is less than the criterion of 0.05 points.

**Table 3 –** Correction parameters for Coping Strategies.

| Model N° | Factors N° | Estimation method | Incremental Fit Indices | | | | Parsimony Fit Indices | |
|---|---|---|---|---|---|---|---|---|
| | | | AGFI | NNFI O TLI | NFI | NFI | PNFI | PGFI |
| 5 | 3 | ML | 0.63 | 0.83 | 0.83 | 0.8 | 0.77 | 0.61 |
| 7 | 6 | ML | 0.71 | 0.87 | 0.87 | 0.84 | 0.81 | 0.66 |
| 9 | 9 | ULS | 0.73 | 0.89 | 0.89 | 0.86 | 0.82 | 0.7 |
| 15 | 3 | ML | 0.63 | 0.83 | 0.84 | 0.8 | 0.78 | 0.61 |
| 19 | 9 | ULS | 0.73 | 0.89 | 0.89 | 0.86 | 0.82 | 0.7 |
| 33 | 11 | ULS | 0.74 | 0.89 | 0.9 | 0.86 | 0.82 | 0.7 |

### 3.2 Description of the psychosocial disposition factors in a sample of victims of the armed conflict

The analysis of Reconciliation based on the Questionnaire of Disposition Factors Towards the Armed Conflict was initially established through descriptive statistical analysis and then through the 2-step method (Anderson & Gerbin, 1988), also known as the "unrestricted (exploratory) model but with a confirmatory purpose" (Pere & Anguiano-Carrasco, 2010, p. 24). This minimized the factorial indeterminacy and confirmatory bias effects.

It can also be noted that the shape of the distributions of these factors represents a normal curve, as the p-value of the Kolmogorov-Smirnov test [K-S] with Lilliefors correction was less than the criterion of 0.05 in all of them. In fact, they are skewed towards the right end of the curve, coinciding with the results obtained by Álzate et al. (2009). In addition, Van Den Brink et al. (2017, p. 291) indicates that "the prevalence towards psychosocial disposition factors varies from a minimum of 0.5% to a maximum of 10%. Therefore, it would be expected that people with a tendency towards reconciliation would obtain atypical values within the measurement distribution that registers it, and thus, this distribution should be skewed. The positive sign of the self-similar coefficients reveals that the presence of reconciliation is towards the right or positive end of the factors; therefore, it would be understood that the higher the score in the underlying factors of the CDCP, the greater the probability that individuals will reconcile.

According to the distribution of the items, the name "Perceived difference between Common Citizens and Non-State Armed Groups" was assigned to Factor 1; from a social psychology point of view, this factor implies the perception or social identification that would be closely related to the differentiation between one group and another (Blanco & Amaris, 2014, p. 27). Factor 2 is made up of different items that share in common "Socio-Political Legitimacy of Violence" (Polo et al., 2008). Factor 3 is called "Negative Attitude towards Armed Groups and the Ineffectiveness of Disarmament" as it implies the appreciation of negative consequences by armed groups and how the absence of the state in the territory is materialized due to the ineffectiveness of policy implementation (Ávila-Toscano & Madariaga-Orozco, 2015).

Factor 4 is “Perception of Deterioration of quality of life as a consequence of the Conflict” and Factor 5 is “Negative Emotions towards Armed Groups”. In these two factors, the perception of deterioration in quality of life and the generation of traumatic events associated with the conflict, the negative situations that arise are scenarios that result from the experiences of the people involved in the conflict due to its dehumanization (Martin-Baró, 1992). Factor 6 is “In the Face of a scenario of loss of negotiation with Armed Groups, it is Preferable to give in”. Understanding the difficulties of socio-political violence, the interests that have been established throughout the armed conflict and in the search for peace, negotiation emerges as a mediating instrument for conflict resolution (Madariaga-Orozco et al., 2017).

Factor 7 is “Reconciliation”. It proposes reconciliation as a qualitatively different process. Reconciliation refers to a process where societies learn to live together in a post-conflict environment (Kelman, 2008).

Table 4 shows that the data does not follow a normal distribution for most factors, as indicated by the “Not normal” entry under the Normality column. The Z-Scores in the table show how each individual data point for a factor compares to the mean of that factor in terms of standard deviations. A Z-Score of 0 means the data point is exactly at the mean, while positive Z-Scores indicate data points above the mean and negative Z-Scores indicate data points below the mean. The factors in the following table are represented as (F); Normality (N); Not normal (NN) (see Table 4).

**Table 4 –** Descriptive Statistics of the Psychosocial Disposition to Conflict Questionnaire [CDPC].

| (Z-Score) | (F) 1 | (F) 2 | (F) 3 | (F) 4 | (F) 5 | (F) 6 | (F) 7 |
|---|---|---|---|---|---|---|---|
| **Total** | 405 | 405 | 405 | 405 | 405 | 405 | 405 |
| **Minimum** | -3.98 | -2.50 | -2.11 | -4.22 | -2.31 | -3.13 | -2.53 |
| **Mean** | 0.00 | 0.00 | -0.00 | -0.00 | -0.00 | -0.00 | -0.00 |
| **Median** | 0.16 | 0.16 | 0.04 | 0.20 | -0.02 | 0.09 | -0.00 |
| **Mode** | 0.32 | 0.97 | -1.87 | 0.50 | 2.53 | 0.53 | 0.42 |
| **Maximum** | 1.35 | 1.70 | 2.22 | 1.72 | 2.58 | 2.42 | 2.62 |
| **Deviation** | 0.88 | 0.91 | 0.95 | 0.90 | 0.83 | 0.86 | 0.89 |
| **Skewness** | -1.42 | -0.54 | -0.08 | -1.27 | 0.37 | -0.73 | 0.08 |
| **Kurtosis** | 2.49 | -0.66 | -0.71 | 2.36 | 0.45 | 1.74 | 0.39 |
| **Skewness Error** | -11.66 | -4.41 | -0.66 | -10.40 | 3.02 | -6.02 | 0.67 |
| **Kurtosis Error** | 10.25 | -2.71 | -2.92 | 9.70 | 1.84 | 7.15 | 1.59 |
| **N** | NN | NN | NN | NN | NN | NN | NN |

Note: The factors are shown in the table like: (1) Perceived difference between Common Citizens and Non-State Armed Group; (2) Socio-Political Legitimacy of Violence; (3) Negative Attitude towards Armed Groups and the Ineffectiveness of Disarmament; (4) Perception of Deterioration of quality of life as a consequence of the Conflict; (5) Negative Emotions towards Armed Groups; (6) In the Face of a scenario of loss of negotiation with Armed Groups, it is Preferable to give in; (7) Reconciliation.

The data for Factor 1 is negatively skewed with a skewness value of -1.42, indicating that the distribution is skewed to the left. The kurtosis value of 2.49 suggests that the data is leptokurtic, meaning it has heavier tails and a sharper peak compared to a normal distribution. The Z-Scores range from -3.98 to 1.35, indicating variability in how data points deviate from the mean. The

data for Factor 2 is negatively skewed with a skewness value of -0.54. The kurtosis value of -0.66 suggests that the data is platykurtic, meaning it has lighter tails and a flatter peak compared to a normal distribution.

The data for Factor 3 is close to a normal distribution with a skewness value of -0.08 and a kurtosis value of -0.71. The Z-Scores range from -2.11 to 2.22, indicating a wide range of values. The data for Factor 4 is negatively skewed with a skewness value of -1.27. The kurtosis value of 2.36 suggests that the data is leptokurtic.

The data for Factor 5 is positively skewed with a skewness value of 0.37. The kurtosis value of 0.45 suggests that the data is mesokurtic, meaning it is similar to a normal distribution in terms of peak and tails. The data for Factor 6 is negatively skewed with a skewness value of -0.73 and a kurtosis value of 1.74, indicating leptokurtosis. The data for Factor 7 is close to a normal distribution with a skewness value of 0.08 and a kurtosis value of 0.39. Overall, the data for these factors exhibit varying degrees of skewness, kurtosis, and deviations from the mean, indicating different patterns in the distribution of responses related to perceptions and attitudes towards armed groups in the context of the study.

The Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) were conducted, yielding a set of possible factorial models. These models were obtained using Principal Components (PC) and Minimum Residuals (MINRES) methods, based on inter-item correlation matrices, whether Pearson (MCPearson) or Polychoric (MCPolychoric), and Varimax and Promax rotations. Subsequently, Confirmatory Factor Analysis (CFA) was performed to identify which model best fit the responses to the CDCP. This was done using absolute, incremental, and parsimonious fit indicators, calculated using Maximum Likelihood (ML) and Unweighted Least Squares (ULS) methods.

In Table 5, the descriptive statistical analysis shows the internal consistency of the questionnaire after validation. The distributions are presented using the regression method (Harman, 1976; Johnson et al., 2000), which is the method that minimizes the presence of false positives in the diagnosis by reducing the measurement error (DiStefano, Zhu, & Mîndrilă, 2019). The distribution is standardized with a mean [$\mu$] of 0 and a deviation [$\delta$] of 1 for all factors, with observed and estimated maximum and minimum limits (see Table 5).

For the analysis of internal consistency, Cronbach's Alpha [$\alpha$] coefficients (Cronbach, 1951), Theta [$\theta$] coefficients (Carmines & Zeller, 1979), and Omega [$\Omega$] coefficients (Heise & Bohrnstedt, 1970) were calculated. Under the A priori criterion, a 13-factor model described by Álzate et al. (2009). This 13-factor model was not obtained through the EFA with forced extraction option (see Table 6).

**Table 5 –** Absolute fit measures for the evaluated factors.

| **Model N°** | **GFI** | 923 | 23 | 7 | 17 |
|---|---|---|---|---|---|
| | | 3413.78 | ML | 5 ULS | ML |
| **Factors N°** | **ECVI NCP** | 0.00 | 0.090 | 0.110 | 0.110 |
| | | 0.00 | 0.082 | 0.110 | 0.110 |
| **Estimation method gl** | $\chi^2$ **RMSR RMSEA RMSEA** | 370 9 | 1588,7 | 5345,27 | 5727 |
| $\chi^2$ | **p value** | 9 | 0 | 0 | 0 |
| $\chi^2$**p value** | | 2490,8 | 1,64 | 5,72 | 7,21 |
| $\chi^2$**/ gl** | | 0,092 | 9,52 | 13,73 | 14,68 |
| | | 0,082 | 2650,6 | 4410,27 | 4718 |

**Table 6 –** Incremental and Parsimony Fit Measures.

| **Model** | **Factors** | **Estimation** | **Incremental Fit Indices** | | | | **Parsimony Fit Indices** | |
|---|---|---|---|---|---|---|---|---|
| **N°** | **N°** | **Method** | **AGFI** | **NNFI o TLI** | **CFI** | **NFI** | **PNFI** | **PGFI** |
| **10** | 7 | ULS | 0.69 | 0.84 | 0.85 | 0.8 | 0.74 | 0.65 |
| **23** | | ML | 0.85 | 1.07 | 1 | 1 | 0.94 | 0.78 |
| **7** | 5 | ULS | 0.81 | 1.05 | 1 | 1 | 0.94 | 0.75 |
| **17** | | ML | 0.80 | 1.05 | 1 | 1 | 0.95 | 0.74 |

In the study's context, Crombach's Alpha appears to be a critical component for assessing the reliability of the factors considered in the psychometric test. It guides the interpretation of whether the provided models (13 and 23-factor models) are robust and reliable enough for the intended construct they aim to measure. The table indicates issues with model fit, thereby guiding future analytic decisions in refining model structures or reconsidering the assumptions underlying factor analysis.

All of the above implies that, for the second phase of analysis with the CFA, a total of 23 factorial models were tested. These models were estimated using ML and ULS methods to minimize confirmatory bias. The following table displays the results of 23 factorial models tested in the second phase of analysis with the Confirmatory Factor Analysis (CFA). The models were estimated using Maximum Likelihood (ML) and Unweighted Least Squares (ULS) methods to minimize confirmatory bias. The table includes information such as the model number, the coefficient of determination (R squared), adjusted R squared, standard error of estimation, and Durbin-Watson statistic (see Table 7).

**Table 7 –** Logistic Regression Model.

| Model | R | R squared | Adjusted R squared | Standard error of estimation | Durbin-Watson |
|---|---|---|---|---|---|
| 1 | ,785[a] | ,617 | ,603 | 6,29726 | 1,770 |

The result of the CFA indicated that the model with the best fit was the 23ULS model, showing a good fit in the first-level structure, composed of 7 factors. This conclusion was reached by observing that the model had the lowest values of chi-square ($\chi^2$=8621.06), the $\chi^2$/df ratio ($\chi^2$/df=1), the Expected Cross-Validation Index (ECVI=9.52), the Noncentrality Parameter (NCP=2650.600), and the Root Mean Square Residual (RMSR=0.09). Additionally, the Root Mean Square Error of Approximation (RMSEA=0.082) was below the upper threshold limit (closest value to 0.10 points), given that the sample size was greater than 100 participants (Hair et al., 1999).

The significance of RMSEA and $\chi^2$ does not allow for distinguishing between the models, as they all have the same value of 0.00. However, the Goodness of Fit Index (GFI) favored the 23ULS model, as it had the highest indicator among the compared models (GFI=0.87). Regarding incremental fit indicators, the same conclusion was reached regarding the 23ULS model's better fit to the CDCP responses. The Non-Normed Fit Index (NNFI=1.07), also known as the Tucker-Lewis Index (TLI), was the highest and above the 0.90 criterion, even at the limit (NNFI=1.00) of what would be expected in cases of model overparameterization (Batista & Coenders, 2000). The same applied to the Normed Fit Index (NFI=1.00) and the Comparative Fit Index (CFI=1.00), which use the same interpretation criteria. However, according to the Adjusted Goodness of Fit Index (AGFI=0.85), the model with the best fit to the CDCP responses would be considered.

The parsimony fit measures help identify which model has the best fit, as it has an acceptable value with no greater difference than the range of 0.06 to 0.09 points from the highest Normed Parsimony Fit Index (PNFI=0.94) and Parsimonious Goodness-of-Fit Index (PGFI=0.78). In conclusion, since the 23ULS model consistently has a higher number of fit indicators within the acceptable range, it is concluded that the model that best explains the CDCP responses is the one with 7 first-level factors grouped into 1 second-level common factor, regardless of whether the normality assumption is met or not. Despite this, the value of RMSEA could explain why the factorial models that obtained the highest number of fit indicators came from calculations based on the Polychoric Matrix and with an estimation based on ULS, even when the CDCP responses were ordinal in nature.

In the same line of thought, the 23ULS model could be considered the most parsimonious, as while it and the 7ULS model have the highest $\%\delta^2$Explained of the original CDCP responses ($\%\delta^2$Explained = 58.10%), it does so with the smallest number of components (5 first-level factors vs. 5 first-level factors and 1 second-level factor).

### 3.3 Description of the personal social networks of victims of the armed conflict

It is provided a descriptive analysis of personal social networks based on various factors. These factors include density, support for different activities, giving advice or emotional support, lending material things, and support for intimate or personal matters. The analysis reveals that, on average, 68% of individuals seek support for job searching, studying, or daily tasks, 54% seek advice or emotional support, and 38% seek support for intimate or personal matters. The data also shows variations in the distribution of support-seeking behavior among individuals in personal social networks. The skewness and kurtosis values indicate the asymmetry and peakedness of the distribution, providing insights into the patterns of support relationships within social networks (see Table 8).

**Table 8 –** Descriptive analysis of personal social networks.

| | **Density %** | **Almost none** | **(1)** | **(2)** | **(3)** | **(4)** | **(5)** | **(6)** |
|---|---|---|---|---|---|---|---|---|
| **Minimum** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Average** | 0,68 | 0,02 | 0,64 | 0,22 | 0, 54 | 0,19 | 0,38 | 0,04 |
| **Standard deviation** | 0,23 | 0,10 | 0,29 | 0,23 | 0,30 | 0,17 | 0,30 | 0,07 |
| **Maximum** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| **Skewness** | -0,30 | 5,76 | -0,30 | 1,51 | 1,05 | 1,37 | 0,59 | 2,61 |
| **Kurtosis** | -0,66 | 35,40 | -1,03 | 1,95 | -1,18 | 2,23 | -0,71 | 10,60 |

Note: The dimensions are listed in the table as follows : (1) Fun or leisure time; (2) Support in work, studies, or daily tasks; (3) Give advice, emotional support; (4) Lend money, tools, or material things; (5) Intimate or personal; (6) Childcare or household activities.

When comparing the distribution of reconciliation with the corresponding exogenous variable of personal networks, Table 9 shows that although most correlations are statistically significant, with the exception of reconciliation regarding “emotional support” (Sig. = 0.828); “lending money, tools, or material things” (Sig. = 0.965); “childcare or household activities” (Sig. = 0.973); “giving intimate or personal advice” (Sig. = 0.106); and “support in work, studies, or daily tasks” (Sig. = 0.754), the observed correlations only represent a level of association that is at least sufficient between reconciliation and “fun or leisure time” (r= 0.214). This suggests that as reconciliation increases based on the support relationship of personal networks, the causal relationship with coping strategies decreases (see Table 9).

**Table 9 –** Correlation analysis between reconciliation and support relationships in the networks.

| | **Almost none** | **(1)** | **(2)** | **(3)** | **(4)** | **(5)** | **(6)** | **Standardized Predicted Value** |
|---|---|---|---|---|---|---|---|---|
| **Reconciliation, Pearson correlation** | -070 | -,065 | -,016 | ,011 | -,002 | -.085 | ,002 | ,138 |
| **Sig. (bilateral)** | ,183 | ,214 | ,828 | ,828 | ,965 | ,106 | ,973 | ,008 |

**Table 9 –** Correlation analysis between reconciliation and support relationships in the networks.

| | Almost none | (1) | (2) | (3) | (4) | (5) | (6) | Standardized Predicted Value |
|---|---|---|---|---|---|---|---|---|
| **N** | 363 | 363 | 363 | 363 | 363 | 363 | 363 | 363 |

Note. The dimensions are listed in the table as follows: (1) Fun or leisure time; (2) Support in work, studies, or daily tasks; (3) Giving advice, emotional support; (4) Lending money, tools, or material things; (5) Intimate or personal; (6) Childcare or household activities.

### 3.4 Personalized Psychological Intervention: CONSTANCE Simulator

Based on the previous analysis, CONSTANCE was designed and built, as a personalized psychological intervention simulator for victims of armed conflict based on the concept of personalized medicine. Its purpose is to improve the diagnosis and treatment of diseases from the concept of precision.

Suggesting this type of methodological application, which requires both biological and social factors to explain human behavior, implies that none of the theories of individual differences is viable unless it is linked to the biopsychosocial conception of human behavior (Maya & Holgado, 2005). This conception is motivated by both biological and social and cultural factors, showing that differences from others of the same species, in terms of traits and abilities, are determined genetically and socially (Welson, 1978; Eysenck & Eysenck 1980 cited by Prieto‡ et al., 1989). The contribution of individual differences, which have been shown to correlate very highly with personality and have a strong genetic basis is considered relevant for research on reconciliation in victims of armed conflict, as it complements the observed and studied individual differences (Heath & Martin, 1990).

Subsequently, taking into account the previous results the data distribution within the sample (363 subjects) was illustrated, considering individual differences linked to personality and underpinned by a robust genetic foundation, with a mean of 50 and a standard deviation of 10 (Ω: 10). The smooth curve provides an approximation of the data distribution based on this metric (see Figure 1).

The result of an ANOVA analysis (see Table 10) also suggests that theoretical constructions or assumptions be made to build systems that integrate diverse methods, such as the constructed simulator CONSTANCE IA. This simulator is based on symbolic approximations, analysis of observed behaviors, analysis of the context where data collection was performed, and the biological, cultural, and social factors of the study subjects. These are integrated through programming processes or in the synthesis of a machine to analyze, adjust, and determine a result with a high degree of diagnostic accuracy.

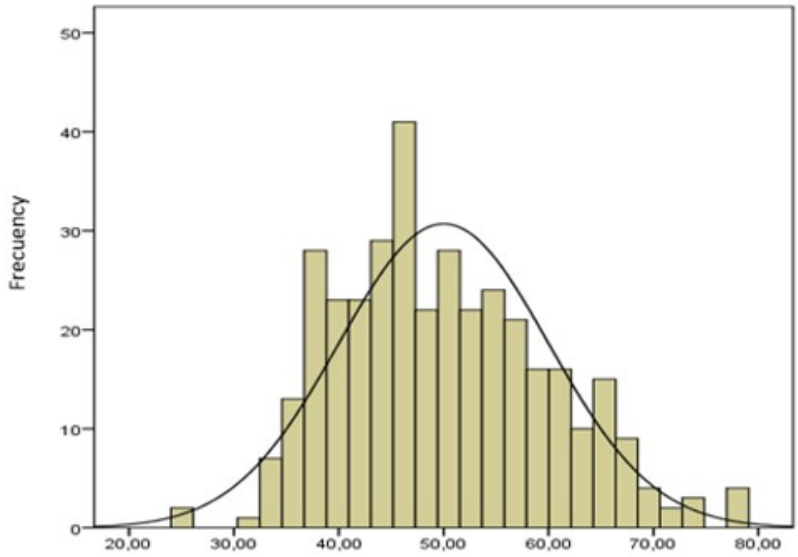


**Figure 1 –** Descriptive statistical analysis.

**Table 10 –** ANOVA Analysis

| Model | | Sum of squares | gl | Root mean square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | **Regression** | 22320,571 | 12 | 1860,048 | 46,905 | ,000[b] |
| | **Residual** | 13879,407 | 350 | 39,655 | | |
| | **Total** | 36199,978 | 362 | | | |

CONSTANCE is a simulator created under the concept of expert systems, which are used to create systems that simulate medical diagnoses. It is known as one of the applications of techniques of reasoning with facts and rules that incorporate human knowledge about medicine, engineering, or business. Programs like CONSTANCE, which are created at an expert level in problem-solving by reproducing a body of knowledge, are called knowledge-based systems or expert systems, where the main components are the knowledge base and the inference engine.

Through the analysis of the results obtained in this study, it was possible to observe that the impact between these two variables is close to 10%, which coincides with the theoretical constructs of social and community psychology and macro-social analysis. The implementation of the diagnosis provided by the simulator leads us to generate a proposal for personalized psychological intervention, as integrating biological, social, and cultural factors can improve or heal groups of people living within the same social context. This is because the more or less shared perception of situational factors and environmental conditions that are perceived is not generated in isolation

but socially constructed based on real indicators of community organization. Based on Lazarus and Folkman's transactional theory of stress and Maslow's hierarchy of needs, the results show that elements linked to economic factors, individual condition, and finally, concern for political aspects explain the conditions required for reconciliation (see Table 11).

**Table 11 –** Types of personalized psychological intervention in the total sample.

| | | Forecast accuracy | | | |
|---|---|---|---|---|---|
| **Type of intervention** | **Reconciliation** | **Multiple Regression** | **Discriminant Analysis** | **Logistic Regression** | **Final Model** |
| Not required or Prevention | 3 Above expectations | 27,55% | 54,00% | 64,00% - 66,00% | 66,00% |
| 2 (Promotion) | 2 Within expectations | 45,73% | 88,55% | | 80,72% |
| 3 (Recovery) | 1 Below expectations | 26,72% | 47,42% | 60,82% - 62,89% | 62,89% |
| | | | | | 71,90% |

Table 11 presents the types of personalized psychological interventions in the total sample, focusing on reconciliation and forecast accuracy. The table includes different models such as Multiple Regression, Discriminant Analysis, and Logistic Regression to assess the effectiveness of interventions. The results in the table indicate that personalized psychological interventions have varying impacts on reconciliation and forecast accuracy. For instance, interventions categorized as "Above expectations" show higher percentages in forecast accuracy, with Logistic Regression achieving 66.00%. On the other hand, interventions related to "Promotion" (category 2) demonstrate a significant impact on forecast accuracy, particularly with Discriminant Analysis at 88.55%.

In terms of reconciliation, interventions classified under "Recovery" (category 3) have mixed outcomes, with some falling below expectations. However, Logistic Regression shows a relatively higher percentage of 62.89% in this category. Overall, the table provides valuable insights into the effectiveness of personalized psychological interventions in achieving reconciliation and forecast accuracy. It highlights the importance of considering different models and approaches to tailor interventions based on individual needs and circumstances. Further analysis and interpretation of these results can inform future strategies for psychological interventions aimed at promoting reconciliation and enhancing forecast accuracy.

This is why there is a strong emphasis on considering psychological variables within the management of reconciliation processes at the community level, as they are of significant importance and weight in this context, especially when the social context involves relocation and represents the majority of the daily and future life of conflict-affected individuals, as they build their well-being day by day. The temporal analysis of these results reveals that there has been an interesting appropriation of the concept of mental health, and research conducted by universities and different public and private organizations highlights the importance of intervening in this variable and this population.

## 4 CONCLUSIONS

When the research was initially formulated, the goal was not to design a simulator. However, upon identifying the data that showed a relationship, the research team proceeded with the analysis, resulting in the development of the CONSTANCE IA software. The methodological and empirical parameters were left for the creation of articles and a user manual for the simulator, where algorithmic and CONSTANCE IA creation aspects are further explored. Building upon the obtained results, the estimation of the obtained scores provided the opportunity to create a system that could simulate the skills of an expert in solving specific problems, which in this case is the reconciliation of victims. Expert system theory, using artificial intelligence as a tool, serves as a knowledge base containing both "factual" and heuristic knowledge. It acts as an inference or reasoning machine, based on the concept of personalized medicine, with the aim of improving the diagnosis and treatment of diseases through precision.

Suggesting these types of technological applications, which consider both the biological and mental factors that explain human behavior, is based on the assumption that none of the theories of individual differences are viable if they are not linked to the biopsychosocial conception of human behavior. Motivation for such an approach is driven by biological, mental, social, and cultural factors, demonstrating that differences from others within the same species in terms of traits and abilities are genetically and socially determined (Eysenck & Eysenck, 1980; Wilson, 1978).

On the other hand, it is expected that the obtained results provide evidence of the etiological reality in the health-disease process among victims of armed conflict and the country's need to generate reconciliation processes, legally recognizing psychology as a psychosocial risk factor to be legislated and managed. Some laws already recognize this, offering not only a scientifically applicable method from social and behavioral sciences to evaluate the relational aspect and the impact of personal and social factors on psychological health indicators of individuals who have experienced such conflicts.

This mobilization and the positive impact of integrating the concept of precision psychology into Colombia's health law and the laws of the Colombian College of Psychology for the appropriate diagnosis and intervention of users or patients with this sociopolitical violence etiology or any scenario of violence is important. Finally, it is recommended to: carry out further studies using the same methodological approach but incorporating additional exogenous variables such as personality, empathy, or forgiveness, which have been studied and recognized as antecedents of reconciliation but have not been studied in combination with social variables; implement a longitudinal study with interannual recurrence to update the programming language of CONSTANCE IA and identify the trends of these health indicators and their relationship with macroeconomic indicators such as employment, income, among others; and evaluate the effectiveness of therapeutic and social techniques for intervention to improve intervention programs for victims of armed conflict.

**References**

AMAR-AMAR J, ABELLO-LLANOS R, MADARIAGA C & ÁVILA J. 2010. Relación entre redes personales y calidad de vida en individuos desmovilizados del conflicto armado colombiano [Relationship Between Personal Networks and Quality of Life in Demobilized Individuals from the Colombian Armed Conflict]. *Universitas Psychologica*, **2**(10): 355–369.

AMARÍS M, MADARIAGA C, AMARÍS M & ZAMBRANO J. 2013. Estrategias de afrontamiento individual y familiar frente a situaciones de estrés psicológico [Individual and Family Coping Strategies in Response to Psychological Stressful Situations]. *Psicología desde el Caribe*, **30**(1): 123–145.

ANDERSON J & GERBING D. 1988. Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*, **103**(3): 411–423.

BAR-TAL D. 2000. From intractable conflict through conflict resolution to reconciliation: Psychological analysis. *Political Psychology*, **21**(2): 351–365.

BAR-TAL D & BENNINK G. 2004. The Nature of Reconciliation as an Outcome and as a Process. In: *In book: From conflict resolution to reconciliation*. p. 11–38. Oxford University Press Editors.

BARRERA M. 1980. A method for the assessment of social support networks in community survey research. *Connections*, **3**: 8–13.

BATISTA J & COENDERS G. two thousand. *Modelos de ecuaciones estructurales (modelos para el análisis de relaciones causales) [Structural Equation Models (Models for the Analysis of Causal Relationships]*. Madrid, España: La muralla, S.A.

BLANCO A & AMARÍS M. 2014. La ruta psicosocial del desplazamiento: una perspectiva de género [The psychosocial route of displacement: a gender perspective]. *Universitas Psychologica*, **13**(2): 661–679.

BRINK S, SAGE F & VÉRTESY Á. 2017. Single-cell sequencing reveals dissociation-induced gene expression in tissue subpopulations. *Nat Methods*, **14**: 935–936.

CARDOZO A, AMARÍS M & BLANCO A. 2015. *Modelo analítico de las relaciones funcionales entre el capital social, la salud mental y las cogniciones postraumáticas en víctimas del desplazamiento forzado asociado al conflicto armado [Analytical model of functional relations between social capital, mental health and post-traumatic cognitions in victims of forced displacement associated with armed conflict]*. Ph.D. thesis. Universidad del Norte. Barranquilla, Colombia. unpublished Doctoral Thesis.

CARMINES E & ZELLER R. 1979. Reliability and Validity Assessment. Available at: https://doi.org/10.4135/9781412985642. doi:.

CORTÉS Á, TORRES A, LÓPEZ-LÓPEZ W, D P & PINEDA-MARÍN C. 2016. Comprensiones sobre el perdón y la reconciliación en el contexto del conflicto armado colombiano [Understandings of Forgiveness and Reconciliation in the Context of the Colombian Armed Conflict]. *Psychosocial Intervention*, **25**(1): 19–25.

CRONBACH L. 1951. Coefficient alpha and the internal structure of tests. *Psychometrika*, **16**: 297–334.

CUARTAS-RICAURTE J, KARIM L, MARTÍNEZ-BOTERO M & HESSEL P. 2019. The invisible wounds of five decades of armed conflict: inequalities in mental health and their determinants in Colombia. *Int J Public Health*, **64**(5): 703–711.

CUTTANCE P. 1987. Issues and problems in the application of structural equation models. In: CUTTANCE P & ECOB R (Eds.), *Structural modeling by example: Applications in educational, sociological, and behavioral research*. p. 241–279. Cambridge University Press.

DATA P. 2024. Victim Registry. Available at: https://datospaz.unidadvictimas.gov.co/registro-unico-de-victimas/. retrieved from:.

DISTEFANO C, ZHU M & MÎNDRILÃ D. 2019. Understanding and Using Factor Scores: Considerations for the Applied Researcher, Practical Assessment. *Research, and Evaluation*, **14**(20).

DUDA R, HART P & NILSSON N. 1976. Subjective Bayesian Methods for Rule-Based Inference Systems. In: *Proc. National Computer Conference. New York, also in Readings in Artificial Intelligence*.

EYSENCK H. 1952. The effects of psychotherapy: an evaluation. *Journal of Consulting Psychology*, **16**(5): 319–324.

EYSENCK H. 1967. *The biological basis of personality*. Thomas: Spring-field, Ill.

EYSENCK M & EYSENCK H. 1980a. Mischel and the concept of personality. *British Journal of Psychology*, **71**: 191–204.

EYSENCK M & EYSENCK M. 1980b. Effects of processing depth, distinctiveness, and word frequency on retention. *British Journal of Psychology*, **71**(2): 263–274.

EYSENCK S. 1982. A cross-cultural study of personality: Germany and England. *Zeitschrift für Differentielle und Diagnostische Psychologie*, **3**(4): 293–300.

FISAS V. 2004. Procesos de paz y negociación en conflictos armados [Peace Processes and Negotiation in Armed Conflicts]. ISBN: 8449315794.

FISHER R. 2006. Intergroup conflict. In: DEUTSCH M, COLEMAN P & MARCUS E (Eds.), *The handbook of conflict resolution: Theory and practice*. p. 176–196. Wiley Publishing.

FREIBERG-HOFFMANN A, STOVER J, IGLESIA G & FERNÁNDEZ-LIPORACE M. 2013. Correlaciones policóricas y tetracóricas en estudios factoriales exploratorios y confirmatorios [Policoric and tetrachoric correlations in exploratory and confirmatory factor analysis studies]. *Ciencias Psicológicas*, **7**(2): 151–164.

GALTUNG J. 1996. *Peace by peaceful means: Peace and conflict, development and civilization*. Oslo: Sage Publications, Inc.

GARZÓN-BORRAY H & YATE-RAMÍREZ J. 2022. La psicología y su papel frente a la violencia en Colombia – periodo 2010 a 2020 [Psychology and Its Role in Addressing Violence in Colombia – 2010 to 2020 Period]. *Revista Latinoamericana Ogmios*, **3**(6): 69–87.

GIEBEL C, ZULUAGA M, SALDARRIAGA G, WHITE R, REILLY S, MONTOYA E, ALLEN D, LIU G, CASTAÑO-PINEDA & GABBAY M. 2022. Understanding post-conflict mental health needs and co-producing a community-based mental health intervention for older adults in Colombia: a research protocol. *BMC Health Serv Res*, **22**(1): 253–270.

GÓMEZ-RESTREPO C, TAMAYO-MARTÍNEZ N, BUITRAGO G, GUARNIZO-HERREÑO C, GARZÓN-ORJUELA N, ESLAVA-SCHMALBACH J, VRIES E, RENGIFO H, RODRÍGUEZ A & RINCÓN C. 2016. Violencia por conflicto armado y prevalencias de trastornos del afecto, ansiedad y problemas mentales en la población adulta colombiana [Violence Due to Armed Conflict and Prevalence of Affective Disorders, Anxiety, and Mental Health Problems in the Colombian Adult Population]. *Rev Colomb*, **Psiquiatr;45(1**: 147–153.

HAIR J, ANDERSON R, TATHAM L & BLACK W. 1999. *Estadística básica, didáctica de la estadística, y métodos y técnica de Investigación [Basic Statistics, Teaching of Statistics, and Research Methods and Techniques]*. Madrid: Prentice Hall Iberia.

HARMAN H. 1976. *Modern factor analysis*. 3rd revised ed. U Chicago Press.

HEATH A & MARTIN N. 1990. Psychoticism as a dimension of personality: A multivariate genetic test of Eysenck and Eysenck's psychoticism construct. *Journal of Personality and Social Psychology*, **58**(1): 111–121.

HEISE D & BOHRNSTEDT G. 1970. Validity, invalidity, and reliability. *Sociological Methodology*, **2**: 104–129.

HERNÁNDEZ-SAMPIERI R & MENDOZA-TORRES C. 2018. *Metodología de la investigación. Las rutas cuantitativa, cualitativa y mixta [Research Methodology: Quantitative, Qualitative, and Mixed Methods Approaches]*. México: The McGraw-Hill Education.

HORN J. 1965. A rationale and test for the number of factors in factor analysis. *Psychometrika*, **30**: 179 –185.

JOHNSON S, ARAGON S & SHAIK N. 2000. Comparative Analysis of Learner Satisfaction and Learning Outcomes in Online and Face-to-Face Learning Environments. *Journal of Interactive Learning Research*, **11**(1): 29–49.

KAISER H. 1960. The application of electronic computers to factor analysis. *Educational and Psychological Measurement*, **20**: 141–151.

KELMAN H. 2008a. Reconciliation from a social-psychological perspective. In: NADLER A, MALLOY T & FISHER J (Eds.), *The social psychology of intergroup reconciliation*. p. 15–32. Oxford University Press.

KELMAN H. 2008b. Reconciliation from a social-psychological perspective. In: NADLER A, MALLOY T & FISHER J (Eds.), *The social psychology of intergroup reconciliation*. p. 15–32. Oxford University Press.

LLORET-SEGURA S, FERRERES-TRAVER A, HERNÁNDEZ-BAEZA A & TOMÁS-MARCO I. 2014. El Análisis Factorial Exploratorio de los Ítems: una guía práctica, revisada y actualizada [Exploratory Factor Analysis of Items: A Practical Guide]. *Revised and Updated]. Anales de Psicología*, **30**(3): 1151–1169.

LONDOÑO N, HENAO-LÓPEZ G, PUERTA I, POSADA S, ARANGO D & AGUIRRE-ACEVEDO D. 2006. Propiedades psicométricas y validación de la escala de estrategias de coping modificada (EEC-M) en una muestra colombiana [Psychometric Properties and Validation of the Modified Coping Strategies Scale (M-CSS) in a Colombian Sample]. *Universitas Psychologica*, **5**(2): 327–349.

LONG W & BRECKE P. 2003. *War and reconciliation: Reason and emotion in conflict resolution*. MIT Press.

LÓPEZ I, ÁLVAREZ S, LORENCE B, JIMÉNEZ L, HIDALGO M & SÁNCHEZ J. 2007. Evaluación del apoyo social mediante la escala ASSIS: descripción y resultados en una muestra de madres en situación de riesgo psicosocial [Assessment of Social Support Using the ASSIS Scale: Description and Results in a Sample of Mothers at Psychosocial Risk]. *Intervención Psicosocial*, **16**(3): 323–337.

MADARIAGA-OROZCO C, MOLINARES C & BAENA S. 2017. La paradoja del proceso de posconflicto en Colombia [The process of post-conflict in Colombia, the paradox]. *En Justicia*, **32**: 214–226.

MANRIQUE K, MARTÍNEZ M & TURIZO Y. 2008. Estudio correlacional entre el bienestar psicológico, subjetivo y social y el fatalismo, el trauma y las cogniciones irracionales postraumáticas, en personas adultas, desplazadas por la violencia sociopolítica, radicadas en la ciudad de Barranquilla [Correlational Study between Psychological, Subjective, and Social Wellbeing and Fatalism]. In: *Trauma, and Posttraumatic Irrational Cognitions in Adult Individuals Displaced by Sociopolitical Violence, Residing in the City of Barranquilla]. Undergraduate Thesis*. Barranquilla: Universidad del Norte.

MARTÍN-BARÓ I. 1988. La violencia política y la guerra como causas en el país del trauma psicosocial en El Salvador [Political Violence and War as Causes of Psychosocial Trauma in El Salvador]. *Revista de Psicología de El Salvador*, **28**: 123–141.

MARTÍN-BARÓ I. 1998. *Psicología de la liberación [Liberation Psychology]*. Madrid: Trotta.

MARTÍN-BARÓ I. 2003. *Poder, ideología y violencia [Power, Ideology, and Violence]*. Madrid: Trotta.

MATIN-BARÓ I. 1992. Los grupos con historia: un modelo psicosocial [Groups with History: A Psychosocial Model]. *Revista de Psicología de El Salvador*, **6**(43): 7–29.

MAYA I. 2001. Psychosocial aspects in an on-line selfhelp group of Alzheimer's patients and caregivers. In: CASAS F & SAURINA C (Eds.), *2001. Proceedings of the Third Conference of the International Society for Quality of Life Studies. Universitat de Girona. Diversitas*, vol. 14. p. 923–936.

MAYA I & HOLGADO D. 2005. Lazos fuertes y proveedores múltiples de apoyo: comparación de dos formas de representación gráfica de las redes personales [Strong Ties and Multiple Sources of Support: A Comparison of Two Forms of Graphical Representation of Personal Networks]. *EMPIRIA*, **10**: 107–128.

PARDO A & RUÍZ M. 2005. *Análisis de datos con SPSS 13 Base [Data Analysis with SPSS 13 Base]*. Madrid: McGraw-Hill / Interamericana.

PEARCE J. 2021. From drugs to peace? Resetting the conversation. *Int J Drug Policy*, **89**(10).

PERE F & ANGUIANO-CARRASCO C. 2010. El análisis factorial como técnica de investigación en psicología [Factor Analysis as a Research Technique in Psychology]. *Papeles del Psicólogo*, **31**(1): 18–33.

PETTIGREW J. 2003. Living Between the Maoists and the Army in Rural Nepal. *Himalaya*, **23**(1): 9–20.

PEÑA D. 2005. *Fundamentos de estadística [Fundamentals of Statistics]*. España: Alianza.

POLO J, AMARÍS M & CASTRO A. 2008. Vivencia de bienestar social de profesionales acompañantes de procesos de integración social en la ciudad de Barranquilla [Experience of social well-being among professionals accompanying social integration processes in the city of Barranquilla]. In: *Psicología desde el Caribe*. pp. 21 ,105–121.

PRIETO G & MUNÍZ J. 2000. Un modelo para evaluar la calidad de los tests utilizados en España [A Model for evaluating the quality of tests used in Spain]. *Papeles del Psicólogo*, **77**: 65–72.

PRIETO‡ T, BLANCO A & RODRIGUEZ A. 1989. The ideas of 11 to 14-year-old students about the nature of solutions. *International Journal of Science Education*, **11**(4): 451–463.

REVOLLO-PARDO C, AKEMI TAKEITI B, TOVAR-GUERRA C & ALVES-FONTES J. 2021. La Psicosociología cómo dispositivo epistémico para la cultura de paz: notas sobre experiencias latinoamericanas – Brasil y Colombia [Psychosociology as an Epistemic Tool for the Culture of Peace: Notes on Latin American Experiences-Brazil & Colombia]. *Pesquisas e Práticas Psicossociais*, **16**(2): 1–20.

SALCEDO A. 2005. *Cultura, Razonamiento y Pensamiento Estadístico. Boletín IASE Hipótesis alternativa [Culture, Reasoning, and Statistical Thinking]*. vol. 6. Venezuela: Universidad central de Venezuela. 3 – 9 pp.

SOTO-TRIANA J, VENEGAS-LUQUE R & RINCÓN-OÑATE C. 2023. Psircular: un escenario reflexivo sobre las construcciones de lo psicosocial y el conflicto armado en Colombia [Psircular: A Reflective Scenario on the Psychosocial Constructions and Armed Conflict in Colombia]. *Revista Vía Iuris*, **34**: 1–31.

TIMMERMAN M & LORENZO-SEVA U. 2011. Dimensionality assessment of ordered polytomous items with parallel analysis. *Psychological Methods*, **16**(2): 209–220.

TRUJILLO S, GIRALDO L, LÓPEZ J, ACOSTA A & TRUJILLO N. 2021. Mental health outcomes in communities exposed to Armed Conflict Experiences. *BMC Psychol*, **27;9(1**: 127–135.

UNIT TV. 2023. Garantías de no repetición. Available at: https://www.unidadvictimas.gov.co/en/node/173. retrieved from:.

VELICER W. 1976. Determining the number of components from the matrix of partial correlations. *Psychometrika*, **41**(3): 321–327.

WILDER D. 1986. Social categorization: Implications for creations and reduction of intergroups bias. In: BERKOWITZ L (Ed.), *Advances in Experimental Social Psychology*. p. 293–363. New York: Academic Press.

WILSON E. 1978. *On human nature*. Cambridge: Harvard University Press.

ÁLZATE M, DURÁN M & SABUCEDO J. 2009. Población civil y transformación constructiva de un conflicto armado interno: Aplicación al caso colombiano [Civil Population and Constructive Transformation of an Internal Armed Conflict: Application to the Colombian Case]. *Universitas Psychologica*, **8**(3): 703–720.

ÁVILA TOSCANO J & MADARIAGA C. 2015. Interacción social conflictiva y problemas de salud mental en redes personales de ex combatientes ilegales en Colombia [Conflictive social interactions and mental health issues in personal networks of Colombian unlawful ex-combatants]. *Terapia Psicológica*, **33**(3): 277–283. Available at: https://doi.org/10.4067/S0718-. doi:.

ÁVILA TOSCANO J & MADARIAGA-OROZCO C. 2010. Redes personales y dimensiones de apoyo en individuos desmovilizados del conflicto armado [Personal Networks and Support Dimensions in Demobilized Individuals from the Armed Conflict]. In: *Psicología desde el Caribe*. pp. 25 ,179–201.

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