



Confirmatory Factor Structure of Occupational Health

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Abstract

The objective of this work was to confirm the factorial structure of occupational health. A non-experimental, exploratory, and cross-sectional study was carried out with a non-probability sampling of students considering the economic, labor, civil and social status. The results show the convergence of five first order factors in a second order factor, explaining a structure of 36% of the total variance, although the research design limits these results to the sample, suggesting the extension of the model to other scenarios.

Keywords: Health; Youth; Old age; Pension; Discourse; Breath; Fever; Dry cough; Tiredness

Introduction

In the framework of the SARS-COV-2 coronavirus pandemic and the COVID19 disease, occupational health emerges as a central issue on the agenda of for-profit organizations and health institutions [1]. It is a preventive phenomenon focused on accidents and diseases, although a greater number of cases are expected due to contagion, infection and illness related to shortness of breath, fever, dry cough, and tiredness. Until the first week of May, identified as the riskiest in Mexico, there are 22,088 infected, 13,447 recovered, 2,061 deaths.

Such context places the organizations that hope to rejoin the labor dynamics at the epicenter of the collateral effects, once it is suspended, as well as the reactivation of trade. In this way, the study of future graduates and their employment will be the central themes of the educational agenda [2].

Further, it is estimated that two thirds of the world population are linked to migratory flows. One tenth (115 million) of the total

population of the countries that make up the Organization for Economic Cooperation and Development (OECD) are the children of migrants. One in three students is a descendant of migrants, 32% of student enrollment is made up of migrant children, but 75% of male migrants are unemployed compared to 57% of unemployed women who are migrants; only 4.3 million migrants are legally studying or working, and immigration grows one million each year [3].

During the period from 2000 to 2020, Norway led the reception of migrants, its rate went from 0.6% to 1.4%; followed by Germany from 0.8% to 1.2% and Australia from 0.5% to 1.1%. The Organization for Economic Cooperation and Development (OECD), in its 2020 report, during the period from 2000 to 2020, estimated that deaths after 30 days of hospital admission went from 8.3 to 4.1 on average per 100 cases for the member countries. In cases related to asthma, the OECD average is 51 cases per 100 thousand

inhabitants older than 15 years. Mexico occupies the past site with 19 cases.

In this work the theoretical, conceptual, and empirical frameworks related to occupational health are exposed to highlight the variables and their relationships. Next, the specification of a model for its approach is included in the following methodological section and observation of its contrast in the results section. Differences between the theoretical structure with respect to empirical observations are discussed in this work. Conclusions regarding the null hypothesis and its derived assumptions are offered.

Theory of Occupational Health

Health psychology in general and occupational psychology it has an established the Demand Model, Control and Social Support (MDCS) and the Model Imbalance, Effort and Reward (MDER) to establish the cardiovascular risk factors, brain-vascular diseases and ischemic heart disease on musculoskeletal disorders, stress, absenteeism, accidents, conflicts, insomnia, depression, and anxiety [4].

Organizational psychology has studied the effects of labor demands on the occupational health of workers [5]. Based on the Demand, Control and Social Support Model (MDCS) and the Unbalance, Effort and Reward Model (MDER), the dependency relationships between occupational risk factors and illnesses, accidents, conflicts, and disorders related to deterioration have been established of health.

The MDCS explains the relationship between the emergence of stress with the demands of the organization that are assimilated as excessive tasks by the work with a null criterion of control of their abilities and effort [6]. An intensification of the labor rhythm, demand for productivity, contradictory policies, conflicts, interruptions determine self-control, skills, abilities, knowledge, negotiation worker and accident or illness.

The MDER warns of an asymmetric relationship between demands and self-control, considering that the rewards -roll, status, salary, recognition- are a function of their effort, dedication, and productivity. Stress emerges when demand, effort and reward are asymmetric [7].

Studies of Occupational Health

The determinants of occupational health would be

- Virtues and lifestyles
- Cultural traditions and values
- Beliefs about biomedical information
- Knowledge of medications and devices

- Social norms of acculturation, multiculturalism or intercultural
- Attitudes or dispositions towards the treatment of asthma, medications, devices, and professionals
- Motivation to achieve successful treatment and
- Adherence to treatment [8].

Therefore, the occupational health involves

- Differences between dominant cultures and migrant cultures
- The reflection of such differences regarding the health service in general and occupational in particular
- A system of adherence to treatment that is based on values, beliefs, attitudes, intentions and behaviors of health professionals and self-care
- The response of older adults with respect to their economic, political, social and cultural environment that is reflected in family support, the quality of their care and health policies [9].

The occupational health from six differences

- Desired information and information received
- Success tests against error tests
- Patient expectations and expectations of doctors
- Occupational health beyond the organization or labor institution, youth and the prevention of diseases and accidents
- The close relationship between occupational health with retirement, economic pension, or family support in old age
- the link between occupational health and the electoral political context [10].

Therefore

- to deepen the social representations of the elderly with respect to health issues that are disseminated in the media
- contrast the social representations with their experiences of support for the elderly, pensions and other income or benefits that the government grants or disseminates in the electoral contest
- develop an instrument to measure the social representations of occupational health
- establish the reliability and validity of the instrument
- contrast the model of trajectories of relations between categories and variables related to the establishment of an agenda, evocative positioning and symbolic processualism [11].

Specification A Model of Occupational Health

From the theoretical, conceptual, and empirical review, a model for the study of occupational health was specified, considering the scenario of central Mexico, as well as the sociodemographic

and sociohistorical context. Thus, the variables that explain the phenomenon are configured by dimensions related to expectations of accidents, perceptions of illnesses, expected violence, labor radicalism and health risks (see Figure 1).

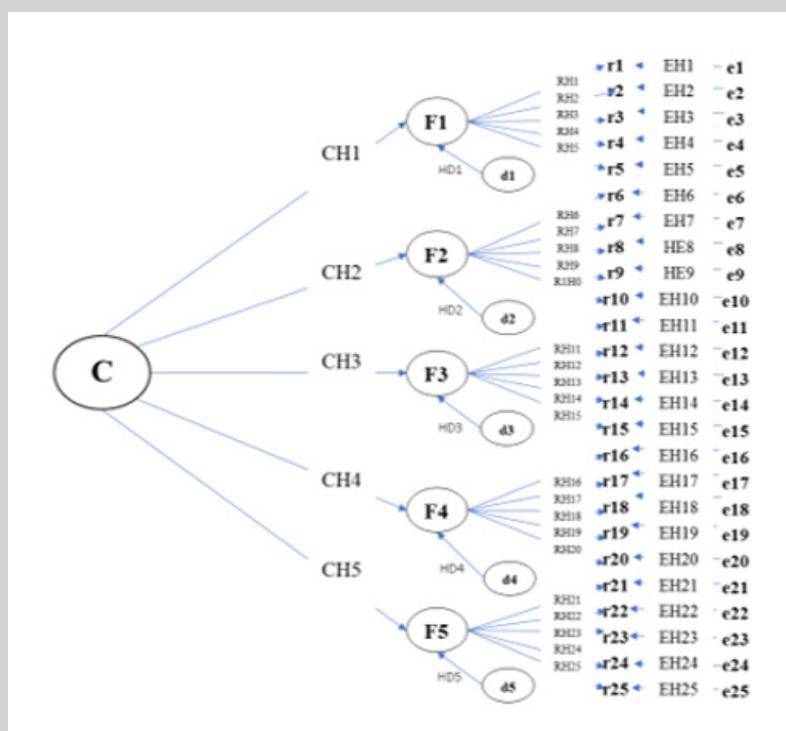


Figure 1: Measurement model.

Note: Elaborated with data study; C = Second order construct (occupational health), F = first order factor (F1 = Expectations of accidents, F2 = Perceptions of illnesses, F3 = Expected violence, F4 = Labor radicalism, F5 = Health risks), R = Indicator (r1..., r25), d 0 Disturbance measurement of factor (d1..., d5), e = Error of measurement indicator (e1..., e25), CH = Convergence Hypothesis (CH1..., CH5), RH = Relationship hypothesis (RH1..., RH25), MEH = measurement error hypothesis (MEH1..., MEH25).

The model proposes the convergence of the first order factors into a second order factor that the literature identifies as occupational health. In such a structure, the phenomenon of occupational health diversifies to the extent that the indicators of the factors intensify their relationships. In this way, in the context of a pandemic, an organization is an epicenter of accidents, diseases, violence, radicalism and risks. Therefore, the contrast of this model will allow us to notice adverse scenarios and those prone to occupational health.

Method

A first study non-experimental, cross-sectional, exploratory, and qualitative study was carried out. A non-probabilistic election of 100 students (M = 21,34 SD = 1,35 age and M = 7'812.23 SD = 342,35 monthly income) the State of Mexico was carried out in the localities of Huehuetenango, Taoyuan and Coyoteed.

A second cross-sectional, linear study was carried out with

100 students (M = 24.3 SD = 1.4 age, M = 7'654.32 SD = 245.67 monthly income) of an automotive multinational, considering its participation in the first local and regional employment programs, as well as their academic training in a strategic allied higher education institution for the formation of intellectual capital.

Both studies used Occupational Health Scale (ESO-25) was used, which suggests five dimensions related to job expectations, salary, compensations, recognitions, identity, and promotions in relation to perceptions of diseases or accidents, risks, and threats to health to achieve these personal or organizational goals. Each item is answered with one of five options ranging from 0 = "not likely" to 5 = "quite likely".

The information was processed in the statistical analysis package for social sciences (SPSS version 16.0). The parameters were estimated to demonstrate the reliability and validity, sphericity, and adequacy, as well as fit and residual of a structural model (Table 1).

Table 1: Descriptive of the instrument.

R	M	S	W	K	A	F1	F2	F3	F4	F5
r1	4,56	1,01	1,43	1,34	,798	,542				
r2	4,09	1,09	1,40	1,46	,743	,654				
r3	4,81	1,08	1,54	1,49	,763	,578				
r4	4,36	1,09	1,72	1,50	,706	,521				
r5	4,82	1,06	1,43	1,85	,786	,509				
r6	4,52	1,00	1,28	1,69	,776		,632			
r7	4,92	1,01	1,49	1,56	,743		,453			
r8	4,30	1,16	1,56	1,45	,709		,498			
r9	4,87	1,76	1,40	1,44	,783		,412			
r10	4,76	1,90	1,36	1,34	,731		,432			
r11	4,56	1,50	1,82	1,29	,795			,564		
r12	4,13	1,03	1,83	1,13	,785			,304		
r13	4,32	1,04	1,32	1,14	,789			,342		
r14	4,87	1,03	1,13	1,10	,794			,354		
r15	4,02	1,02	1,45	1,81	,763			,314		
r16	4,35	1,05	1,01	1,56	,732				,413	
r17	4,36	1,09	1,54	1,45	,756				,543	
r18	4,14	1,00	1,31	1,34	,709				,439	
r19	4,89	1,01	1,32	1,54	,784				,541	
r20	4,06	1,43	1,43	1,20	,721				,430	
r21	4,53	1,28	1,50	1,38	,782					,542
r22	4,32	1,93	1,69	1,54	,790					,401
r23	4,36	1,04	1,68	1,38	,750					,433
r24	4,87	1,02	1,63	1,42	,762					,562
r25	4,02	1,08	1,30	1,54	,765					,540

Note: Elaborated with data study; R = Reactive, M = Mean, S = Standard Deviation, W = Sweetness, K = Kurtosis, A = Alpha excluded item value. Method: Principals components, Rotation: Varimax. Adequation and Sphericity [$\chi^2 = 12,34$ (23 df) $p < ,05$; KMO = ,675] F1 = Expected Accidents for Ascents (12% total variance explained alpha ,780), F2 = Diseases Expected for Achievements (10% total variance explained and alpha ,776), F3 = Expected Violence for Leadership (7% total variance explained and alpha ,766), F4 = Radicalization Expected by Merits (4% total variance explained and alpha ,782), F5 = Expected Harassment Before Companions (3% total variance explained and alpha ,732). All items are answered with any of five options ranging from 0 = "not likely" to 5 = "quite likely".

Results

In a first study, Table 1 shows the values of distributive normality that allowed carrying out reliability and validity analyzes, as well as the observation of the structure of relationships and trajectories among the variables.

A second study to observe the structure of relations between the variables, correlations and covariances between the factors were estimated, as well as a structural model to confirm the relationship between the factors with an emerging second-order factor that the literature identifies as occupational governance (see Table 2 and Figure 1).

Table 2: Correlations and covariations.

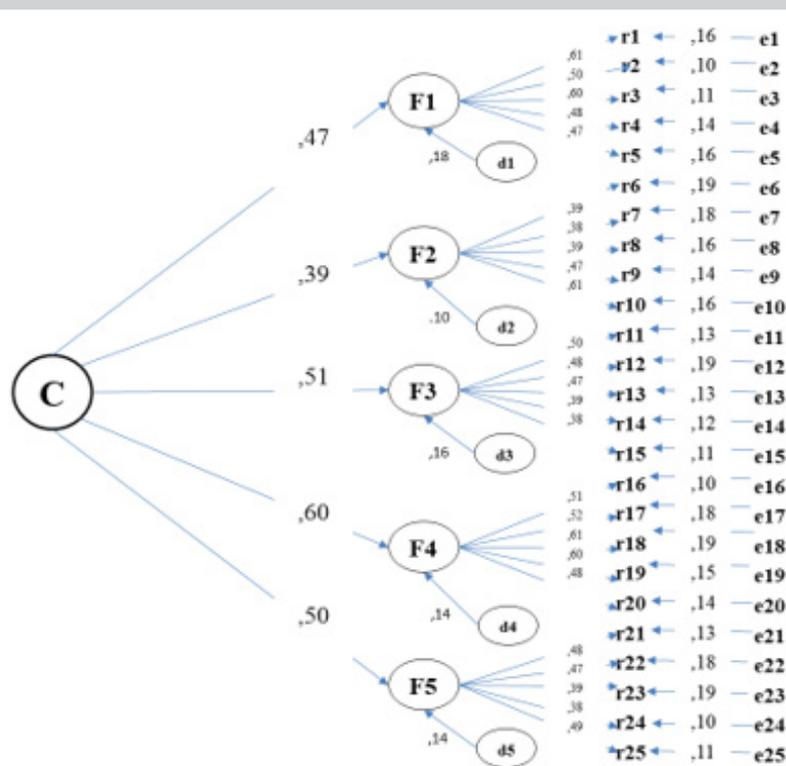
	M	SD	F1	F2	F3	F4	F5	F1	F2	F3	F4	F5
F1	23,13	13,21	1,000	,432*	,419**	,398***	,370**	1,875	,532	,458	,397	,407
F2	21,25	14,35		1,000	,562*	,386**	,374**		1,732	,431	,306	,456
F3	20,31	16,21			1,000	,409*	,405***			1,980	,532	,423
F4	25,31	13,11				1,000	,562*				1,754	,385
F5	22,36	10,47					1,000					1,832

Note: Elaborated with data study; F1 = Expected Accidents for Ascents, F2 = Diseases Expected for Achievements, F3 = Expected Violence for Leadership, F4 = Radicalization Expected by Merits, F5 = Expected Harassment Before Companions: * $p < ,01$; ** $p < ,001$; *** $p < ,0001$.

The structure of relationships seems to suggest the emergence of a second-order factor given that the links between the factors are close to zero, ruling out multicollinearity.

The structure of trajectories between disturbances and errors with respect to factors and indicators suggests the emergence of a common factor that literature identifies as the governance of

security to account for the participation of civil actors in the face of problems attributed to the State, such as the case of safety. The adjustment and residual parameters [$\chi^2 = 14,35$ (15 df) $p > ,05$; GFI 0,990; CFI,997; RMSEA ,008] suggest the non-rejection of the null hypothesis relative to the differences between the theoretical relations with respect to the empirical relationships found. (Figure: 2).

**Figure 2:** Structural equation modelling.

Note: Elaborated with data study; F1 = Expected Accidents for Ascents, F2 = Diseases Expected for Achievements, F3 = Expected Violence for Leadership, F4 = Radicalization Expected by Merits, F5 = Expected Harassment before Companions: d = Disturbance measured factor, e = Error measured indicator: □ relations between disturbances or errors with respect factor or indicators; □ relations between factors and with respect indicators.

Discussion

The contribution of the present work to the state of the art lies in the confirmation of a structure of factors alluding to occupational health that explained up to 36% of the total variance, although the research design limited the results to the surveyed sample.

In relation to the theory of occupational health which highlights the balance between demands and resources to anticipate diseases, accidents, risks, violence, threats or contingencies, this work has shown that this structure is reflected in the radicalism of expected merits. Research lines related to occupational stress will predict risk, disease, accident, or violence scenarios.

Regarding occupational health studies which highlight a cultural, differential, biased and perceptual variables as determinants of occupational health, this work has shown that diseases, accidents, risks, threats, contingencies, and violence are represented as highly probable as his features intensify. Systematic reviews of these findings will corroborate the prevalence of the factors.

Regarding the specification of the model for the study of the phenomenon where the convergence of accidents, diseases, violence, radicalisms, and risks is proposed, this research has not rejected the null hypothesis regarding the differences between the theoretical structure with respect to the structure empirical observed.

In summary, the empirical structure found conforms to the theoretical structure reviewed in the literature, although this is reflected in the radicalism of merits. This is so because the surveyed sample represents their occupational health from the recognition of objectives, tasks and goals rather than from prevention or health care.

Conclusion

The objective of the present work was to confirm the theoretical structure subtracted from the consulted literature regarding the observed structure of relations between variables. Failure to reject the hypothesis provisionally suggests that the radicalism of merits reflects occupational health, but the research design limits this finding to the study sample.

The lines of research derived from the findings consist of observing the relationship between meritocratic radicalism with respect to expectations of accidents, diseases, risks and violence. The specification of the model for the observation of these dimensions will allow anticipating conflict scenarios that affect occupational health in a pandemic context.

Occupational health policies focused on conflicts associated with accidents, illnesses, risks or violence will allow to achieve a balance between demands, resources and capacities, if recognition of merits prevails over any other factor.

Acknowledgement

None.

Conflict of Interest

No conflict of interest.

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