Translation and Validation of the Spanish version of the Chronic Illness Anticipated Stigma Scale (CIASS) in Colombian Patients Diagnosed with Chronic Illnesses.

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ABSTRACT.

Objective: Determine the psychometric properties of the CIASS scale for Colombian patients living with chronic diseases.

Method: A Spanish version of the scale was distributed to a sample of 230 patients (33.2% male, aged 18-98 years) diagnosed with chronic diseases. A confirmatory factor analysis was performed using unweighted least squares to determine the scale's structural validity, Cronbach's alpha was calculated to determine the scale's reliability, and correlations with related constructs were calculated to determine the scale's convergent validity.

Results: Confirmatory factor analysis suggested that the factor structure of the scale was a satisfactory fit to the proposed theoretical model (χ^2 = 3133.26, df = 526, root mean square error of approximation [RMSEA] = 0.082, P-Value = 0.00, CFI = 1.00, root mean

square residual [RMR] = 0.11). The internal consistency of the scale was strong (Cronbach's α = .815), indicating that the scale was reliable. We found that the discrimination index of CIASS scale items were high (r= .647-.870). Convergent validity was also supported, associations observed with lower coping and greater negative emotion scores.

Conclusion: The CIASS scale is a valid and reliable instrument for the assessment of anticipated stigma in Colombian patients with chronic illnesses.

Keywords: Anticipated Stigma, Validation, Psychometric Properties, Chronic Disease, Social Stigma.

INTRODUCTION

According to the World Health Organization (2014), noncommunicable diseases (NCDs), also known as chronic illnesses, are the leading cause of death in the world, causing 68% of the 56 million deaths registered in 2012. More than 40% of these deaths were premature, occurring before the age of 70. The individual registers of health services provision of the Colombian general system of social security in health reported that 65.7% of people were diagnosed with NCDs between 2009 and December of 2015. Caring for people with these illnesses accounted for 67.14% of expenditures on total care provided to women and for 63.18% of that provided to men. With reference to morbidity data in the lifecycle, NCDs were the leading cause for the need for health services in childhood, generating 54.25% of health care records; likewise, for adolescents, 56.10% of admittances were due to NCDs; 57.24% of youth cases were due to NCDs; 71.20% of presenting adults required care for NCDs; and in those older than 60 years old, 82.13% had NCDs. These data show that these illnesses represent a great challenge for health in Colombia, due to their social, economic and public health impacts (Ministerio de Salud y Protección Social, 2016). The NCDs patients with a high anticipated stigma could experience a heightened psychological distress. The stigma processes related to the concern that others will look down upon, shun, or discriminate for their chronic condition can impact psychological-social well-being and physical health among patients living with a concealable stigmatized identity.

The literature review on anticipated stigma has shown that this concept was include to the social sciences, defining it as a deeply discrediting attribute or undesirable difference that discounts an individual from full social acceptance (Goffman, 1963). Recent authors such as Corrigan, Watson and Barr (2006) define perceived stigma as an awareness of social devaluation or discrimination due to an attribute that is perceived socially in a negative light. In their formulation of a concept of stigma that

would be useful for public health, Weiss, Ramakrishna and Somma (2006) emphasize that stigma is typically the result of a social process, experienced or anticipated, that is characterised by exclusion, rejection, blame or devaluation resulting from the experience of or the reasonable anticipation of an adverse social judgement about a person or group.

The study of stigma has gained special relevance for clinical practice and in the field of public health. Studies have focused on the emotional impact of stigma that adds to the burden of many illness, such as cáncer (Bedi & Devins, 2016; Phelan, et al., 2013) epilepsy (Kilinç, & Campbell, 2009; Ryu, Sang-Ahm, Soyong & Heung-Dong, 2017; Shi et al., 2017), Parkinson's disease (Hermanss, 2013; Maffoni, Giardini, Pierobon, Ferrazzoli & Frazzitta, 2017), chronic pain (Carr, 2016; Cohen, Quintner, Buchanan, Nielsen, & Guy, 2011; Waugh, Byrne, & Nicholas, 2014; Wibers, 2015; Young, Park, Tian & Kempner,2013), chronic obstructive pulmonary (Berger, Laéñña & Larson, 2011; Johnson, Cabell, Bowers & Nichol, 2007) and cirrosis (Vaughn-Sandler, Sherman, Aronsohn & Wolk, 2014).

Anticipated stigma involves the expectation of experiencing prejudice, discrimination and stereotyping from others in the future. People who have chronic illnesses report significant stigma from others, including social rejection from friends and family, employment termination and poor care from healthcare providers (Earnshaw & Chaudoir, 2009; Quinn & Earnshaw, 2011). Personally experiencing stigma, or knowing of others who have experienced stigma, may lead people with chronic illnesses to anticipate stigma in the future. Anticipated stigma can impact people with chronic illnesses differently, depending on the source of stigma. For example, evidence suggests that anticipated stigma from friends, family, and work colleagues is associated with greater stress whereas anticipated stigma from healthcare workers is associated with lower patient satisfaction (Earnshaw, Quinn & Park, 2012). Given that individuals can anticipate stigma even if they have not personally experienced it, anticipated stigma may be a particularly detrimental form of stigma (Earnshaw, Quinn, Kaalichman, & Park, 2013).

Few studies have investigated anticipated stigma among people living with chronic illness. Peltzer and Pengpid (2016) found that, in three Southeast Asian countries, 20.7% of patients living with chronic illness reported anticipating stigma. This was greater than the numbers found in countries participating in the World Health Survey (WHS) study (15.5% among persons with significant limitations to their activity and chronic physical conditions).

The Chronic Illness Anticipated Stigma Scale (CIASS) is a promising measure of self-reported anticipated stigma in populations living with chronic illness. Few studies have been carried out to evaluate the reliability and validity of this scale with both clinical and non-clinical samples. It was developed by Earnshaw et al. (2013) to measure anticipated stigma among people living with chronic illnesses from three groups, including friends and family, work colleagues and health care providers. Reliability measures show this scale to be highly internally consistent, with an ordinal α of .95. The subscales for friends and family, work colleagues and healthcare workers subscales were internally consistent as well, with ordinal αs of .92, .95 and .95, respectively, and test–retest reliability measures indicate that the CIASS is an internally reliable scale (.82; $p < .001$). The structural validity of the CIASS was evaluated using a confirmatory factor analysis (CFA), which showed a three-factor model, representing the three sources of anticipated stigma that are included in the scale, indicating that the model fit the data well. The original norming study include patients with several chronic conditions such as asthma, inflammatory bowel disease, diabetes, multiple sclerosis and fibromyalgia. In current work, the validation of psychometric properties of CIASS scale were performed with patients diagnosed with

lupus, chronic kidney disease, diabetes, heart disease, neurological disease, cancer and arterial hypertension.

A study evaluating the psychometric properties of a Persian version of the CIASS, which was performed by Nejatisafa et al. (2017), showed a Cronbach's α coefficient of 0.88. The subscales were internally consistent, with ordinal αs of .88, .94 and .89 respectively. The intraclass correlation coefficient was .95, which confirms the reliability of the Persian version. Its structural validity was evaluated using exploratory factor analysis: the Persian version of CIASS was found to include three factors: family and friends, work colleagues and healthcare workers; these explained 79.68% of the total variance.

A validation of the Italian version of the CIASS was carried out by Spadaro, Romano, and Mosso (2017); here, it showed an internal consistency of .89 among cancer patients and .85 among multiple sclerosis patients. The Cronbach's α values of the scales ranged from .59 to .77. The structural validity of the Italian version of the CIASS was evaluated with a CFA, finding a three-factor structure, as was found in the original model proposed by Earnshaw et al. (2013). These results indicated adequate adaptation for both groups of participants, suggesting that the model was structurally valid (oncologic patients: χ^2 = 14.39, p = .06; SRMR = .05; goodness of fit index [GFI] = .99; multiple sclerosis patients: χ^2 = 24.25, p = .58; SRMR = .059; GFI = .995).

In the current work, we evaluated the psychometric properties of the Spanish version of the CIASS in Colombian patients with chronic illnesses, to measure anticipated stigma among people living with chronic illnesses from three different sources: friends and family, work colleagues, and healthcare workers. The CIASS can help researchers gauge the degree to which people living with chronic illnesses anticipate stigma, better understand the processes by which anticipated stigma contributes to the health and behavior of people living with chronic illnesses, and compare the extent to which people living with different types of chronic illnesses anticipate stigma.

METHODS

Participants

The sample consisted of 230 patients diagnosed with NCDs (33.2% men and 66.8% women). Their ages ranged between 18 and 98 years, with an average age and standard deviation of 50.99 ± 18.16 at the time of evaluation (men, 53.57 ± 16.90, and women 49.71 ± 18.68). An independent-samples t-test was used to verify if there are differences according to the gender of the participants in the Anticipated Stigma score ($p < .001$). The descriptive statistics of the sociodemographic characteristics of the participants are given in Table 1.

[Table 1 here]

Instruments

The CIASS includes three subscales and 12 questions that evaluate the extent to which patients anticipate stigma from (1) friends and family, (2) work colleagues and (3) healthcare workers. Participant responses are indicated on a Likert-type scale, ranging from 1 (very unlikely) to 5 (very likely). The Cronbach's α coefficient of the scale was .95 in the English validation study (Earnshaw et al., 2013). The Cronbach's α coefficients reported for the subscales were .92 (friends and family), .95 (work colleagues) and .95 (healthcare workers). The Spanish version used by the authors is included in Appendix A.

The Brief Resilient Coping Scale (BRCS) (Sinclair & Wallson, 2004) evaluate "Resilience" that is the ability to cope with difficulties. The version used to the current work was adapted into Spanish by Moret-Tatay, Fernández, Civera, Navarro-Pardo and Alcover (2015), is a four-item scale, whose response format has five options, ranging from 1 (does not describe you at all) to 5 (describes you very well). Total scores range from 4 to 20, with higher scores denoting greater resilient coping. The authors considered that total scores equal to or lower than 13 indicate low resilience, and scores equal to or greater than 17 indicate high resilience. The scale has an internal consistency of .68 and a test–retest reliability of .71. In the validation of psychometric properties of this scale in Colombia context, the BRCS scale has an internal consistency of .770.

The Orientation to Life Questionnaire (OLQ-13) (Antonovsky, 1993) evaluate "Sense of Coherence" that is described as a global orientation that expresses the extent to which individuals have a feeling of confidence that their environment is structured, predictable and explicable and resources are available to face challenges. The version used to the current work was adapted into Spanish by Virués-Ortega, Martínez-Martín, Del Barrio and Lozano (2007), measures three dimensions of the sense of coherence (SOC): comprehensibility (items 2, 6, 8, 9 and 11), manageability (items 3, 5, 10 and 13) and meaningfulness (items 1, 4, 7 and 12). Items 1, 2, 3, 7 and 10 have a negative sense. The abbreviated version of 13 items is scored on a scale ranging from 1 (very often) to 7 (very seldom or never). The Cronbach's α coefficient of the scale was .80. In the validation of psychometric properties of this scale in Colombia context, the OLQ-13 scale has an internal consistency of .797

The Distressed Personality (Type D) Scale (DS-14) (Denollet, 2005) for the assessment of Type D personality which is based on negative affectivity (NA) and social inhibition (SI). High-NA individuals experience more feelings of dysphoria, anxiety, and irritability; have a negative view of self; and scan the world for signs of impending trouble and High-SI individuals tend to feel inhibited, tense, and insecure when they are with others. The version used to the current work was adapted into Spanish by Montero, Bermúdez and Rueda (2017), is a 14-item self-rating questionnaire consisting of two seven-item subscales designed to measure the personality traits of negative affectivity (NA) (items 2, 4, 5, 7, 9, 12 and 13) and social inhibition (SI) (items 1, 3, 6, 8, 10, 11 and 14). Items 1 and 3 have a negative sense. Each item is rated on a five-point Likert-type scale from 0 (false) to 4 (true), with total scores ranging from 0 to 28 for each subscale. Scores equal to or greater than 10 on both DS-14 subscales of NA and SI indicate a Type D personality (Denollet, Sys & Brutsaert, 1995; Pedersen & Denollet, 2006). The Cronbach's α of the scale was .88 for the AN scale and .86 for the IS scale, with high temporal stability at three months in test–retest correlation (r = .72 for the AN scale and .82 for the IS scale). In the validation of psychometric properties of this scale in Colombia context, the DS-14 scale has an internal consistency of .762

Procedure

The objectives and study procedures, including informed consent, were evaluated and approved by the Ethics Committee of Universidad del Norte. The ethical aspects of research involving human beings outlined in Resolution # 008430 of 1993 by the Ministry of Health and Social Protection of Colombia and the Code of Ethics for Psychologists Law 1090 of 2006 (also known as Psychologist's law in Colombia) were taken into account in the study design; these include professional secrecy, the right to decline or withdraw participation, informed consent and return of results. Each participant signed an informed consent form, where the objectives, procedures, risks, benefits, voluntary nature and confidentiality of the study were clearly outlined.

Procedures for translating the CIASS to Spanish followed recommendations established by Merenda (2006). Items from the CIASS were first translated from English to Spanish and then back-translated from Spanish to English by two independent translators. These versions were then compared and checked for accuracy by the team of researchers, including the author of the original English CIASS. The final version of the scale was written in a Spanish that would be comprehensible to the Colombian population.

Data Analysis

All quantitative descriptive analyses were performed using IBM SPSS Software®, Version 25. Internal consistency was assessed using Cronbach's α, and values equal to or greater than α = .70 were considered to be satisfactory (Nunnally, 1978). An item discrimination index through point-biserial correlation was used to analyse subjects which success on an item corresponds to success on the whole CIASS scale. Correlations for each item were calculated in relation to its subscale, the quadratic residual and the percentage distribution of responses. Further, we calculated correlations between scale dimensions as well as between dimensions and the total scale. A CFA was performed using LISREL 8.80 software to test structural validity. We analysed the correlations between the dimensions of the CIASS scale and the scores for other scales, using Spearman's rho to determine convergent validity. Finally, we elaborated the normative values to the CIASS scale, using the complete sample, and cut scores were established.

RESULTS

Internal Consistency

Table 2 shows the descriptive statistics and the Cronbach's α values for the three subscales and the total score of the CIASS Scale. The Cronbach's α values were calculated with the full 12 items and then with the subscales defined by Earnshaw et al. (2013): Friends and family (items 1–4); work colleagues (items 5–8) and healthcare workers (items 9–12). The Cronbach's α reliability estimate of the CIASS total score was .815, indicating strong reliability (Nunnally, 1978).

[Table 2 here]

Item Analysis

We performed an item discrimination index through point-biserial correlation to analyse that subjects with high overall scores in CIASS scale also got a particular item correct. Table 3 shows the correlations obtained for each item in relation to its subscale, quadratic residual and percentage distribution of responses by item. The correlations for the item with its subscale tend to have excellent items effect, with values between .647 and .870, according to the recommendations of Ebel and Frisbie (1986). In the percentage distribution for the responses, it can be observed that they tend to focus around low scores (1 and 2).

Table 4 shows the correlations between subscales and correlations of the subscales with CIASS total score. These results show that correlations are low or moderate among the subscales, suggesting independence. Meanwhile, correlations between the subscales and the CIASS total score were moderate or high, indicating a strong relationship of the subscales to the global evaluation of the scale.

[Table 3 here]

[Table 4 here]

Convergent Validity

Previous studies (Earnshaw, et al. 2013; Nejatisafa et al. 2017; Peltzer & Pengpid, 2016; Spadaro et al., 2017) have demonstrated the convergent validity of CIASS with measures of anxiety, depression and other measures related to stigma. Additional analyses were conducted to verify whether the CIASS scale showed convergent validity with other measures used in clinical and health psychology. Table 5 shows the point-biserial correlation analyses with the scores for of the three CIASS subscales and other scales related to social stigma: BRCS, OLQ-13 and DS-14.

A weak, negative correlation was found between the subscales for friends and family and healthcare workers as well as for the total CIASS (Hinkle, Wiersma & Jurs, 2003) with the BRCS scale, indicating that participants who anticipated greater stigma may also have had lower resilience, optimism, perseverance, creativity and positive growth, as well as difficulty in maintaining adaptive behavior in the face of adversity or a stressful event. The total score for the CIASS showed a negative and weak correlation with the meaningfulness scale of the OLQ-13 scale, or SOC, suggesting that participants who anticipated greater stigma may have less of an ability to redefine their situation and give it an acceptable meaning; in other words, such patients may not perceive adverse events as challenges and mobilise in the face of them to orient them positively in life.

A positive, weak correlation was found between the friends and family subscale, the healthcare workers subscale and the CIASS total score with the NA scale of the DS-14, suggesting that participants who anticipated greater stigma may have a tendency to experience more negative emotions, with possible manifestations of dysphoria, tension, worry, irritability and anger.

[Table 5 here]

Structural Validity

CFA

We proceeded to execute a CFA for which four theoretical models were proposed. Model 1 uses the Kaiser criterion (incorporating all factors that have eigenvalues greater than one), postulating that there are three factors, with four items each, following the original theoretical model proposed by Earnshaw et al. (2013). Model 2, using a sedimentation graph, defends a bifactorial structure, in which the first factor is saturated with five items and the second has seven items. Model 3, using sedimentation graph, proposes a structure of four factors, where the first two are saturated with four items each, and the two remaining factors have two items each. Finally, Model 4 includes the structure proposed by Earnshaw et al. (2013), and adds factors a second-order factor called anticipated stigma to the original structure of three. As shown in Figure 1, the initial solution of the three factors was confirmed, with the same items loading in the same factors, with factorial weights greater than .3.

The different theoretical models' goodness of fit was measured with both absolute and relative indexes, as recommended by Hu & Bentler (1999), among others. The analysis of the ratio of χ^2 to degrees of freedom allows the inferences that Model 4 has fewer indicators of goodness of fit, and Model 3 fits the data well (Hair, Anderson, Tatham & Black, 1999). The root mean square residual (RMR) gave higher values for Models 1, 2 and 4. Model 1 fits the data quite well. The comparative fit index (CFI) requires values greater than approximately .95; by this criterion, all models were within the expected limit. The non-normed fit index (NNFI) presupposes a value between 0 and 1, with recommended acceptance values greater than .90. In relation to this, Batista-Foguet and Coender (2000) indicate that values greater than .95 and not greater than 1 are best, because this would indicate the overparameterization of the model. Here, the values obtained for all the models exceeded the expected range; however, Model 1 showed the least value among all the proposed models, suggesting that it had a lower overparameterization index. The recommended root mean square error of approximation (RMSEA) ranges from 0.05 to 0.08, where smaller values indicate a better model fit. Values of .06 or less are indicative of an acceptable model fit; for these data, only Models 1 and 3 fulfilled this criterion. Values greater than .9 indicate a good fit on the GFI. Models 1, 2 and 3 met this criterion. Thus, Model 1, which is the theoretical model composed of three factors, fits the data quite well (Table 6).

[Figure 1 here]

[Table 6 here]

Cut Scores of CIASS Scale.

The total scores of the CIASS scale in the present sample were distributed with a mean of 23.38, a standard deviation of 8.67 and a range of scores of 12–60. Following the guidelines of Morales (2008),

a centile scale method was used. A possible value was assigned to each possible direct score (on a scale of 1 to 100) and it indicates the percentage of subjects of the normative group who obtain scores equal to or lower than the corresponding direct ones. To calculate the centile associated with a score, the possible direct scores of each subject were assigned in a growing or decreasing way. Then, to each score was assigned its absolute frequency, that is, the number of subjects of the normative group that obtained it. Finally for each value of the accumulated frequency the value Ci=(100) Fi/N is obtained (Ci=centile assigned to the direct score (Xi); Fi=accumulated frequency corresponding to direct score (Xi); N=total number of subjects of normative group) (Table 7). We obtained scores, percentiles and the coefficient of variation for each factor and for the total score of CIASS scale as well, for this sample, as the previous analyses indicated that there were no significant differences for sex or age (Table 8).

[Table 7 here]

[Table 8 here]

DISCUSSION

These results shows the cross-cultural validation and psychometric properties of the Spanish version of the Chronic Illness Anticipated Stigma Scale (CIASS). The validity was evaluated in the areas of internal consistency, convergent, and also structural validity and demonstrate that this version are comparable to English, Persian and Italian versions because the confirmatory factor analysis confirmed extraction of all dimensions in three factors, consisting of family and friends, work colleagues, and healthcare workers. In this study we found a low internal consistency in the healthcare workers subscale. After performing additional analyzes by type of diagnosis we found that internal consistency of healthcare workers subscale improve in patients with healthcare issues as arterial hypertension, neurological diseases and diabetes and decrease if we include patients with heart disease, cancer, lupus and chronic kidney disease. This can be explained because in this types of chronic disease some patients can perceive more anticipate stigma, in other words, patientes percibe that healtcare workers have frustration feelings in this kind of disease, little concerns for patients and thoughts regarding patients being at fault for not recover the health and consequently conclude that they are bad patients. We also found that internal consistency levels improve in patients who only have a single diagnosis and decrease in patients that have 2 or 3 related chronic diagnoses. Within the limitations of the study, it can be pointed out that it would be important to consider in future studies a more detailed characterization of the ethnicity to which the participants belong. Another aspect to consider is the size of the sample, because it would be interesting to perform cross-validation processes that allow the execution of exploratory and confirmatory factor analysis in order to reduce the limitations in the generalization of the model.

As research has demonstrated that anticipated stigma undermines the physical and mental well-being of people living with chronic illnesses (Earnshaw & Chaudoir, 2009; Quinn & Earnshaw, 2011; Earnshaw et al., 2012), we sought to verify the convergent validity of CIASS relative to other constructs that are related to health, well-being and quality of life.

This findings can be used for interventions to reduce anticipated stigma in patients with a several chronic illness and to promote their psychological and social well-being. First, policy makers should implement improvements in the health care system to balance the allocation of resources for

this chronic illnesses that have a high prevalence in Colombian context. Second, public education about chronic illnesses should be strengthened, which includes etiology, symptoms, treatment of patients, and the effect of anticipated stigma on the psychological status of the patients to redirect them to social services. Third, these findings provide a scale that can be use by clinical workers to identify different sources of anticipated stigma in patients diagnosed with chronic diseases, which can help them to cope with their symptoms and develop more positive attitudes during the treatment.

It was verified that patients diagnosed with chronic diseases who anticipate stigma from friends and family and from healthcare workers have less resilience. Several studies conducted on patients living with chronic illness have found that resilience had a protective effect in relation to body pain, improving health, personal well-being, and social support, as well as producing modifications in cognitive assessments of self-efficacy and the possibility of maintaining one's active status at work (Newton, Mason & Hunter, 2014; Steinhardt, Mamerow, Brown & Jolly, 2009; Strand et al. 2006).

Broersma, Oeseburg, Dijkstra and Wynia (2018) found that multiple sclerosis patients with a higher SOC experienced fewer limitations, less stigma and better quality of life; further, it was shown that perceived limitations and stigma were detrimental to the patients' quality of life. This study found that patients living with chronic illness with anticipated stigma maintained the cognitive and behavioural dimensions of the SOC, which allows them to understand and manage their illnesses; however, evidence was found that such patients may experience difficulties in maintaining motivation or meaningfulness, which may block the desire to invest the energy required to face the anxiety and the potential stress of chronic illness, which could be in detrimental to apply active coping strategies during the illness. Norekvål et al., (2009) work showed that female survivors of acute myocardial infarction with weak SOC also had worse physical health and psychosocial status, suggesting that females require more support.

The Type D personality is an important indicator of adverse clinical outcomes and reduced quality of life for various diseases. This suggests that high scores for anticipated stigma in patients with chronic diseases may be associated with the tendency to experience negative emotions such as depression, dysphoria, hostility, anxiety, worry, unhappiness and irritability and to have a pessimistic view on the self and the world. Researchers have suggested that having Type D personality is significantly associated with reduced quality of life in patients with several chronic conditions (Bartels et al., 2010; Demirci, Demirci & Demirci, 2017; Dubayova et al. 2013; Erkol Inal, Demirci, Doğru & Sahin, 2016; Mols & Denollet, 2010; O'Dell, Masters, Spielmans, & Maisto, 2011).

The results of CFA supported the structural validity of the scale. This scale includes three factors, namely, family and friends, work colleagues and healthcare workers, just as the original English version did, showing that the anticipation of stigma experiences is distinguished in the scale in the three social domains originally foreseen by the instrument. Additionally, the same results demonstrated the viability of a three-factor model with a second-order factor. In relation to the psychometric properties of the instrument, internal consistencies of .815 for the whole scale were found. Our data show a similar behavior of the CIASS scale in the chronic illness population in the English, Persian and Italian versions. Regarding the number of factors, we found that a 3-factor structure explained 61.8% of the variance. This result is in line with the original version of CIASS scale. The most conclusive results of this study indicate that both in the exploratory and confirmatory factor analyses the total variance is better explained (~62%) by a 3-factor structure. In addition, the contribution of this study lies in the proposal of

cut scores that provide a better interpretation of the results of anticipated stigma in patients with chronic diseases for healthcare workers.

People living with chronic illnesses who anticipate stigma expect others to devalue them because of their chronic illness in a wide range of situations (Earnshaw et al., 2012). The CIASS is a brief, easy and quick administration scale for health professionals, capable of identifying the early beginnings of processes related to stigma in patients with chronic diagnoses in response to sources of stigma, and it could inform early and effective interventions to improve the quality of life of these chronic patients.

REFERENCES.

Antonovsky, A. (1993). The structure and properties of the sense of coherence scale. *Social Science & Medicine*, *36*(6):725-733.

Bartels, H., Pedersen, S., Van der Laan, B., Staal, M., Albers, F., & Middel, B. (2010). The impact of Type D personality on health-related quality of life in tinnitus patients is mainly mediated by anxiety and depression. *Otology and Neurotology*, *31*(1), 11-18.

Batista-Foguet, J. & Coenders, G. (2000) *Modelos de ecuaciones estructurales (Modelos para el análisis de relaciones causales)*. Madrid: Editorial la Muralla.

Bedi, M., & Devins, GM. (2016). Cultural considerations for South Asian women with breast cancer. *Journal of Cancer Survivorship*, *10*(1), 31–50.

Berger, BE., Kapella, MC., & Larson, JL. (2011). The experience of stigma in chronic obstructive pulmonary disease. *Western Journal of Nursing, 33*(7), 916-32.

Broersma, F., Oeseburg, B., Dijkstra, J., & Wynia K. (2018). The impact of self-perceived limitations, stigma and sense of coherence on quality of life in multiple sclerosis patients: results of a cross-sectional study. *Clinical Rehabilitatio,32*(4), 536–545.

Carr, D. (2016). Patients with Pain Need Less Stigma, Not More. *Pain Medicine*, 17, 1391–1393.

Cohen, M., Quintner, J., Buchanan, D., Nielsen, M., & Guy, L. (2011). Stigmatization of Patients with Chronic Pain: The Extinction of Empathy. *Pain Medicine, 12*(11), 1637–1643.

Corrigan, P., Watson. A., & Barr, L. (2006). The self-stigma of mental illness: Implications for self-esteem and self-efficacy. *Journal of Social and Clinical Psychology, 25*, 875–884.

Demirci, S., Demirci, K., & Demirci, S. (2017). The Effect of Type D Personality on Quality of Life in Patients with Multiple Sclerosis. *Archives of Neuropsychiatry, 54*(3), 272-276.

Denollet, J. (2005). Standard assessment of negative affectivity, social inhibition, and Type D personality. *Psychosomatic Medicine, 67*(1), 89-97.

Denollet, J., Sys, S., & Brutsaert, DL. (1995). Personality and mortality after myocardial infarction. *Psychosomatic Medicine, 57*(6), 582-591.

Dubayova, T., Krokavcova, M., Nagyova, I., Rosenberger, J., Gdovinova, Z., Middel, B.,… Van Diik, JP. (2013). Type D, anxiety and depression in association with quality of life in patients with Parkinson's disease and patients with multiple sclerosis. *Quality of Life Research, 22*(6), 1353-1360.

Earnshaw, V. & Chaudoir, S. (2009). From Conceptualizing to Measuring HIV Stigma: A Review of HIV Stigma Mechanism Measures. *AIDS and Behaviour, 13*(6), 1160–1177.

Earnshaw, V., Quinn, D., Kalichman, S., & Park, C. (2013). Development and psychometric evaluation of the Chronic Illness Anticipated Stigma Scale. *Journal of Behavioral Medicine, 36*(3), 270-282.

Earnshaw, V., Quinn, D., & Park, C. (2012). Anticipated stigma and quality of life among people living with chronic illnesses. *Chronic Illness,* 8(2), 79–88.

Ebel, RL. & Frisbie, DA. (1986). *Essentials of Education Measurement*. Englewood Cliffs, NJ: Prentice Hall.

Erkol İnal, E., Demirci, K., Doğru, A., & Şahin, M. (2016). Ankylosing Spondylitis patients with Type D personality have worse clinical status. *Modern Rheumatology, 26*(1), 138-145.

Goffman, E. (1963). *Stigma: Notes on the management of spoiled identity*. New York: Simon & Schuste.

Hair, J., Anderson, R., Tatham, R., & Black, W. (1999). *Análisis Multivariante*. Madrid: Prentice Hall Iberia.

Hermanns, M. (2013). The invisible and visible stigmatization of Parkinson's disease. *Journal of the American Association of Nurse Practitioner*, *25*(10), 563-6.

Hinkle, D., Wiersma, W., & Jurs, S. (2003). *Applied Statistics for the Behavioral Sciences*. Houghton: Mifflin.

Hu, L. & Bentler, P. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, *6* (1), 1-55.

Johnson, JL., Campbell, AC., Bowers, M., & Nichol, AM. (2007). Understanding the social consequences of chronic obstructive pulmonary disease: the effects of stigma and gender. *Proceedings of the American Thoracic Society, 4*(8), 680-2.

Kilinç, S. & Campbell, C. (2009). It shouldn't be something that's evil, it should be talked about: A phenomenological approach to epilepsy and stigma. *Seizure,18*(10), 665–671.

Maffoni, M., Giardini, A., Pierobon, A., Ferrazzoli, D., & Frazzitta, G. (2017). Stigma Experienced by Parkinson's Disease Patients: A Descriptive Review of Qualitative Studies. *Parkinson's Disease*, 12, 1-7.

Merenda, P. (2006). An overview of adapting educational and psychological assessment instruments: past and present. *Psychological Reports, 99*(2), 307-314.

Ministerio de Salud y Protección Social. *Análisis de Situación de Salud. Colombia, 2016*. https://www.minsalud.gov.co/sites/rid/Lists/BibliotecaDigital/RIDE/VS/ED/PSP/asis-colombia-2016.pdf.

Mols, F. & Denollet, J. (2010). Type D personality in the general population: a systematic review of health status, mechanisms of disease, and work-related problems. *Health and Quality of Life Outcomes, 8*(9), 1477-7525.

Montero, P., Bermúdez, J., & Rueda, B. (2017). Adaptación al castellano de la Escala DS-14 («Type D Scale-14») para la medida de la personalidad tipo D. *Revista de Psicopatología y Psicología Clínica, 22*(1), 55-67.

Morales, P. (2008). *Estadística aplicada a las ciencias sociales*. Madrid: Universidad Pontificia Comillas.

Moret-Tatay, C., Fernández, J., Civera, C., Navarro-Pardo, E., & Alcover de la Hera C. (2015). Psychometric properties and Factor structure of the BRCS in an elderly Spanish sample. *Anales de Psicología, 31*(3), 1030-1034.

Nejatisafa, AA., Mozafari, S., Noorbala, AA., Asgarian, FS., Earnshaw, VA., Sahraian, MA., & Etesam, F. (2017). Psychometric Evaluation of the Persian Version of the Chronic Illness Anticipated Stigma Scale (CIASS). *International Society of Behavioral Medicine*, *24*(4), 634-640.

Newton, F., Mason, C., & Hunter, M. (2014). The role of resilience in adjustment and coping with chronic pain. *Rehabilitation Psychology*, *59*(3), 360-365.

Norekvål, TM., Fridlund, B., Lunas, P., Nordrehaug, JE., Saevareid, HI., Wentzel-Larsen, T., & Hanestad, BR. (2009). Sense of coherence—a determinant of quality of life over time in older female acute myocardial infarction survivors. *Journal of Clinical Nursing, 19*(5-6), 820–831.

Nunnally, J.C. (1978). *Psychometric theory.* 2nd Edition, New York: McGraw-Hill.

O'Dell, KR., Masters, KS., Spielmans, GL., & Maisto, SA. (2011). Does type-D personality predict outcomes among patients with cardiovascular disease? A meta-analytic review. *Journal of Psychosomatic Research, 71*(4), 199-206.

Organización Mundial de la Salud. (2014). *Informe sobre la situación mundial de las enfermedades no transmisibles 2014.* http://www.who.int/nmh/publications/ncd-status-report-2014/es/

Pedersen, SS. & Denollet, J. (2006). Is Type D Personality Here to Stay? Emerging evidence across cardiovascular disease patients groups. *Current Cardiology Reviews,* 2, 205-213.

Peltzer, K. & Pengpid, S. (2016). Anticipated stigma in chronic illness patients in Cambodia, Myanmar and Vietnam. *Nagoya Journal of Medical Science, 78*(4), 423-435.

Phelan, SM., Griffin, JM., Jackson, GL., Zafar, FY., Hellerstedt, W., Sthare, M.,…Van Ryn, M. (2013). Stigma, perceived blame, self-blame, and depressive symptoms in men with colorectal cancer. *Psychooncology, 22*(1), 65-73.

Quinn, DM., & Earnshaw, V. (2011). Understanding concealable stigmatized identities: The role of identity in psychological, physical, and behavioral outcomes. *Social Issues and Policy Review, 5*(1), 160-190.

Ryu, H., Sang-Ahm, L., Soyong, E., & Heung-Dong, K. (2015). Perceived stigma in Korean adolescents with epilepsy: Effects of knowledge about epilepsy and maternal perception of stigma. *Seizure, 24,* 38–43.

Shi, Y., Wang, S., Ying, J., Zhang, M., Liu, P., Zhang, H., & Sun, J. (2017). Correlates of perceived stigma for people living with epilepsy: A meta-analysis. *Epilepsy & Behaviour, 70,* 198-203.

Sinclair, V. & Wallson, K. (2004). The development and Psychometric evaluation of the Brief Resilient Coping Scale. *Assessment,11*(1), 94-101.

Spadaro, G., Romano, A., & Mosso, C. (2017). Contributo alla validazione italiana del CIASS. *Giornale italiano di medicina del lavoro ed ergonomia, 39*(1), 49-55.

Steinhardt, M., Mamerow, M., Brown, S., & Jolly, C. (2009). A resilience intervention in african american adults with Type 2 diabetes: A pilot study of efficacy. *The diabetes educator, 35*(2), 274-284.

Strand, E., Zautra, A., Thoresen, M., Odegard, S., Uhlig, T., & Finset, A. (2006). Positive affect as a factor of resilience in the pain-negative affect relationship in patients with rheumatoid arthritis. *Journal Psychosomatic Research,60*(5), 477-484.

Vaughn-Sandler, V., Sherman, C., Aronsohn, A., & Volk, ML. (2014). Consequences of perceived stigma among patients with cirrhosis. *Digestive Diseases and Sciences,59*(3),681-6.

Virués-Ortega, J., Martínez-Martín, P., Del Barrio, JL., & Lozano, LM. (2007). Validación transcultural de la Escala del Sentido de Coherencia (OLQ-13) de Antonovsky en ancianos mayores de 70 años. *Medicina Clínica, 128*(13), 486-492.

Waugh, OC., Byrne, DG., & Nicholas, MK. (2014). Internalized stigma in people living with chronic pain. *Journal of Pain, 15*(5), 550.e1-10.

Weiss, M., Ramakrishna, J., & Somma, D. (2006). Health-related stigma: rethinking concepts and interventions. *Psychology, Health & Medicine*, *11*(3), 277–287.

Wilbers, L. (2015). She Has a Pain Problem, Not a Pill Problem: Chronic Pain Management, Stigma, and the Family—An Autoethnography. *Humanity & Society, 39*(1), 86-111.

Young, W., Park, J., Tian, I., & Kempner, J. (2013). The Stigma of Migraine. *PLoS One, 8*(1), e54074.

Appendix A.

Spanish Version of Chronic Illness Anticipated Stigma Scale (CIASS)

Instrucciones: Los siguientes enunciados describen algunas maneras en las que son tratadas algunas personas que tienen enfermedades crónicas. Por favor lea estos enunciados y señala lo que tú piensas que podría pasarte en el futuro.

Primero piensa como tus amigos, los miembros de tu familia, hermanos, hermanas y hijos te tratarían en un futuro. ¿Cómo sería si ellos te trataran de las siguientes maneras **por su enfermedad crónica?**

	Muy poco probable	Poco probable	Algo probable	Probable	Muy probable
1. Algún amigo o miembro de la familia estará enojado contigo.	1	2	3	4	5
2. Algún amigo o miembro de la familia te culpará por no recuperarte.	1	2	3	4	5
3. Algún amigo o miembro de la familia pensará que tú tienes la culpa de tu enfermedad	1	2	3	4	5
4. Algún amigo o miembro de tu familia no pensará extremadamente en ti.	1	2	3	4	5

Ahora piensa como tus compañeros de trabajo y jefes te tratarán en el futuro.

Si no estás empleado actualmente, piensa en los compañeros de trabajo y los jefes que podrías tener en el futuro. ¿Cómo sería si ellos te trataran de las siguientes maneras **debido a tu enfermedad crónica?**

	Muy poco probable	Poco probable	Algo probable	Probable	Muy probable
5. Tu jefe no te ascenderá.	1	2	3	4	5
6. Alguien en el trabajo te discriminará.	1	2	3	4	5
7. Tu jefe le asignará a alguien más un proyecto desafiante.	1	2	3	4	5
8. Alguien en tu trabajo pensará que no puedes cumplir con tus responsabilidades laborales.	1	2	3	4	5

Finalmente, piensa en cómo te tratarán en el fututo tus proveedores de salud: doctores, enfermeras, técnicos y secretarias que trabajan en el hospital y en el consultorio médico. ¿Cómo sería si ellos te trataran de las siguientes maneras **debido a tu enfermedad crónica?**

	Muy poco probable	Poco probable	Algo probable	Probable	Muy probable
9. Un profesional de la salud estará frustrado como tú.	1	2	3	4	5
10. Un profesional de la salud se preocupará poco por tu cuidado.	1	2	3	4	5
11. Un profesional de la salud te culpará por no mejorarte.	1	2	3	4	5
12. Un profesional de la salud pensará que tú eres un mal paciente.	1	2	3	4	5

513 Table 1. Descriptive statistics of the sociodemographic characteristics of the participants (N=230).

Variables		%
Sex	Male	33.2
	Female	66.8
Age (years)	18–27	11.7
	28–37	11.7
	38–48	16.1
	49–60	30.9
	60 or more	29.6
Socioeconomic status	Strata 1–2	46.5
	Strata 3–4	32.7
	Strata 5–6	20.8
Marital status	Single	26.2
	Married	41
	Separated/divorced	7.4
	Free union	17.5
	Widowed	7.9
Educational level	Primary education	15.7
	Secondary education	30
	Technology education	16.6
	University studies	24.2
	Postgraduate education	13.5
Employment status	Employee	29.6
	Independent worker	22.1
	Retired/Pensioner	9.3
	Unemployed	4
	Homemaker	23
	Student	10.6
	Worker and student	1.3
Principal diagnosis	Lupus	9.1
	Chronic kidney disease	4.8

Diabetes	13.9
Heart disease	13.5
Neurological diseases	16.5
Cancer	12.6
Arterial hypertension	23.5
Others	6.1

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Table 2. Internal Consistency by Subscales and Total Score on the Chronic Illness Anticipated Stigma Scale

Scales	Min.	Max.	Mean	SD	α
Friends and family	3	20	7.07	3.563	.738
Work colleagues	3	20	8.48	4.737	.873
Healthcare workers	3	20	7.70	3.396	.658
CIASS total score	20	51	23.25	8.723	.815

Note: Min = minimum; Max = maximum; SD = standard deviation; α = Cronbach's α; CIASS = Chronic Illness Anticipated Stigma Scale.

520 Table 3. Item Analysis: Correlation, Ceiling and Floor Effects on the Chronic Illness Anticipated Stigma
521 Scale

	Item correlation		Percentage distribution of responses				
	Subscale	R^2	%1	%2	%3	%4	%5
1. A friend or family member will be angry with you.	**.753****	.34	69.6	13.9	8.3	4.8	3.5
2. A friend or family member will blame you for not getting better.	**.823****	.37	63.9	16.1	8.3	8.3	2.6
3. A friend or family member will think that your illness is your fault.	**.798****	.17	66.1	11.7	9.1	7.8	5.2
4. A friend or family member will not think as highly of you.	**.652****	.45	51.3	17.0	12.2	10.4	8.7
5. Your employer will not promote you	**.862****	.26	2.6	46.5	19.6	9.1	13.5
6. Someone at work will discriminate against you.	**.818****	.42	57.0	14.8	9.6	10.9	5.2
7. Your employer will assign a challenging project to someone else.	**.870****	.16	42.2	16.1	14.8	14.3	10.4
8. Someone at work will think that you cannot fulfil your work responsibilities.	**.853****	.23	44.3	14.8	14.8	15.7	8.7
9. A healthcare worker will be frustrated with you.	**.673****	.24	59.1	20.9	9.6	7.4	3.0
10. A healthcare worker will give you poor care.	**.647****	.27	40.9	21.3	14.8	12.2	10.4
11. A healthcare worker will blame you for not getting better.	**.751****	.34	52.6	19.1	14.3	10.9	3.0
12. A healthcare worker will think that you are a bad patient.	**.761****	.22	60.9	16.5	10.4	7.4	3.9

522 Note: Significant correlations are highlighted in bold; R^2 = quadratic residual.

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525 Table 4. Correlation between subscales and correlations of subscales with the CIASS total score.

		Factor 1	Factor 2	Factor 3	CIASS total score
Factor 1. Friends and family	PCC	1	**.293****	**.322**	**.693****
	p-value		.000	.000	.000
	N	230	230	230	230
Factor 2. Work colleagues	PCC	**.293****	1	**.365****	**.805****
	p-value	.000		.000	.000
	N	230	230	230	230
Factor 3. Healthcare workers	PCC	**.693****	**.805****	1	**.719****
	p-value	.000	.000		.000
	N	230	230	230	230

526 Note: Significant correlations are highlighted in bold; CIASS = Chronic Illness Anticipated Stigma Scale; PCC = Pearson
527 correlation coefficient; $p > .01$ (bilateral); N = population size.

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532 Table 5. Convergent Validity of the Chronic Illness Anticipated Stigma Scale with Other Measures.

Measures		CIASS Scales			
		Friends and family	Work colleagues	Healthcare workers	CIASS total score
	BRCS	**−.243****	−.078	**−.195****	**−.218****
OQL-13	Meaningfulness	−.091	−.156*	−.148*	**−.190****
	manageability	−.102	−.102	−.113	−.158*
	comprehensibility	−.027	.006	−.087	−.047
	Total OQL-13	−.096	−.094	−.159*	−.164*
DS-14	Negative affectivity	**.201****	.12	**.176****	**.227****
	Social inhibition	.028	.037	.137*	.081
	Total DS-14	.132*	.095	**.193****	**.187****

533 Note: CIASS = Chronic Illness Anticipated Stigma Scale; BRCS = Brief Resilient Coping Scale; OQL-13 = Orientation to
534 Life Questionnaire; DS-14 = Distressed Personality; $p > .01$ (bilateral).

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538 Table 6. Models of confirmatory factor analysis.

Models	χ2	*df*	χ^2/gl	GFI	RMR	CFI	NNFI	PNFI	RMSEA
1. Three-factor model	3133.26	526	5.95	.96	.11	1.00	1.02	.94	.082
2. Two-factor model	237.01	53	4.47	.97	.11	1.00	1.05	.8	.12
3. Four-factor model	71.19	48	1.48	.99	.074	1.00	1.05	.73	.046
4. Three-factor model and second-order factor	1637.87	51	32.11	.79	.39	1.00	1.05	.77	.37

539 Note: χ2 = normal-theory weighted least squares chi-square; df = degrees of freedom; GFI = goodness of fit index;
540 RMR = root mean square Residual; CFI = comparative fit index; NNFI = ; non-normed fit index; PNFI = parsimony
541 normed fit index; RMSEA = root mean square error of approximation

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543 Table 7. Cut Scores of the Chronic Illness Anticipated Stigma Scale.

	Friends and family	Work colleagues	Healthcare workers	CIASS total score
Mean	7,08	8,57	7,73	23,38
SD	3,56	4,63	3,37	8,67
Low	4–9	4–9	4–9	12–28
Medium	10–14	10–14	10–14	29–45
High	15–20	15–20	15–20	46–60

544 Note: CIASS = Chronic Illness Anticipated Stigma Scale; SD = standard deviation.

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546 Table 8. Normative Values on the Chronic Illness Anticipated Stigma Scale.

Friends and family			**Work colleagues**			**Healthcare workers**			**Total CIASS**		
S	PS	CV	S	C	CV	S	C	CV	S	C	CV
4	38	87.0	4	30	85.2	4	24	83.4	12	11	80.3
5	46	91.2	5	37	88.4	5	30	87.9	14	16	83.8
6	53	95.4	6	44	91.7	6	42	92.3	16	27	87.2
7	61	99.7	7	52	94.9	7	52	96.8	18	34	90.7
8	73	103.9	8	59	98.2	8	68	101.2	20	41	94.1
9	79	108.1	9	63	101.4	9	73	105.6	22	50	97.6
10	83	112.3	10	70	104.6	10	80	110.1	24	61	101.1
11	88	116.5	11	73	107.9	11	86	114.5	26	67	104.5
12	91	120.7	12	78	111.1	12	90	119.0	28	77	108.0
13	93	125.0	13	80	114.4	13	92	123.4	30	80	111.5
14	95	129.2	14	84	117.6	14	95	127.9	32	83	114.9
15	97	133.4	15	89	120.8	15	97	132.3	34	86	118.4
16	98	137.6	16	91	124.1	16	99	136.8	36	92	121.8
17	98	141.8	17	95	127.3	17	100	141.2	38	93	125.3
18	99	146.0	18	98	130.5				40	96	128.8
19	100	150.3	19	99	133.8				42	98	132.2
20	100	154.5	20	100	137.0	20	100	154.6	51	100	147.8

547 Note: CIASS = Chronic Illness Anticipated Stigma Scale; S = score; PS = percentile; CV = coefficient of variation

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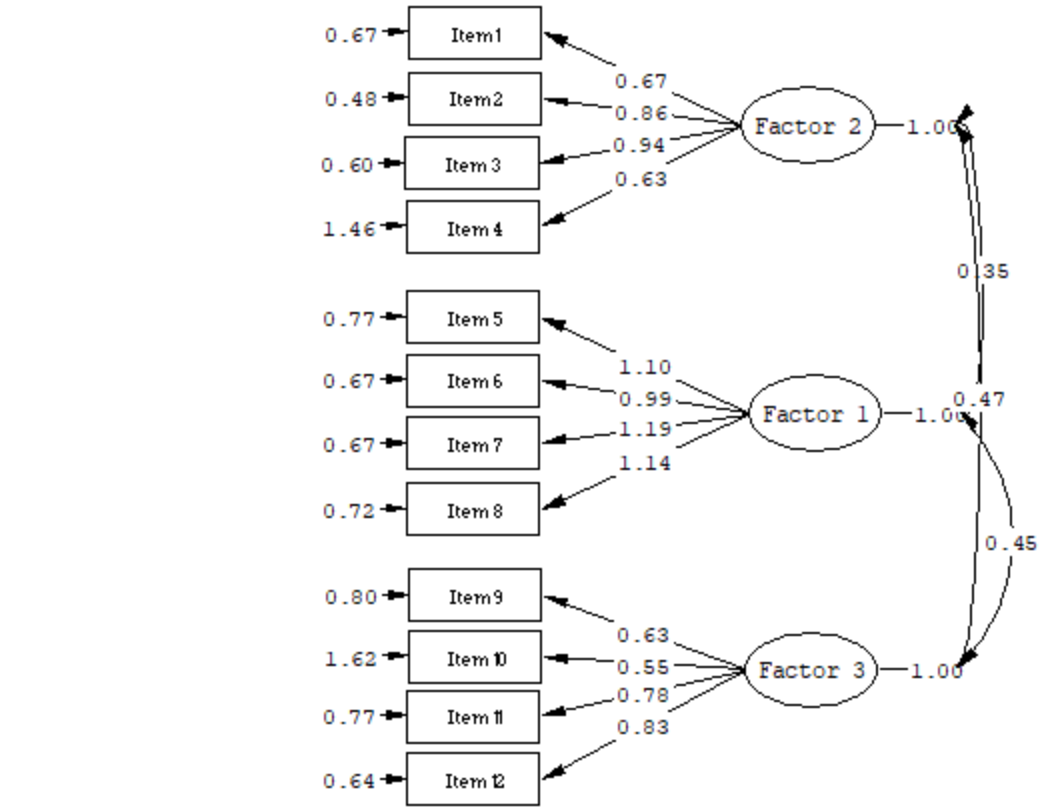

Figure Captions:

Figure 1. Factorial Solution for the Chronic Illness Anticipated Stigma Scale.