Neural Network for Learning Gender Categories in Expert Judges

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1. Abstract

Violence has been associated with gender roles and perspective as effects of the health crisis. Given that the pandemic fostered distance, asynchronous and self-managed learning, the objective of the study was to establish the neural network in a sample of experts who rated abstracts published in indexed journals. A cross-sectional, exploratory and retrospective study was carried out with sources and experts selected from the h-index of citation and referencing. The results show that the sum of squares error suggests significant differences from the second phase of the analysis. The contribution lies in the establishment of significant learning from the second phase called comparative, although the limit consists of the number of observations and analyzes that the model identifies as hidden layers of information processing. It is recommended to extend the model with the inclusion of virtual, augmented and gamified reality learning.

2. Introduction

The relationship between university and work has been widely debated. Some consider that academic training should be a prelude to professional training and this to job training (Roesch et al., 2020) [17]. Others, those who question neoliberalism and educational positivism, swear and perjure that there should be no relationship because the university should be a space for critical training. Both positions seem far from reality to me. It is enough to observe a little to realize that education and work are close in terms of the application of certain knowledge and skills, but distant in terms of teaching-learning processes. It is possible to appreciate that the idea that the teacher has more knowledge and experiences predominates in the classroom, even those critics of positivism point out that the scheme should be reversed, but they continue to assume that the teacher is the leader in the classroom. Instead, the world of work is governed by a logic of dependency relationships established from the job interview. In companies that deign to be, those who choose employees, managers or technicians establish profiles to avoid conflicts and reduce risks. In the classroom there is no such selection, even when students take a multiple-choice exam. Universities are known to select those with fewer errors. So, both universes are opposite, companies do not guarantee a place by school averages and universities do not suggest who of their graduates can work in which companies or positions. In fact, it seems to me that the university is a ordered simulation of knowledge susceptible to immediate recall at best. In the classroom or laboratory, the ideology prevails that the theory does not have to be demonstrated in experiments if it has already been previously established, criticized or discussed. Thus, in postgraduate courses only a level of language comprehension, software management or reading and writing level is sought, but not empirical demonstration and contrast under the pretext that such a procedure would be expensive.

In this educational and labor framework, gender violence is a gradient where differences accumulate between what is assumed to be learning efficiency, or else, a questioning of hegemonic knowledge (Ruiz-Pérez & Pastor-Moreno, 2020) [18]. A more permissive or flexible stage because what was important, according to critics of positivism, was significant learning without necessarily measuring it. Now we are in a vacuum where everyone seems to have their own parameters or any other criteria to define a rating or evaluation left and right. Even those who measure everything follow an intuitive probability logic where whoever supports their ideology is merit enough and whoever does not follow it is insufficient demerit. It is enough to review publications where it is speculated that one variable is related to another with no other foundation than the occurrence of the author or the reference to an author without any questioning. In this way, regarding the measurement of gender violence, the levels of individual or collective analysis are ambiguous (Mittal & Singh, 2020) [13]. If we consider that all conflict is individual or social, then the levels are reductionist; individualist or collectivist, if we analyze these levels in the classroom or in the training institution, we will see that they are insufficient due to the relationships that a school has with its environment. In fact, it is anachronistic (from the 19th century) to resort to an individualistic explanation of conflicts to identify profiles or characteristics of people prone to conflicts from their thought, decision or action (Solórzano, Gamez & Corcho, 2020) [20]. Next, if we rule out the individualist bias, the same occurs with the collectivist bias where it is perjured that the social influences every individual, then, only the group levels remain, which were an interesting bet of the most refined psychology of the 20th century. However, the idea of groups, tribes, collectives, communes, communities or whatever was like it was soon superseded by the Internet, which is responsible for ending groups and reducing them to spectators or users of social networks (Dlamini, 2021) [3]. The billions of Internet users who spend at least three hours a day viewing their digital social networks suggest that the idea of groups is an approach to pigeonhole conflicts due to ideological differences, but Facebook, TikTok, Twitter or Instagram indicate that everything can be reduced to an expression of "like" or "reel". If we consider levels of exposure to the Internet and now with ChatGP to Artificial Intelligence (AI), and if the Internet user is exposed long enough, then we can talk about levels of conflict according to their contact with messages or other Internet users (Kumar et al., 2021). In this way, stalking, trolling, stashing, phishing or sexting would be those new levels to consider.

The reduction of the conflict to a video and short expression that is disseminated in social digital networks is not something that changed overnight (García-Fernández et al., 2021) [4]. If we reflect a little, we will realize that conflict is something inherent to humans and inhumans, good or bad, regular or diverse, barrier or opportunity, however you want to see it, conflict is a constant in our actions and decisions. The important thing in any case, according to what social digital networks say, is that this conflict is a symptom of something that our mind, body or spirit identifies as a preamble to a change. The conflict is not something that changes or modifies any perspective, it is only a symptom; a little pinch in the chest that announces a heart attack, a puncture in the tendon that predicts injury or a tune, phrase, little noise that anticipates reflection and negotiation with oneself and others around.

In this sense, gender violence is a conflict in which the parties involved try to control the damage inherent in an asymmetric relationship (Rodriguez-Jimenez, Fares-Otero, & García-Fernández, 2023) [16]. It is true that literature and, of course, the media or social digital networks mediate violence as a process of depredation where there are more victims than aggressors, in the best of cases they denounce perpetrators, spectators, managers, promoters and instigators. Artificial Intelligence (AI) already makes it possible to establish with data, how many make up violence in a sociodigital media or network (Javed & Chattu, 2021) [6, 7]. There is already talk of algorithmic justice to show who the actors of the violence are. This means that future opinionologists on violence will have to cite these actors with precise data and not simply wander into speculations about any violence. Most importantly, it will be possible to follow up on those who are apparently victims or perpetrators to demonstrate with sequences of fingerprints if their behavior is consistent with this or that profile. In this dynamic reality, violence must be reconceptualized based on clarifying data on who is attacking whom (McIlwaine et al., 2023) [12]. Unfortunately, violence exists beyond the Internet and only a video surveillance system would make it possible to clarify the facts, but this cost is not permissible or affordable given the investment in science and technology. Of course, AI must be accompanied by a new regulatory framework, even to defend the victims of those who through a technology, device or network generate violence towards Internet users (Valera, 2020) [21]. AI must be subject to the principle of protecting the dignity of people (risk reduction). If an AI affects one gender or another, it must be established which is the most vulnerable gender to protect it against violent AI and those behind it. Gender violence in socio-digital networks alludes to a type of ideology typical of the seventies when it was thought that patriarchy could be tamed or at least reduced to a minimum expression of its violence, but today it is assumed to be so diverse as well as the communities that appropriated the term (Sapire et al., 2022) [19]. In this sense, it alludes to a conviction to dialogue with patriarchy and deconstruct it. A contradiction prevails, considering that men and women interact and influence each other without considering whether to intervene in the people around us. It is too complicated that our environment does not influence us, and the freedom lies in the fact that we choose from what is available and most of what is available is different from what we would like to be assuming that we influence more than those who influence us.

Freedom may or may not be effective if it is considered that a first moment of the problem is to be able to choose, then to be able to influence not only to be influenced (Lundin et al., 2020) [11]. If freedom is limited by a patriarchal system, then the problem is one of persuasion, not freedom of choice, because the patriarchal system offers various ways to be free under the veil of ignorance. It is possible to build with knowledge and not with ideology a system that allows the influence of a different ideology so as not to follow the canons of patriarchy. The answer is that it is possible, but not because of the substitution of a single thought (patriarchy) for another unilateral thought (feminisms except for one that I will comment on later) but rather the ability to analyze and disseminate information for dialogue between the parties involved. Capitalism in its hyper-consumerist modality reifies everything and turns it into a product of consumption, addiction, leisure or criticism (Bettinger-Lopez & Bro, 2020) [2]. Hyper consumerism is an idea typical of the seventies and eighties when it was thought that working against oppression was the only way to emancipation. Today, rather, the apparently radical idea of taking informal rights from various communities of sexual diversity is spreading. However, I believe that the most interesting proposal is that of justice based on algorithms, which consists of demonstrating with Artificial Intelligence the bias in hiring, promotion, incentives or privileges of men compared to women with the same knowledge and skills in organizations or institutions. open to change. Freedom is the ability to influence at a mature age having been influenced at a child or youth age (Murray et al., 2023) [14]. It means then that freedom can be enjoyed or demanded at any time and scenario. In a convention of experts, it is likely to demand the freedom to be wrong or cling to what is considered convenient or convincing, but in front of a group of students, freedom develops in the absence of questioning. In the case of a liberal and progressive wing (see what is related to justice demonstrated with algorithms), an overly advanced proposal of freedom emerges because it is just discovered behind the veil of ignorance as the ideological factor of genders and other movements that do not, they stop to consider humans as we are thinking and walking beings who are not wandering or addicted to single thought. We are thinkers because we have developed our brain with ideas and practices. We are walkers because we learn to accompany each other rather than abandon ourselves or get lost in ideas, substances or fallacies. Thus, the objective of this work was a systematic review of gender violence in the literature published in indexing repositories during the pandemic period from 2020 to 2023 with the purpose of discussing the impact of the health crisis on intersubjective relationships.

3. Method

meta-analytical and retrospective work was carried out with a sample of sources indexed to international repositories: Scopus, WoS, Latindex, Redalyc, Scielo and JCR, considering the period from 2020 to 2023.

The focus group technique was used for the discussion and homogenization of the concepts and categories of analysis (Jatmiko, Syukron & Mekarsari, 2020) [8]. Next, using the Delphi technique, the sectioned summaries were evaluated, assigning a score of 0 to the summaries that did not include the central categories of gender violence such as gender role. Therefore, the experts assigned a score of 5 to the abstracts that included the gender role category. In a second instance, the experts compared their preliminary evaluations with averages to be able to modify or reiterate their criteria. In the third phase, the judges reflected on their initial and final qualification, the difference and the similarity before different summaries alluding to gender violence. The participants in focus groups and Delphi sessions were contacted from their institutional emails, after selection considering their citation index h in google scholar. They were informed about the objectives and those responsible for the project, stressing that they will not receive any remuneration for their participation (Islam & Hossain, 2021) [1]. In addition, the confidentiality and anonymity of their responses was guaranteed, as well as compliance with the standards of the American Psychological Association in its section on studies with humans. The data were captured in Excel and processed in SPSS version 29. The coefficients of centrality, grouping and structuring were estimated to contrast the null hypothesis regarding the significant differences between the theoretical structure of gender violence reported in the literature with respect to to the appreciations made in the present work (Johnson et al., 2023) [9]. Values close to unity were assumed as evidence of non-rejection of the null hypothesis.

4. Results

Neural networks are a specific technique to investigate the processing of information regarding the criteria of expert judges. In this sense, the first phase of training (comparison of initial qualifications with averages) allowed to establish a baseline of learning. In this sense, 71% of experts stayed in the training phase, since the remaining 29% continued with the evaluation since they ratified or modified their criteria. Next, the phase of reiteration of qualifications or modification of the evaluation criteria was assumed as a test phase where 150 modifications were observed, corresponding to 28.9 % (Table 1). The neural network included a factor (gender role) and a covariate (gender perspective), as well as six intermediate layers and an output layer for the explanation of the neural learning of the participants regarding the gender violence reported in the literature of 2020 to 2023. Training and testing related to the first and second phase indicate that the neural network explains 45% of the relationships between nodes and edges. In other words, the learning of the neural network goes through a training phase and reaches its greatest explanation until the second testing phase with 42% and 45% of the forecasts (Table 2).

The ratios indicate proportions of probable relationships between the input layers (GBV summaries) with respect to the intermediate

layers (GBV roles included in the summaries). The intermediate layers suggest the leaking of data and information related to violence, roles and gender perspective. The output layer indicates the neural learning of the learning network. In this way, the neural network explains the relationships between the input, intermediate, and output nodes indicated by the synaptic weights. That is, the radial basis function suggests the differences between the input and output nodes. The ratios indicate between 10 and 29 relationships that are processed in hidden layers where the first phase is the one with the lowest error compared to the second phase. In fact, initial scores reflect fewer GBV learning errors than repeated or modified scores when compared to averages (Table 3). The neural network model around the learning of violence through the rating of abstracts published during the pandemic indicates that the sum of squares error is the main finding of the study. In other words, the phase of modification of the qualification or ratification of the same is more significant than the resulting action or the previous phase. That is, the neural network finds its smallest learning error in the differences between those who reiterated their initial qualification with respect to those who modified it.

Table 1: Centrality measures per variable

Network				
Variable	**Betweenness**	**Closeness**	**Strength**	**Expected Influence**
Conviccion	1.041	0.412	0.219	-1.149
Responsabilidad	-0.932	-0.244	-0.884	-1.567
Cuidado	0.055	-0.552	-0.501	0.38
Categorico	1.041	1.137	0.944	0.3
Hipotetico	-0.932	0.488	1.066	1.792
Fines	1.534	1.371	1.554	-0.608
Medios	0.055	-0.133	-0.813	0.123
Instrumental	-0.932	-1.934	-1.321	0.111
Sustantiva	-0.932	-0.545	-0.264	0.62

Table 2: Clustering measures per variable

Network				
Variable	**Barrat**	**Onnela**	**WS**	**Zhang**
Categorico	1.301	2.437	0.771	0.926
Conviccion	-0.718	-0.247	-1.085	-0.391
Cuidado	0.379	-0.343	0.868	-1.089
Fines	-0.98	0.206	-0.841	-0.285
Hipotetico	-0.839	-0.074	-0.841	0.633
Instrumental	-1.269	-0.907	-1.085	-0.738
Medios	1.358	0.29	1.454	-0.628
Responsabilidad	0.725	-0.663	0.868	-0.468
Sustantiva	0.043	-0.699	-0.109	2.04

Table 3: Weights Matrix

Network									
Variable	**Conviccion**	**Responsabilidad**	**Cuidado**	**Categorico**	**Hipotetico**	**Fines**	**Medios**	**Instrumental**	**Sustantiva**
Conviccion	0	-0.426	-0.376	-0.421	0.498	-0.274	-0.165	0	0.006
Responsabilidad	-0.426	0	-0.305	0	0.046	-0.336	-0.27	-0.205	-0.018
Cuidado	-0.376	-0.305	0	0	0.154	0.081	0.385	0.353	-0.148
Categorico	-0.421	0	0	0	0.655	-0.624	0	-0.184	0.65
Hipotetico	0.498	0.046	0.154	0.655	0	0.515	0.103	-0.119	-0.507
Fines	-0.274	-0.336	0.081	-0.624	0.515	0	-0.423	-0.113	0.478
Medios	-0.165	-0.27	0.385	0	0.103	-0.423	0	0.296	0
Instrumental	0	-0.205	0.353	-0.184	-0.119	-0.113	0.296	0	-0.114
Sustantiva	0.006	-0.018	-0.148	0.65	-0.507	0.478	0	-0.114	0

5. Discussion

The contribution of this work to the state of the art lies in the establishment of a learning network related to gender violence reported in the literature from 2020 to 2023 and evaluated by expert judges. The results show a lower sum of squares error that suggests significant differences between the theoretical structure with respect to the observations of the present study. In relation to the studies on neural networks of immersive learning of violence or algorithmic justice, the results show that differences prevail between the relations of violence, role and gender perspective when configuring a neural network. In this way, immersive learning suggests that a change prevails whenever information is disseminated in a gamified, virtual or augmented way (Ashraf, Ali & Ullah, 2021) [1]. In the present study neural networks predict significant learning of violence, but with respect to the experience and knowledge of expert judges. In studies on the gamification of information, higher learning curves attributed to the presentation of content are reported (Harvey, 2021) [5]. From the perspective of this paper, it is recognized that the interaction between violence, the role and the gender perspective foster significant differences. Consequently, the immersive and gamified mode when interacting with the evaluated categories would generate differences with respect to a hypothetical structure. Therefore, it is recommended to expand the study to highlight the contribution of the study and observe in other modes of learning such as virtual, gamified or augmented reality.

The limits of the study lie in the number of observations and predictions. The sample size seems to affect the results of the relationships between input, intermediate and output nodes. In addition, the neural network technique suggests 16 hidden layers that the model contemplates in its analysis, but their effects on the output layer are unknown. This issue is essential to establish a learning field of gender violence that distances itself from other types of violence with respect to its systematicity and diversification. Violence between people of the same sex is established through profiles and patterns (Raj et al., 2020) [15]. Gender violence, according to the results, is interconnected and oriented towards a learning phase of inclusion or exclusion of categories. This is the case of the gender role that, as an imposition, is related to another ideology of equality or equity without reducing its structure or diminishing its relationships. In other words, the gender role can coexist with the gender perspective. It is a positive violence that is disseminated in a dual way: through gender roles and gender perspective.

6. Conclusion

The objective of this work was to establish the violence learning network in a sample of experts who rated summaries alluding to the subject. The results warn that as the evaluation is extended, a structure of relationships between violence, role and perspective is revealed as axes of discussion and consensus. In addition, the literature seems to support this type of learning since augmented, immersive or gamified reality studies warn that the presentation of information defines learning, but the limits of the study indicate an expansion of the types of learning. The main limitation is the size of the observations, since as they increase the parameters become more significant. Such an issue can be corrected by comparing the coefficients and network models.

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