Construction and validation of a scale of stigma against individuals diagnosed with schizophrenia

Construcción y validación de una escala de estigma hacia personas diagnosticadas con esquizofrenia

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Abstract:

Antecedents: Individuals diagnosed with schizophrenia are not just dealing with their diagnoses. They are facing stigma due to their pathology. International research has proposed that individuals diagnosed with schizophrenia suffer more stigma than other types of mental issues. However, in Chile, a valid scale is not available to measure stigma against individuals diagnosed with schizophrenia. **Objectives:** To fill this gap, this research is aimed to develop and validate a scale to measure stigma against individuals diagnosed with schizophrenia. **Methods:** Two stages were completed to achieve the research objective. First, a pool of items was developed based on the three critical components of stigma, cognitive, affective and behavioural. Three independent judges were asked to assess the content aspects of the content validity of the items. Second, following an instrumental and longitudinal design with non-probabilistic with a quota sampling by gender (N = 607) the validity and reliability of the final scale was assessed. **Results:** A one-dimensional scale composed of 22 items showed good statistical boundaries. The observed factor loadings suggest that the items adequately represent the dimension ($\lambda >$, 6), and the reliability estimates are optimal ($\alpha >$, 8; $\omega >$, 8). Results suggest that the scale can be used the respondents' gender irrespectively.

Keywords: stigma; schizophrenia; scale validation.

Resumen:

Antecedentes: Las personas diagnosticadas con esquizofrenia no solo enfrentan su diagnóstico. Ellos también tienen que enfrentar el estigma producto de su patología. Investigaciones internacionales han propuesto que las personas diagnosticas con esquizofrenia sufren más de estigma que otras patologías mentales. Sin embargo, en Chile no existe una escala validada para medir el estigma hacia personas diagnosticadas con esquizofrenia. **Objetivos:** Para cubrir esta necesidad en la literatura, esta investigación tiene como objetivo desarrollar y validar un instrumento para medir el estigma hacia personas diagnosticadas con esquizofrenia. **Métodos:** Dos etapas fueron completadas para lograr el objetivo de investigación. En primer lugar, se desarrolló un set de ítems basados en los "tres componentes centrales del estigma: creencia, emoción y conducta". Se les solicitó a tres jueces independientes evaluar estas preguntas de acuerdo con su contenido y validez. En segundo lugar, siguiendo un diseño instrumental y longitudinal con muestreo no probabilístico por cuotas por género (N = 607) se evaluó la validez y confiabilidad de la escala final. **Resultados:** Una escala unidimensional compuesta por 22 ítems mostró buenos límites estadísticos. Las saturaciones de factores observadas sugieren que los ítems representan adecuadamente la dimensión ($\lambda >$, 6), y las estimaciones de confiabilidad son óptimas ($\alpha >$, 8; $\omega >$, 8). Los resultados sugieren que la escala se puede utilizar independientemente del género de los encuestados

Palabras clave: stigma; esquizofrenia; validación de escala.

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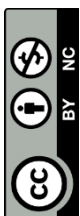
Introduction

Stigma and prejudice are two related and different concepts (Link & Phelan, 2001). Both are complex concepts that involve individual experience, the interaction between marginalised and non-marginalised groups, and social phenomena, including power relations, contingencies, social practices and program policy designs (Allport, 1979; Goffman, 1963). The classic starting point for conceptualise stigma of mental issues is proposed by Goffman (1963, p. 11), as "an attribute that links a person to an undesirable stereotype, leading other people to reduce the bearer from a whole and usual person to a tainted, discounted one". Hence, stigma is a set of cognitions and feelings, usually negative, against a minority social group with a different condition than the rest of the society (López et al., 2008). On the other hand, in Allport words, prejudice is defined as "an aversive or hostile attitude toward a person who belongs to a group, simply because he belongs to that group, and is therefore presumed to have the objectionable qualities ascribed to the group" (Allport, 1979, p. 7). Therefore, prejudice is a negative attitude against an individual who belongs to a group with a negative social value (Navarro et al., 2012).

Based on these previous works, stigma and prejudice have similarities including, exposure to adverse attitudes, unfair treatment and violence against individuals belonging to disadvantage social groups. Notwithstanding these similarities, stigma and prejudice are different attitudinal concepts (Ottati et al., 2005). Indeed, stigma research has primarily focused on individuals with atypical conditions, including mental illness (e.g., schizophrenia). Conversely, prejudice research focused on the far more common but powerful implications of race, nationality, gender and class division, among other similar variables (Stubber et al., 2008). Therefore, prejudice research has been associated with social processes determined by domination, while stigma research has been related to processes driven by disease avoidance (Phelan et al., 2008).

Three critical components integrate stigma (Reynders et al., 2014). The first one is related to the *cognitive* component of stereotypes. Stereotypes are cognitive structures which helps individual to simplify their context (Corrigan & O´Shaughnessy, 2007). As such, stereoypes towards individuals with mental health issues, including schizophrenia, results in negative beliefs such as *individuals with psychological issues being inept* (Reynders et al., 2014). The second component is prejudice, which represents the agreement of most individuals with these stereotypes or the experience of adverse *affective* reactions, including *anger* or *fear* toward the stigmatised group (Pascal et al., 2023; Reynders et al., 2014). Prejudice

leads to discrimination as a behavioural consequence (Fiske et al., 2010). As such, the third component is the *behavioural* responses to prejudice result in the need for social distance (Rusch et al., 2005). A central concept in the process of stigmatisation is labelling (Reynders et al., 2014). Through labelling, the negative stereotype of being diagnosed with a mental health illness will be triggered (Angermeyer & Matschinger, 2003).

Regarding mental health illness, research has proposed that individuals with typical or common mental health illnesses, such as depression or anxiety, are more accepted and suffer less stigma (Cazzaniga & Suso, 2015). Conversely, individuals diagnosed with schizophrenia are the most who suffer stigma and are less considered by societies (Rusch et al., 2005; Soler, 2019). It is suggested that stigma against individuals diagnosed with schizophrenia is based on mistaken ideas about their dangerousness and violent behaviour (Chang et al., 2018). Research has flagged out that individuals diagnosed with schizophrenia may suffer one or a combined type of stigma: direct discrimination (e.g., refusal to hire the individual) (Grandon et al., 2018; Link et al., 2001), structural discrimination (e.g., less availability of adequate treatment) (Gren et al., 2020 van Zelst, 2008), and social-psychological process which involve the stigmatised individuals' perceptions (Link & Phelan, 2001; Valery & Proteau, 2020).

Stigmatisation may harm the course and the onset of schizophrenia (Graves et al., 2005; van Zelst, 2008). Literature has highlighted several negative consequences impacting individuals diagnosed with schizophrenia. For example, it has been proposed that stigma represents a significant barrier to accomplishing the social integration of these individuals (López et al., 2008; Soler, 2019). Experiences of stigma can be covering almost all aspects of standard of living, including general health and psychiatric treatment (Gonzalez-Torres et al., 2007). Stigma can significantly reduce individuals' self-esteem and life satisfaction (Dickerson et al., 2002; Link et al., 2001; Markowitz, 1998). Stigma produces a vicious cycle of discrimination and disadvantage, which in turn lead individuals into social seclusion (including homelessness), drug or alcohol abuse, reduced job opportunities and excessive institutionalisation. Moreover, stigma does not also negatively impact individuals diagnosed with schizophrenia, evidence support that families or their caregivers suffer social isolation (Caqueo-Urízar et al., 2014). Finally, disadvantages in social legislation and the health care system reflect the harmful effects of stigmatization of individuals diagnosed with schizophrenia (Gaebel & Baumann, 2003). All of these consequences decrease the likelihood of recovery (Gaebel & Baumann, 2003).

In response to the negative impact of the stigma of individuals diagnosed with schizophrenia, research and practitioners focused on developed initiatives to reduce this stigmatization are gaining acceptability. Broad knowledge and successful intervention is the Open the Doors program developed by the World Psychiatric Association, implemented in more than 20 countries to reduce stigma against individuals diagnosed with schizophrenia (Hochman, 2007). For example, international evidence has supported that based interventions research has been successful in Australia (Rosen et al., 2000), Germany (Gaebel & Baumann, 2003), New Zealand (Vaughan & Hansen, 2004), the United Kingdom (Curran, 2004) and Japan (Desapriya & Nobutada, 2002).

Measuring the success of these interventions research relies on quantifying differences between scales over time or between interventions and controls groups over time in a between-within design (McEldoon et al., 2012). Indeed, selecting appropriate and valid scales is critical in designing valid and useful intervention programs and outcomes research (An et al., 2020; Coster, 2013). Therefore, a valid scale is required to ensure the quality of antistigma interventions against individuals diagnosed with schizophrenia in any country or society.

In Chile is estimated that the proportion of individuals diagnosed with schizophrenia is between 1.4 to 4.6 individuals per 1,000 inhabitants (Ministerio de Salud Chile, 2009; World Health Organization, 2017). Furthermore, it is expected that twelve new cases per 100,000 inhabitants will be diagnosed in any given year (Hospital Clínico de la Universidad de Chile, 2016). As a result, schizophrenia treatment is a critical concern and policy priority for Chilean public health (Langer et al., 2017). However, stigma against individuals diagnosed with schizophrenia is a barrier to accessing adequate treatment for these individuals (Grandón et al., 2015). Indeed, in Chile, both the lack of knowledge about schizophrenia and stigma against these individuals, are the main reasons to delay or avoid medical treatment (Vicente et al., 2007).

Notwithstanding local interventions have been developed to reduce stigma against individuals diagnosed with schizophrenia (Solano & Vasquez, 2014), there is a lack of adequate scales to evaluate its efficacy. In Chile, are available three scales to assess stigma against individuals diagnosed with severe mental disorder, such as schizophrenia. The first scale was adapted from *The Community Attitudes toward Mental Illness, CAMI* (Taylor & Dear, 1981) by Grandón et al. (2016). 10 items were integrated into the scale in its final version. Each item is rated using a 5-point Likert scale (1=strongly disagree, 6=strongly agree), that were equally distributed into two factors: acceptance and rejection of mental health centers in the communi-

ty. The authors reported adequate values of Cronbach´s alpha α = 0.69 for the scale. Although the statiscals features reported, this scale has some limitations. First, the scale was designed to assess the behavioural answer of the contestants towards individuals with severe mental disorders. Thus, the scale was no designed to evaluate stigma towards individuals with schizophrenia specifically. Finally, some methodological issues has been reported, including lack of adjustment to the original structure of the scale, bias of the non-probabilistic sample using a cross sectional design and the scale showed differences with respect to the original instrument, partculary in the factorial structure (Grandón et al., 2016).

The second scale was adapted from the *Social Distance Scale* (Bogardus, 1925) by Grandón et al. (2015). Five items were integrated into the scale, each items is rated using a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree). Two factors integrate the scale: closeness and social interaction (2 items) and intimacy and trust (three items). The authors reported acceptable values of Cronbach´s alpha α = 0.78 for the scale. Notwithstanding this values, the scale has some limitations. First, the developed scale was designed to assess stigma towards individuals with several mental disorders in general, but not the schizophrenia in particular. Hence the scale do not considering the affective and cognitive components of stigma. Finally, the scale has bias of the non-probabilistic sample using a cross sectional design and do not considering the test-retest reliability that allows to account for the temporal stability of the measures (Grandón et al., 2015).

The third scale was adapted from the scale used by the World Health Organisation, WHO in the implementation of the open the doors programme (Stuart et al., 2001), in its Spanaish language version adapted in Argentina (Leiderman et al., 2011) by Grandón et al. (2018). This scale was developed to assess stigma towards individuals with schizophrenia by measuring knowledge and level of information with variables which, in other cultural contexts, have been shown to influence the stigma the population attaches to people with schizophrenia.

11 items were integrated into this scale, eight items have a yes/no/don't know answer format; the ninth item investigates the causes of schizophrenia, gives the multiple choice options: genetic, environmental or both; the tenth item asks for knowledge about more effective treatments, gives the options: medication, psychotherapy or both, and the last item investigates if the medical treatment help them to remain stable, with the choice being yes/no/don't know. Two factors integrate the scale: beliefs on the knowledge of schizophrenia and attitudes towards schizophrenia. The authors reported acceptable values of Cronbach´s alpha for each factor α = 0.72 and α =0.52. However, the Cronbach´s alpha for the whole scale was

not reported. The study has some limitations. First, the study was the non-probability sampling. Furthermore, the authors reported that the scale did not reflect the knowledge well, as a consequence, further research therefore needs to be carried out on the structure of the scale

Furthermore, the three research presented above, reported issues with the translation procedure and the cultural representations of the scales. Regarding to this practice, the literature has flagged two main issues in scales translation. First, the translation from the original language to another represents a methodological problem (Hachey et al., 1995). Second, the cultural representations of the scale might be not a good representation in different settings (Ramada et al., 2013). These related issues are based on the quality of the translation and the comparability of different cultural or ethnic groups (Sperber, 2004).

Consequently, it is not available in Chile appropriate and valid scales to evaluate the stigma against individuals diagnosed with schizophrenia. This study aims to develop a valid scale to evaluate the stigma against individuals diagnosed with schizophrenia within the Chilean population to address this gap.

Method

Stage 1: Generating and Judging Measurement Items

In stage 1, a pool of items was developed based on the three critical components of stigma, *cognitive*, *affective* and *behavioural* answers against individuals diagnosed with schizophrenia. A balance of items between the three components was achieved by considering a potential loss of 75%. In order to further assess the content aspects of content validity, the items were rated by three external expert judges (Netemeyer et al., 2003), which were independent of those who developed the items (Boateng et al., 2018), and they are experts in areas of social psychology and instrument validation. The expert judges were presented with all the items alongside definitions of the three components of stigma (cognitive, affective and behavioural). They were asked to (a) assign each item to whichever component they felt most relevant, b) rate each item from 1 (not adequate) to 3 (clearly adequate) in terms of how well they felt it represented the component that they had selected. Furthermore, the expert judges were asked to provide qualitative feedback on item readability, wording, clarity and overlap. Items were maintained if classified in the original component and rated as clearly representative unanimously by the expert judges. As a result, minor wording changes were implemented to

enhance understanding of several items, and a total of 61 items were retained (28 cognitive, 12 affective and 21 behavioural).

Stage 2: Exploratory Factor Analysis

Sample and Procedure

This research was conducted following an instrumental and longitudinal design. A non-probabilistic with a quota sampling design by gender was chosen. Participation in the study was voluntary and written informed consent was obtained from the study participants. Participants were asked to complete one online survey hosted on Google Forms. A sample compromised by 607 participants was achieved. The sample had approximately twice as many females (N = 412, 67.9%) as males (N = 194, 32%). Participant ages ranged from 18 to 71 (M = 32, SD = 11,6). The degree of relationship with individuals diagnosed with schizophrenia was asked of participants. There were 244 (40.2%) participants who reported no direct contact with individuals diagnosed with schizophrenia, 204 (33.6%) participants reported occasional and distant contact with them, 95 (15.7%) participants reported occasional and close contact with these individuals, and 64 (10.5%) participants have had frequent and close relations with individuals diagnosed with schizophrenia. Finally, participants' mental health situation was asked. There were 199 (32.8%) participants who had been diagnosed with any mental health issue during their life, and 408 (67.2%) participants who had been not diagnosed with any mental health issue during their life. A detailed breakdown of sample demographics is presented in Table 1.

Table 1. *Demographic characteristics of the sample*

	N	%
Marital Status		
Single	258	42,9%
Married	130	21,6%
Unmarried Couple (Cohabitation Agreement)	99	16,4%
Romantical Relationship (No-cohabitation agreement)	72	12%
Education Level		
High School	111	18,4%
Technical	111	18,4%
Undergraduate Degree not completed	166	27,5%
Undergraduate Degree	134	22,2%
Socioeconomic Status		
Middle	339	56,2%
Low	161	26,7%

Statistical analyses

Firstly, reliability analyses and corrected homogeneity indices were carried out through the Jamovi statistical program. Table 2 is presented the corrected homogeneity index of the set of items of the cognitive dimension. Table 3 is presented the corrected homogeneity index of the set of items of the affective dimension. Finally, Table 4 is presented the corrected homogeneity index of the set of items of the behavioural dimension.

Table 2. *Corrected homogeneity index of cognitive dimension items.*

Item	Item-rest correlation	Cronbach´s α	McDonald´s ω
COG1	-0.364	0.814	0.841
COG2	0.449	0.773	0.817
COG3	0.646	0.764	0.807
COG4	0.571	0.767	0.811
COG5	0.475	0.772	0.814
COG6	0.418	0.777	0.815
COG7	0.515	0.771	0.813
COG8	0.384	0.778	0.817
COG9	-0.075	0.801	0.832
COG10	0.641	0.762	0.808
COG11	0.008	0.796	0.830
COG12	0.216	0.785	0.824
COG13	0.317	0.780	0.821
COG14	0.263	0.783	0.822
COG15	-0.212	0.805	0.838
COG16	0.608	0.767	0.808
COG17	-0.072	0.798	0.834
COG18	0.561	0.769	0.810
COG19	0.548	0.771	0.810
COG20	0.324	0.779	0.822
COG21	0.310	0.780	0.823
COG22	0.612	0.766	0.809
COG23	0.566	0.766	0.810
COG24	0.356	0.779	0.818
COG25	0.391	0.776	0.819
COG26	0.288	0.781	0.823
COG39	0.098	0.791	0.828
COG40	0.230	0.784	0.823

Table 3. *Corrected homogeneity index of affective dimension items.*

Item	Item-rest correlation	Cronbach's α	McDonald's ω
EMO27	0.666	0.768	0.798
EMO28	0.608	0.776	0.803
EMO29	0.706	0.763	0.793
EMO30	0.225	0.812	0.834
EMO31	0.693	0.765	0.795
EMO32	0.411	0.792	0.820
EMO33	0.393	0.794	0.821
EMO34	0.338	0.800	0.825
EMO35	0.018	0.832	0.845
EMO36	0.567	0.781	0.806
EMO37	0.638	0.769	0.802
EMO38	0.305	0.802	0.828

Table 4. *Corrected homogeneity index of behavioural dimension items.*

Item	Item-rest correlation	Cronbach's α	McDonlad's ω
CON41	0.577	0.901	0.903
CON42	0.512	0.902	0.905
CON43	0.643	0.899	0.902
CON44	0.687	0.898	0.901
CON45	0.660	0.898	0.901
CON46	0.620	0.899	0.902
CON47	0.677	0.898	0.901
CON48	0.558	0.901	0.904
CON49	0.628	0.899	0.902
CON50	0.499	0.902	0.905
CON51	0.551	0.901	0.904
CON52	0.090	0.912	0.913
CON53	0.645	0.899	0.902
CON54	0.555	0.901	0.904
CON55	0.480	0.903	0.906
CON56	0.245	0.907	0.910
CON57	0.412	0.904	0.907
CON58	0.571	0.901	0.904
CON59	0.539	0.901	0.904
CON60	0.484	0.903	0.906
CON61	0.543	0.901	0.904

It was decided to discard those items that presented inverse correlations, or less than 0.3, with the corrected total score. As a result, ten items were eliminated iteratively. Secondly, to assess the internal validity of the scale, four models were contrasted following the sequential analyses:

a) An exploratory structural equation model (ESEM) with GEOMIN rotation based on the polychoric correlation matrix was selected. Furthermore, the robust weighted least squares estimation method (WLSMV) (Asparouhov & Muthén, 2009) was considered. The initial model of three dimensions is presented in Figure 1. The general fits of the model were evaluated according to

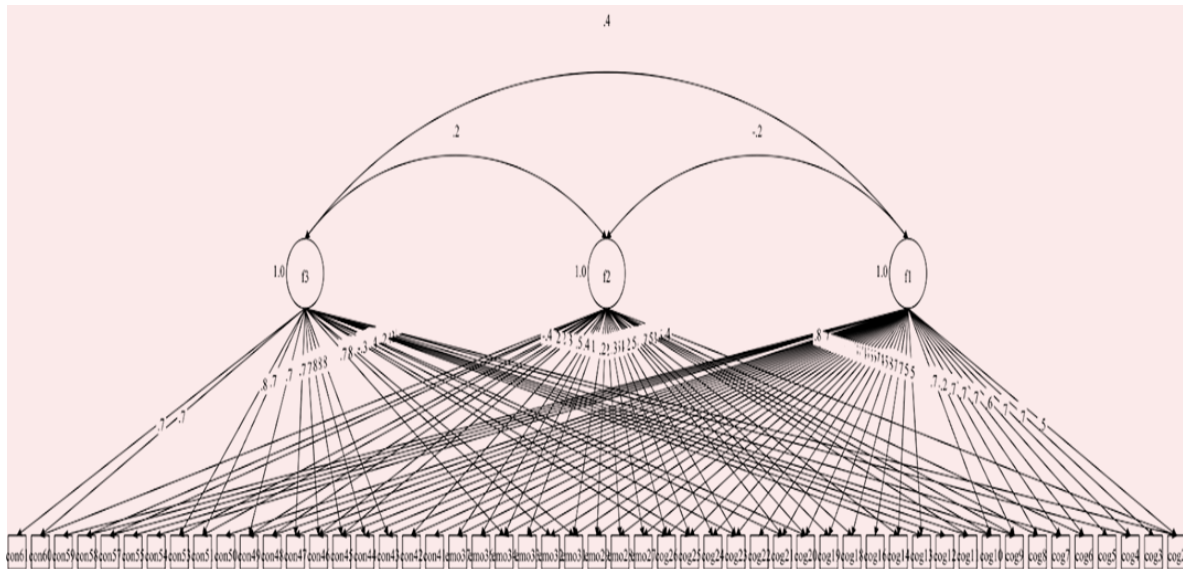the criteria proposed by Schreiber (2017) (e.g. CFI> .95, TLI> .95 and RMSEA <.06).

Figure 1. *Initial ESEM model composed of three dimensions F1 = cognitive; F2 = affective; F3 = behavioural*

b) Subsequently, given the presence of high cross-loads, a bifactor model was tested with three specific factors (cognitive, affective and behavioural) and a general factor (Reise et al., 2013). In Figure 2, this model is presented.
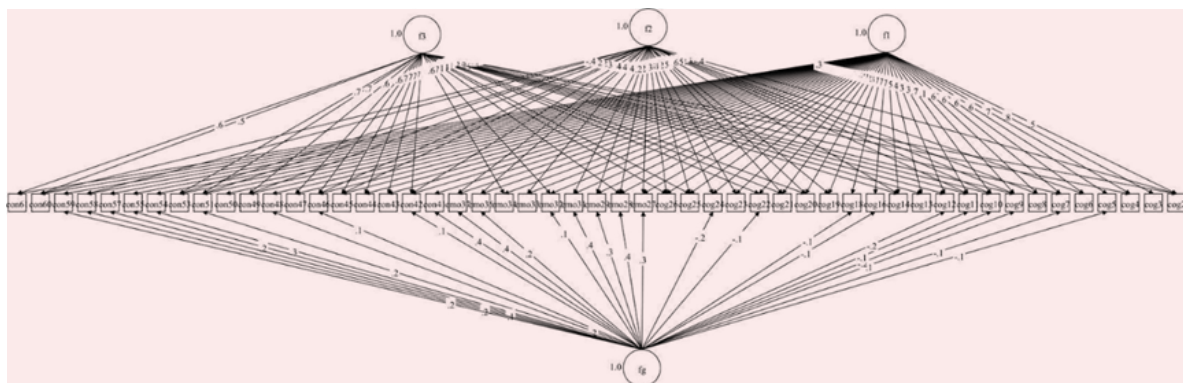

Figure 2. *ESEM bifactor model, Fg = general factor; F1 = cognitive; F2 = affective; F3 = behavioural*

c) However, the bifactor model did not present coherent loadings with the proposed structure, with a with a predominance of the general factor, over the specific factors. Thus, it was decided to test a one-dimensional solution by confirmatory factor analysis (CFA), which initially contains 51 items (Figure 3). Furthermore, the WLSMV based on the polychoric correlation matrix was considered. This method was iteratively debugged based on two criteria: re-

tention of strong factorial loads ($\lambda > .5$) and elimination of redundant elements. As a results, the final model (Figure 4) was integrated by 22 ítems.
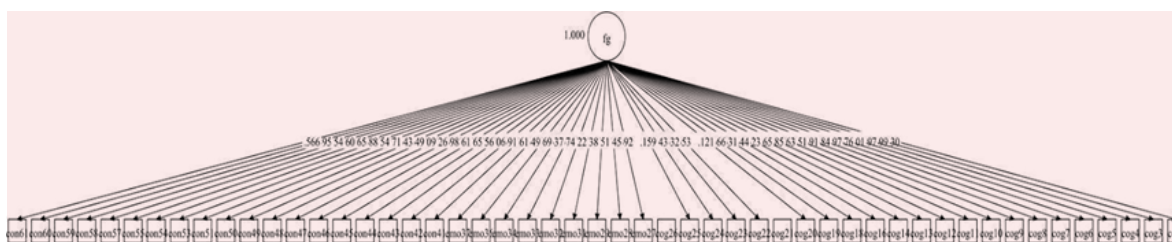

Figure 3. *One-dimensional confirmatory factor analysis (CFA) with 51 items*

d) An invariance test was carried out in the one-dimensional model of 22 items to evaluate the stability of the scale. It was considered constant changes in CFI less than 0.010 and RMSEA less than 0.015 (Chen, 2007). This final model is presented in Figure 4. After that, reliability analyses were carried out for the final scale. These analyses were conducted with Mplus 8.2 (Muthén & Muthén, 2017). It is noticed that the factorial loadings of the items are significant to the general factor.
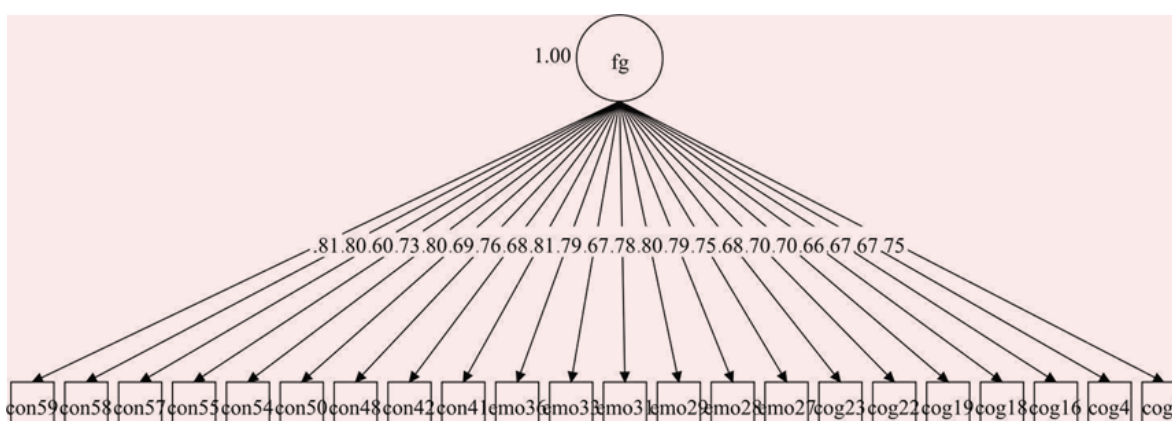

Figure 4. *Final model. One-dimensional confirmatory factor analysis (CFA) of 22 ítems*

Results

In Table 5, the statistical indicators of the goodness of fit analyses for the scale used by considering four models are presented. First, values of the initial model, Model 1, are partially adjusted to what is recommended (CFI> .95; TLI> .95 ; RMSEA <, 06) (Schreiber, 2017). Notwithstanding that all the contrasted models fit as an explanation of the covariance variance matrix, the ESEM model presented interpretation problems, including items redundancy, reducing factor loadings, and cross loads presence. Furthermore, a great percentage of cross-loadings were observed. Second, Model 2 is a bi-factorial model with an adequate fit. However, it was not

possible to establish a clearly defined structure in its factorial loadings while the general factor loads indicated the one-dimensional trend of the scale. Third, Model 3 presented important issues in its fit standards. Thus, it was necessary to debug it iteratively. Items compatible with the one-dimensional model were kept. Finally, Model 4 shown an adequated explanation of observed relations, with all the items with relevant factorial loadings and absence of relevant covariations between item errors.

Table 5. *Global fit indicators of measurement models*

Model	Pairs Number	x2	DF	P	TLI	CFI	RMSEA	RMSEA CI 90%	
								Low	Upp
Model 1 (51 items)	303	2030.784	1125	.000	.973	.976	.036	.034	.039
Model 2 (51 items)	351	1603.661	1077	.000	.983	.986	.028	.025	.031
Model 3 (51 items)	204	13315.211	1224	.000	.665	.678	.128	.126	.130
Model 4 (22 items)	88	937.449	209	.000	.955	.959	.077	.072	.082

Notes: Model 1= Initial ESEM 51 ítems; Model 2= ESEM bi-factorial 51 ítems; Model 3= unidimensional CFA of 51 ítems; Model 4= Unidimensional CFA of 22 ítems; x2= Chi-square; DF= Degrees of freedom; P= Statistical significance; CFI = Comparative fix index; TLI = Tucker-Lewis index; RMSEA = Root mean square error of approximation; CI= Confidence interval.

In table 6, the standardised factorial loadings of the final model (One-Dimensional, 22 Items) and the reliability coefficients' estimates. The observed factor loadings suggest that the items adequately represent the dimension (λ>, 6). Moreover, the reliability estimates are optimal (α>, 8; ω>, 8).

Escala de estigmatización hacia personas diagnosticadas con esquizofrenia	
Suelen ser un peligro para la sociedad	.751
Deberían estar hospitalizadas	.666
Suelen ser pervertidos	.673
No deberían trabajar	.658
Suelen ser ineficientes	.703
Suelen ser potenciales asesinos	.698
No deberían tener hijos	.682
Me hacen sentir temor	.752
Me hacen sentir rechazo	.791
Me hacen sentir inseguro si están cerca de mí	.802
Me incomodan	.779
Me hacen sentir vergüenza	.669
Me hacen sentir desagrado	.794
Son personas que trato de evitar	.813
Rechazaría un familiar con esquizofrenia	.679
Los ignoro todo lo que puedo	.764
No daría trabajo a alguien con esquizofrenia	.690
Evitó hablarles	.800
Cruzaría la calle si se me acercaran	.732
Los golpearía si me sintiera en peligro	.604
Son personas que evitaría tocar	.800
Intentó evitar que se acerque a mis hijos	.805
Alpha de Cronbach	.941
Coeficiente Omega	.942

Finally, in Table 7, the invariance test results according to the sex of the participants are presented.

Table 7. *The contrast of invariance measure to the final scale (22 items) between men and women*

	Pairs Number	χ^2	DF	P	CFI	RMSEA	$\Delta_{\chi2}$	Δ_{DF}	$P_{\Delta\chi2}$	Δ_{CFI}	Δ_{RMSEA}
Configural	176	1121.821	418	.000	.965	.076					
Metric	155	1148.337	439	.000	.965	.074	35.372	21	.025	0	-.002
Scalar	112	1109.269	482	.000	.969	.066	116.041	64	.000	.004	-.01

Notes: Pairs number= parameters number; X2= Chi-square; DF= Degrees of freedom; *P*= Statistical significance; ΔX2= Chi-square difference; Δgl: Degrees of freedom difference; Δp: Statistical significance difference.

The statistical differentials between the model without restrictions (e.g. configuration) and models with metric and scalar restrictions allow the invariance.

Discussion

This study aimed to develop a valid scale of stigma against people with a schizophrenia diagnosis to fill a gap in Chilena research about this topic. As mentioned, previous valuable research (Grandón et al., 2015; Grandón et al., 2016;

Grandón et al., 2018) has attempted to fill this gap by adapting international scales. However, methodological issues, like fit indexs under the suggested standards in the literature (Scheiber, 2017), have been reported in these studies. Furthermore, adapting scales practices might have other problems, including translation quality and cultural representations (Hachey et al., 1995; Ramada et al., 2013; Sperber, 2004). Therefore, in this research, these previous limitations have been considered to build and validate an original scale of stigma against people with a schizophrenia diagnosis in the Spanish language and by considering the local cultural representation.

At the beginning of this research, a tridimensional model was proposed to assess stigma against people with a schizophrenia diagnosis. Cognitive, affective and behavioural components are integrated into this model. However, the interrelationships between these components, and the ability of individuals to make differentiated judgments, led us to propose a one-dimensional model that jointly incorporates the three attitudinal concepts. Previous research has supported this decision, which has explained that cognitive, affective and behavioural components are strongly interrelated and mutually reinforcing (López et al., 2008; Reynders et al., 2014). It means that stereotypes (cognitive) are accepted if they are concordant with emotional prejudice (affective), resulting in discriminatory acts (behaviour).

Finally, a one-dimensional model was considered to develop a scale to assess stigma against people with a schizophrenia diagnosis. Twenty-two items integrate the final version of this one-dimensional scale. The statistical results showed that this scale has adequate psychometric properties, including strong reliability and validity evidence based on the internal structure. Furthermore, the invariance tests allow accepting the equivalence between men and women, which means that this scale can be used the respondents' gender irrespectively.

This research has limitations to be mentioned. First, this study was developed in the context of the COVID-19 pandemic. This context might impact the rates of answers and on the psychological-emotional condition of the respondents. Second, the study participants in their majority are from one Chilean city (Arica), which might imply a non-representative of the total Chilean population. Future research may apply this scale within different populations and settings to have more comprehensive results and further evidence about its reliability and internal consistency.

Conclusion

The relevance of this research is to build and validate an original scale of stigma against people with a schizophrenia diagnosis in the Spanish language and by considering the local cultural representation. It is a short one-dimensional short scale (22 items) that were considered the three critical components of the stigma: cognitive, affective and behavioural. This scale can be used for research purposes and to understand better the stigma against people with a schizophrenia diagnosis in Chile. Furthermore, applying this scale in different settings and participants can provide further insights into its psychometric properties.

Referencias

Allport, G. (1979). *The nature of prejudice.* Basic Books.

An, M., Dusing, S. C., Harbourne, R. T., Sheridan, S. M., & Consortium, S.-P. (2020). What Really Works in Intervention? Using Fidelity Measures to Support Optimal Outcomes. *Physical Therapy, 100*(5), 757-765. https://doi.org/10.1093/ptj/pzaa006

Angermeyer, M., & Matschinger, H. (2003). The stigma of mental illness: effects of labelling on public attitudes towards people with mental disorder. *Acta Psychiatrica Scandinavica, 108*(4), 304-309. https://doi.org/10.1034/j.1600-0447.2003.00150.x

Asparouhov, T., & Muthén, B. (2009). Exploratory Structural Equation Modeling. *Structural Equation Modeling: A Multidisciplinary Journal, 16*(3), 397-438. https://doi.org/10.1080/10705510903008204

Boateng, G. O., Neilands, T. B., Frongillo, E. A., Melgar-Quiñonez, H. R., & Young, S. L. (2018). Best Practices for Developing and Validating Scales for Health, Social, and Behavioral Research: A Primer. *Frontiers in public health, 6,* 149-149. https://doi.org/10.3389/fpubh.2018.00149

Bogardus, E. (1925). Social Distance and Its Origins. Journal of Applied Sociology, 9, 216-226.Caqueo-Urízar, A., Miranda-Castillo, C., Lemos, S., Lee, S., Ramírez, M., & Mascayano, F. (2014). An updated review on burden on caregivers of schizophrenia patients. *Psicothema, 26*(2), 235-243.

Cazzaniga, J., & Suso, A. (2015). *Salud mental e inclusión social. Situación actual y recomendaciones contra el estigma*. Confederación Salud Mental España.

Chang, N., Ribot, V., & Pérez, V. (2018). Influencia del estigma social en la rehabilitación y reinserción social de personas esquizofrénicas. *Habanera de ciencias médicas, 17*(5), 705-719.

Chen, F. F. (2007). Sensitivity of Goodness of Fit Indexes to Lack of Measurement Invariance. *Structural Equation Modeling: A Multidisciplinary Journal, 14*(3), 464-504. https://doi.org/10.1080/10705510701301834

Corrigan, P. & O'Shauhnessy, J. (2007). Changing mental illness stigma as it exists in the real world. Australian *Psychologist, 42*(2), 90-97. https://doi.org/10.1080/00050060701280573

Coster, W. J. (2013). Making the best match: selecting outcome measures for clinical trials and outcome studies. *The American journal of occupational therapy , 67*(2), 162-170. https://doi.org/10.5014/ajot.2013.006015

Curran, S. (2004). *Every family in the land: understanding prejudice and discrimination against people with mental illness.* LibraPharm.

Desapriya, E. B., & Nobutada, I. (2002). Stigma of mental illness in Japan. *The Lancet, 359*(9320), 1866. https://doi.org/10.1016/S0140-6736(02)08698-1

Dickerson, F., Sommerville, J., Origoni, A., Ringel, N., & Parente, F. (2002). Experiences of stigma among outpatients with schizophrenia. *Schizophr Bull, 28*, 143-155. https://doi.org/10.1093/oxfordjournals.schbul.a006917

Fiske, S., Gilbert, D., & Lindzey, G. (2010). *Handbook of social psychology* (5th ed.). John Wiley. https://doi.org/10.1002/9780470561119

Gaebel, W., & Baumann, A. E. (2003). Interventions to reduce the stigma associated with severe mental illness: experiences from the open the doors program in Germany. *The Canadian Journal of Psychiatry, 48*(10), 657-662. https://doi.org/10.1177/070674370304801003

Goffman, E. (1963). *Stigma: notes on the management of spoiled identity*. Simon and Schuster.

Gonzalez-Torres, M., Oraa, R., Aristegui, M., Fernandez-Rivas, A., & Guimon, J. (2007). Stigma and discrimination towards people with schizophrenia and their family members. A qualitative study with focus groups. *Social Psychiatry and Psychiatric Epidemiology, 42*, 14-23. https://doi.org/10.1007/s00127-006-0126-3

Grandón, P., Cova, F., Saldivia, S., & Bustos, C. (2015). Análisis psicométrico y adaptación de la Escala de Distancia Social (DS) en una muestra chilena. *Salud Mental, 38*(2), 117-122. https://doi.org/10.17711/SM.0185-3325.2015.016

Grandón, P., Saldivia, S., Cova, F., Bustos, C., & Iturra, V. (2016). Análisis psicométrico y adaptación de la escala de actitudes comunitarias hacia enfermedades mental (CAMI) en una muestra chilena. *Universitas Psychologica, 15*(2), 153-162. https://doi.org/10.11144/Javeriana.upsy15-2.apae

Grandón, P., Vielma, A., Bustos, C., Castro, E., & Saldivia, S. (2018). Evaluation of the stigma towards people with a diagnosis of schizophrenia using a knowledge scale. *Revista Colombiana de Psiquiatría, 47*(2), 72-81. https://doi.org/10.1016/j.rcp.2017.01.009

Graves, R. E., Cassisi, J. E., & Penn, D. L. (2005). Psychophysiological evaluation of stigma towards schizophrenia. *Schizophrenia Research, 76*(2), 317-327. https://doi.org/https://doi.org/10.1016/j.schres.2005.02.003

Gren, K., Hellström, L., Berg, M., & Eplov, L. (2022). Structural discrimination against people with mental illness; a scoping review. SSM - Mental Health, *2*: 100117. https://doi.org/10.1016/j.ssmmh.2022.100117

Hachey, R., Jumoorty, J., & Mercier, C. (1995). Methodology for validating the translation of test measurements applied to occupational therapy. *Occupational Therapy International, 2,* 190-203. https://doi.org/10.1002/oti.6150020305

Hochman, K. (2007). Reducing the Stigma of Mental Illness: A Report from a Global Programme of the World Psychiatric Association. *Journal of the Canadian Academy of Child and Adolescent Psychiatry, 16*(1), 38-39. http://tinyurl.com/fcbrhpfz

Hospital Clínico de la Universidad de Chile. (2016, September 13). *Clínica Psiquiátrica implementa innovador programa de detección* . Universidad de Chile Noticias. January 19, 2024. http://tinyurl.com/2fubvtr8

Langer, Álvaro I., Schmidt, C., Mayol, R., Díaz, M., Lecaros, J., Krogh, E., Pardow, A., Vergara, C., Vergara, G., Pérez-Herrera, B., Villar, M. J., Maturana, A., & Gaspar, P. A. (2017). The effect of a mindfulness-based intervention in cognitive functions and psychological well-being applied as an early intervention in schizophrenia and high-risk mental state in a Chilean sample: Study protocol for a randomized controlled trial. *Trials, 18*(1): 233. https://doi.org/10.1186/s13063-017-1967-7

Leiderman, E.A., Vazquez, G., Berizzo, C. et al. (2011). Public knowledge, beliefs and attitudes towards patients with schizophrenia: Buenos Aires. *Social Psychiatry and Psychiatric Epidemiology, 46*, 281-290. https://doi.org/10.1007/s00127-010-0196-0

Link, B., & Phelan, J. (2001). Conceptualizing stigma. *Annual Review of Sociology, 27*(1), 363-385. https://doi.org/https://doi.org/10.1146/annurev.soc.27.1.363

Link, B., Struening, E., Neese-Todd, S., Asmussen, S., & Phelan, J. (2001). Stigma as a Barrier to Recovery: The Consequences of Stigma for the Self-Esteem of People With Mental Illnesses. *Psychiatric Services, 52*(12), 1621-1626. https://doi.org/10.1176/appi.ps.52.12.1621

López, M., Laviana, M., Fernández, L., López, A., Rodríguez, A. M., & Aparicio, A. (2008). La lucha contra el estigma y la discriminación en salud mental: Una estrategia compleja basada en la información disponible. *Revista de la Asociación Española de Neuropsiquiatría, 28*(101), 48-83. https://doi.org/10.4321/S0211-57352008000100004

Markowitz, F. (1998). The effects of stigma on the psychological well-being and life satisfaction of persons with mental illness. *Journal of Health and Social Behavior, 39*(4), 335-347. https://doi.org/10.2307/2676342

McEldoon, K., Cho, S.-J., & Rittle-Johnson, B. (2012). *Measuring Intervention Effectiveness: The Benefits of an Item Response Theory Approach*. Society for Research on Educational Effectiveness.

Ministerio de Salud Chile. (2009). *Guía Clínica para el tratamiento de personas desde primer episodio de esquizofrenia*. MINSAL

Muthén, L. K., & Muthén, B. O. (2017). *Mplus User's Guide* (8th ed).

Navarro, O., Prevert, A., & Bogalska-Martin, E. (2012). La discriminación social desde una perspectiva psicosociológica. *Revista de Psicología Universidad de Antioquia, 4*(1), 7-20.

Netemeyer, R. G., Bearden, W. O., & Sharma, S. (2003*). Scaling procedures: Issues and applications.* Sage. https://doi.org/10.4135/9781412985772

Ottati, V., Bodenhausen, V., & Newman, S. (2005). Social psychological models of mental illness stigma. In P. W. Corrigan (Ed.), *On the Stigma of mental Illness* (pp.99-128). American Psychological Association. https://doi.org/10.1037/10887-004

Pascal, E., Holman, A.C., & Milut, F. (2023). Emotional relevance and prejudice: testing the differentiated effect of incidental disgust on prejudice towards ethnic minorities. *Frontiers in Psychology,14*:1177263. https://doi.org/10.3389/fpsyg.2023.1177263

Phelan, J. C., Link, B. G., & Dovidio, J. F. (2008). Stigma and prejudice: One animal or two? *Social Science & Medicine, 67*(3), 358-367. https://doi.org/ckqfw7

Ramada, J., Serra, C., & Delclós, G. (2013). Adaptación cultural y validación de cuestionarios de salud: revisión y recomendaciones metodológicas. *Salud Pública México, 55*(1), 57-66. https://doi.org/10.1590/S0036-36342013000100009

Reise, S. P., Scheines, R., Widaman, K. F., & Haviland, M. G. (2013). Multidimensionality and Structural Coefficient Bias in Structural Equation Modeling: A Bifactor Perspective. *Educational and Psychological Measurement, 73*(1), 5-26. https://doi.org/10.1177/0013164412449831

Reynders, A., Kerkhof, A., Molenberghs, G., & Van Audenhove, C. (2014). Attitudes and stigma in relation to help-seeking intentions for psychological problems in low and high suicide rate regions. *Social Psychiatry and Psychiatric Epidemiology, 49,* 231-239. https://doi.org/10.1007/s00127-013-0745-4

Rosen, A., Walter, G., Casey, D., & Hocking, B. (2000). Combating psychiatric stigma: an overview of contemporary initiatives. *Australiasian Psychiatry, 8,* 19-26. https://doi.org/10.1046/j.1440-1665.2000.00239.x

Rössler, W., Salize, H., & Voges, B. (1995). Does community-based care have an effect on public attitudes toward the mentally ill? *European Psychiatry, 10*(6), 282-289. https://doi.org/10.1016/0924-9338(96)80309-9

Rusch, N., Angermeyer, M., & Corrigan, P. (2005). Mental illness stigma: concepts, consequences, and initiatives to reduce stigma. *European Psychiatry, 20*(8), 529-539. https://doi.org/10.1016/j.eurpsy.2005.04.004

Schreiber, J. B. (2017). Update to core reporting practices in structural equation modeling. *Research in Social and Administrative Pharmacy, 13*(3), 634-643. https://doi.org/https://doi.org/10.1016/j.sapharm.2016.06.006

Solano, M., & Vasquez, S. (2014). Familia, en la salud y en la enfermedad… mental. *Revista Colombiana de Psiquiatría, 43*(4), 194-202. https://doi.org/10.1016/j.rcp.2014.05.001

Soler, C. (2019). La esquizofrenia y su estigma social: una aproximación a la percepción actual [Tesis de grado, Universitat Autónoma de Barcelona]. DDD. http://tinyurl.com/2253jw5x

Sperber, A. D. (2004). Translation and validation of study instruments for cross-cultural research. *Gastroenterology, 126* (Supp. 1), S124-S128. https://doi.org/bhtjmt

Stuart H, Arboleda-Flórez J. (2001). Community Attitudes toward People with Schizophrenia. *The Canadian Journal of Psychiatry. 46*(3), 245-252. https://doi.org/10.1177/070674370104600304

Stubber, J., Meyer, I., & Link, B. (2008). Stigma, prejudice, discrimination and health. *Social Science & Medicine, 67*(3), 351-357. https://doi.org/10.1016/j.socscimed.2008.03.023

Taylor, S., & Dear, M. (1981). Scaling Community Attitudes Toward the Mentally Ill. *Schizophrenia Bulletin, 7*(2), 225-240. https://doi.org/10.1093/schbul/7.2.225

Valery, K.M., & Prouteau, A. (2020). Schizophrenia stigma in mental health professionals and associate factors: A systematic review. *Psychiatry Research, 290*: 113068. https://doi.org/10.1016/j.psychres.2020.113068

van Zelst, C. (2008). Which Environments for G × E? A User Perspective on the Roles of Trauma and Structural Discrimination in the Onset and Course of Schizophrenia. *Schizophrenia Bulletin, 34*(6), 1106-1110. https://doi.org/10.1093/schbul/sbn113

Vaughan, G., & Hansen, C. (2004). 'Like Minds, Like Mine': a New Zealand project to counter the stigma and discrimination associated with mental illness. *Australasian Psychiatry, 12*(2), 113-117. https://doi.org/10.1080/j.1039-8562.2004.02083.x

Vicente, V., Kohn, R., Saldivia, S., & Rioseco, P. (2007). Carga del enfermar psíquico, barreras y brechas en la atención de salud mental en Chile. *Revista médica de Chile, 135* (12), 1591-1599. https://doi.org/10.4067/S0034-98872007001200014

World Health Organization. (2017). *Depression and other common Mental Disorders* Global Health Estimates.