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Benevolence Toward Schizophrenia Scale: Construction and evidence of validation

Escala de benevolência frente à esquizofrenia: construção e evidências de validação

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Abstract

The aim of this study was to construct and seek evidence for the validity of the *Escala de Benevolência frente à Esquizofrenia* (Benevolence Toward Schizophrenia Scale). Two studies were conducted in *João Pessoa, Paraíba, Brazil*. Study 1 describes the development and evidence of the factor validity of the Benevolence Toward Schizophrenia Scale with a sample composed of 200 university students aged 16 to 51 years old ($M = 25.31$; $SD = 7.21$). The data were subjected to exploratory factor analysis, which revealed one single seven-item factor that explained 37.74% of the variance and a satisfactory Cronbach's alpha (0.77). The aim of Study 2 was to test the goodness-of-fit of the Benevolence Toward Schizophrenia Scale factor structure with a sample composed of 200 university students aged 16 to 52 years old ($M = 24.82$; $SD = 6.97$). The one-factor structure exhibited adequate goodness-of-fit; the composite reliability value was 0.83, which indicates scale stability and satisfactory psychometric parameters for assessing benevolent prejudice toward schizophrenia.

Keywords: Benevolence; Scale; Schizophrenia.

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Resumo

Esta pesquisa objetivou construir e buscar evidências de validade da Escala de Benevolência frente à Esquizofrenia. Foram realizados dois estudos na cidade de João Pessoa, Paraíba: o Estudo 1 descreve a construção e busca evidências de validade fatorial da Escala de Benevolência frente à Esquizofrenia com uma amostra de 200 estudantes universitários, idades entre 16 e 50 anos ($M = 21,2$; $DP = 5,23$). Os dados foram submetidos à análise fatorial exploratória revelando um único fator, com 07 itens que explicou 34,74% da variância, alfa de Cronbach satisfatório (0,77). O Estudo 2 objetivou testar o modelo de ajuste aos dados da estrutura fatorial da Escala de Benevolência frente à Esquizofrenia com uma amostra de 200 universitários, com idades entre 16 e 68 anos ($M = 25,75$; $DP = 10,34$). Foi demonstrado ajuste a estrutura unifatorial com índice de confiabilidade composta de 0,83, indicando estabilidade na escala e parâmetros psicométricos satisfatórios para avaliação do preconceito benevolente frente à esquizofrenia.

Palavras-chave: Benevolência; Escala; Esquizofrenia.

In addition to the symptoms of their health problem, individuals with mental disorders confront many daily barriers, one of which is prejudice (Todor, 2013; Schlier, Schmick & Lindoln, 2014; Mfoafo-M'Carthy & Huls, 2014). Despite countless anti-stigma studies, campaigns and programs, especially at the international level, prejudice against individuals with severe mental disorders is still a very frequent phenomenon deeply rooted in society (Estroff, Penn, & Toperek, 2004; Haqanee, Lou, & Lalonde, 2014; Lincoln, Arens, Berger, & Rief, 2008).

Allport (1962), one of the main scholars devoted to the study of prejudice, defined it as “an antipathy based upon a faulty and inflexible generalization” (p.9) or as a negative attitude toward someone based on the belief that he/she exhibits the negative characteristics associated with some socially undervalued group. Considering that there are many different undervalued groups, there can be as many types of prejudice as there are minority groups within the power structure (Lima, 2011; Pereira & Souza, 2016).

Researchers who have studied prejudice have found that individuals with severe mental disorders, such as schizophrenia, are seen as unpredictable, incompetent and dangerous (Maciel, Pereira, Lima, & Souza, 2015; Nee & Witt, 2013). Such stereotypes and prejudice hinder the development of competency and the functional possibilities of recovery, which consequently hinders the social inclusion of these individuals. Such hindrance affects several spheres of their lives, including interpersonal relationships, empowerment over the illness and the search for treatment, self-concept and self-esteem, and it impairs their professional and economic lives, housing, social experiences and family lives.

Although prejudice is currently difficult to recognize—and is even avoided in various social settings in Brazil and worldwide as a result of ongoing policies and the respect for human rights—its manifestations are still present, either overtly, subtly or even innately. As society is adjusting to anti-discrimination pressure, strategies are developed to bypass antiprejudicial norms, whereby prejudice appears under new forms of expression. Overt discrimination—which presupposes a belief in the inferiority of the discriminated group and rejection of intimate contact with its members—is being replaced by more subtle forms (Camino, Silva, Machado, & Pereira, 2001; Lima & Vala, 2004).

Benevolence is one such subtle form of the expression of prejudice, as Eagly and Diekman (2005) observe. These authors emphasize not only that prejudice can be manifested through “antipathy” or negative attitudes but also that other types of prejudice involve more subtle means of control and exploitation, such as kind paternalism, which they consider a benevolent attitude. This form of prejudice may be defined as

an exaggerated paternalistic and assistentialist attitude, which, despite perhaps seeming beneficial at first sight, is based on pity, which leads to discrimination.

This view is prejudiced and exclusionary, because individuals with severe mental disorders are seen as limited, excessively dependent and defenseless, as people who cannot actualize their potentialities and with limited possibilities for exerting their social roles and their rights. Benevolence conveys the idea that because of their condition, people with severe mental disorders should be protected through a form of paternalism centered on the provision of special care, personal attention and even material comfort, similar to the behavior of parents toward their children. However, the benevolent attitude does not entail genuine affection or esteem; instead, it devolves from charitable paternalism and the moralism characteristic of this attitude (Cohen & Struening, 1962; Pedrão, Avanci, & Malaguti, 2002).

According to Ribeiro, Martins, and Oliveira (2009), behind the benevolent attitude is the idea that the only role for an individual with a severe mental disorder is one of a protection-requiring patient, someone who is unable to give new meaning to his/her life and everyday experience without the active involvement of other people. One of the essential aspects of benevolence is the notion that individuals should be treated and considered as children dependent on the care provided by others. In a study by Maciel, S. C., Maciel, C. M. C., Barros, Sá, and Camino (2008), relatives grounded their representation of the “mentally ill” individual on the image of children, as evidenced in their narratives, for instance: “the mentally ill are like children; they don’t know anything...” (p.117). This representation leads to an attitude centered on caring for/protecting such “children,” who are believed to be unable to care for themselves but need to be protected by others, thus reinforcing the benevolent attitude and the guardianship ethos.

From the perspective of those who adopt a benevolent attitude, individuals with severe mental disorders should be sequestered from society and cared for by those who know how to do it and are responsible – “experts” and family—thus depriving the individuals of their capacity for autonomy and exercise of citizenship. This representation gives rise to the care/protect/treat/hospitalize model, which ultimately sustains the asylum and guardianship system for individuals with mental disorders (Maciel et al., 2008, p.118).

Corrigan, Edwards, Green, Thwart, and Perm (2001) conducted a study on severe mental disorders with 151 students in Illinois (USA). The results showed that both the authoritarian and benevolent attitudes were related to discrimination, actualized by the desire for social distance, and that the benevolent attitude was more strongly associated with discrimination than authoritarianism. These authors explained that these findings are counterintuitive: one would expect that people who represent the mentally ill in a paternalistic manner would be more willing to adopt helping and acceptance behaviors and thus less likely to maintain social distance. However, the truth is that the benevolent conception might lead to perceptions of irresponsibility and disability, which in turn might result in angry reactions and avoidance. These data are corroborated by a study on schizophrenia conducted by Crisp and Turner (2013), with a sample of university students ($n = 150$) in Romania. According to these authors, although seemingly positive and nonprejudiced, benevolence sustains asymmetric power relationships between groups, which favor social dominance relationships, since it restricts the autonomy of individuals with schizophrenia and keeps them excluded from society.

While characterized as a less evident, i.e., a more subtle, form of prejudice, benevolence restricts the target subjects to certain social roles, thus reinforcing stereotypes and justifying social dominance. The benevolent attitude seeks to make the so-called “mentally ill” docile, adjust them to social life and the

socially accepted patterns defined as normal. The consequences of subtle prejudice are as harmful as the effects of overt prejudice, because based on either pity or fear, these individuals are rejected and socially excluded (Crisp & Turner, 2013).

Therefore, benevolence is a subtle expression of prejudice but one that is nevertheless still present, inasmuch as it pretends to be something good and inclusive, whereas overt prejudice became politically incorrect and in opposition to social norms (Pereira & Souza, 2016). The result is expressions disguised as positive and “politically correct” but that bring discrimination and prejudice with them.

It should be observed that understanding, and even measuring, the benevolent attitude poses a challenge, because on occasion, it may be mistaken for an honest and nonprejudiced attitude toward schizophrenia. In the present study, benevolence was characterized as an overly paternalistic and assistentialist attitude based on feelings of pity, which restricts the autonomy of individuals with schizophrenia. The reason is that these individuals are seen as limited, childish, dependent and defenseless, conceptions that pass unnoticed under the alleged need to protect individuals with mental disorders given that they are childish and need to be watched, consequently resulting in their social exclusion.

Studying the benevolent attitude toward individuals with schizophrenia is highly relevant, especially given the new mental health policies formulated in Brazil and worldwide grounded on the Psychiatric Reform and the anti-asylum movement. The current mental health policy recommends progressive deinstitutionalization and inclusion within the social and family context, in order to help these individuals recover their autonomy, contractuality and independence to become socially active and productive. As a result, society as a whole is called to devise other ways to conceive of mental disorders in order to eliminate prejudice and stigma and to receive these individuals who have been marginalized from normal society over time. However, despite the political changes targeting mental health, individuals with schizophrenia experience daily the double challenge posed by the need to combat the symptoms of their condition and the unfair effects of stereotype and prejudice (Corrigan, Morris, Michaels, Rafacz, & Rusch, 2012; Evans-Lacko, Henderson, & Thornicroft, 2013; Lund & Boggero, 2014; Maciel & Melo, 2014; Pescosolido, 2013).

Given the aforementioned considerations, the present study sought to investigate subtle, benevolent prejudice against individuals with schizophrenia. This construct has been previously studied within the field of mental health/disease; thus, there are instruments available that include benevolence as one of the constructs considered. A large number of these instruments were developed abroad, such as Opinions about Mental Illness (OMI) (Cohen & Struening, 1962) and Community Attitudes towards the Mentally Ill (CAMI) (Taylor & Dear, 1981). However, none of them target benevolence but rather analyze it together with other dimensions of more overt prejudice. Among the instruments developed in Brazil, we call attention to the *Escala de Atitudes frente ao Doente Mental* (ADM, Attitudes Toward the Mentally Ill Scale) (Pasquali, Nogueira, Martins, & Martins, 1987), validated by Dantas (2014), which measures aspects of behavior of the mentally ill with a focus on sexuality, sociability, language and cognition, and the *Escala de Crenças sobre a Doença Mental* (ECDM, Beliefs About Mental Illness Scale) (Maciel et al., 2015), which is more focused on causal beliefs about mental illness. Thus, a Brazilian instrument that measures subtle prejudice—with particular emphasis on benevolence within the context of mental illness, in particular schizophrenia—and that considers the aspects of exaggerated dependence and childishness attributed to this condition is lacking. This fact accounts for our need to emphasize benevolence in the present study, as it is an expression of subtle prejudice with impact on how individuals with mental disorders are treated.

The present study seeks to contribute to research on benevolence and mental disorders by developing and seeking evidence for the validity of the *Escala de Benevolência frente à Esquizofrenia* (EBE, Benevolence Toward Schizophrenia Scale) in the Brazilian context. For this purpose, we performed two studies, which are described next in full detail. In the first, we constructed the EBE and sought evidence of its validity; in the second, we investigated the goodness-of-fit of the data to the model devised for the scale constructed in Study 1.

Study 1

Construction and evidence of the validity of the Benevolence Toward Schizophrenia Scale: Exploratory analysis

Method

Participants

A total of 200 undergraduate students at public and private universities in different towns in the state of Paraíba, Brazil, aged 16 to 51 years old (Mean [M] = 25.31; Standard Deviation [SD] = 7.21) and mostly female (83.7%), participated in this study. The students were in the Psychology (61.0%), Social Work (18.7%), Psychopedagogy (17.2%), Nursing (5.0%) or Pedagogy (2.0%) programs. Approximately 84.3% of the sample reported not having close contact with an individual with schizophrenia. The participants were selected by nonprobabilistic convenience sampling.

Procedure for development of the EBE

The EBE was developed based on the available literature on subtle prejudice, benevolence and severe mental disorders and by means of Bardin's thematic analysis of a dataset composed of interviews conducted with mental health professionals (25 interviews) and relatives of individuals with mental disorders (25 interviews) belonging to the Research Group on Mental Health and Chemical Dependency at Federal University of Paraíba (UFPB, *Universidade Federal da Paraíba*).

The initial version of the instrument consisted of 10 items and was subjected to five examiners who were experts (with a master's or doctoral degree) in the subject of interest to analyze the coherence between the definition of the latent trait (dimension) and the behaviors (items) representing it empirically. The minimum interexaminer agreement to establish the apparent validity and correspondence of each item to the analyzed category (benevolence) was 70%. As a result, changes were made, and only seven items remained. Next, semantic validity was analyzed with 10 university students selected by convenience sampling, who, after having answered the items, were asked about their understanding of and the clarity of the items following the same criteria as those applied by the experts. After this assessment and the resulting changes, the scale was tested in an exploratory manner.

Instruments

The instrument administered was the EBE Scale constructed in this study, which contains seven items analyzing the benevolent attitude toward schizophrenia. The items are answered on a Likert scale ranging from (1) "fully disagree" to (5) "fully agree."

The participants also answered a sociodemographic questionnaire to investigate their sex, age, program and whether they had close contact with someone with schizophrenia. These questions served to characterize the sample.

Ethical issues and data collection procedure

The study complied with the National Health Council Resolution no. 466/12, which includes guidelines and regulatory standards for research involving human beings. It was duly approved by the research ethics committee of Center for Health Sciences, UFPB, ruling no. 138.515, CAAE 03228712.3.0000.5188.

Once the study was approved by the ethics committee, one investigator contacted institutions for data collection. The instruments were collectively administered in classrooms. Data collection began after information on ethical issues and procedures was provided, and subjects agreed to participate by signing an informed consent form.

Data analysis

The data were tabulated and analyzed using the Statistical Package for the Social Sciences (Chicago, Illinois, United States) for Windows version 21.0. We performed exploratory factor analysis and used the Unweighted Least Squares (ULS) method as estimator to investigate the factor structure of the scale. Cronbach's alpha was used for analysis of internal consistency.

Results and Partial Discussion

First, we sought to demonstrate the factorability of the matrix of correlations between the scale items. The results supported the performance of exploratory factor analysis, which yielded satisfactory results: Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy = 0.79 and Bartlett's sphericity test, $\chi^2(21) = 312.02$; $p < 0.001$.

Exploratory factor analysis was performed with the ULS method as estimator, as factor analyses including estimators based on polychoric correlations tend to more often identify the correct number of factors underlying the data and thus result in more consistent parametric estimates of factor loadings and correlations among factors (Asún et al., 2016; Holgado-Tello, Chacón-Moscó, Barbero-García, & Vila-Abad, 2010; Lara, 2014). Without setting the number of components to be extracted or the rotation type *a priori*, we detected one component with eigenvalue over 1 (3.03; Kaiser criterion), which explained 34.74% of the total variance. As the Kaiser criterion is not conclusive, we also considered the Cattell criterion, which corroborated the possibility of the scale having a single component, as shown in the scree plot depicted in Figure 1.

We chose to apply a third criterion to confirm the number of components to be extracted, namely, Horn's parallel analysis (Horn, 1965). This analysis considered the same parameters as those of the original dataset, i.e., 200 participants and seven items. The results showed that all the Kaiser criterion eigenvalues were superior to those obtained with parallel analysis, which did not support a one-dimensional structure for the EBE Scale. Therefore, we chose to test the models with two and three factors, which was not useful, because upon analyzing the factor loadings and considering only those equal to or greater than 0.30, all the items clustered into a single factor. Thus, we decided to perform exploratory factor analysis by means of the ULS method without determining any number of factors and establishing values greater than or equal to 0.30 for item loadings (Prieto & Muñiz, 2000). The results are described in Table 1.

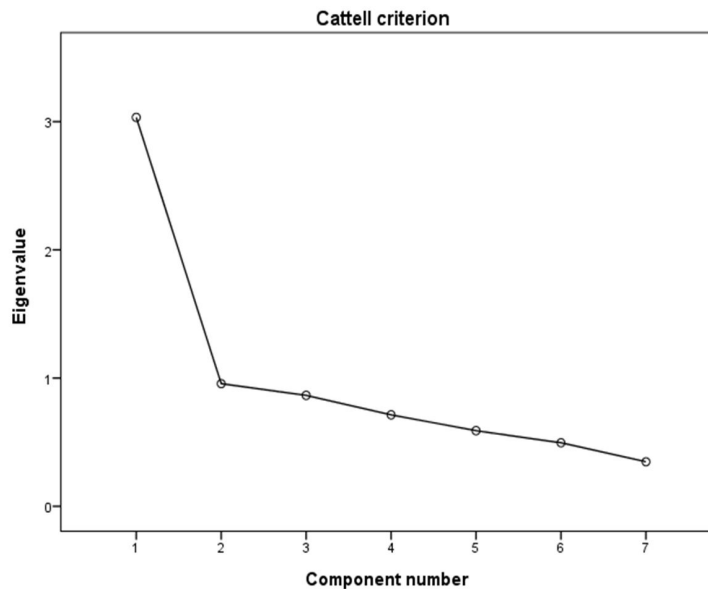


Figure 1. Graphic representation of the eigenvalues of the Benevolence Toward Schizophrenia Scale.

Table 1. Factor structure of the Benevolence Toward Schizophrenia Scale

Items	Factor loadings	h^2
1. There is not much that can be done for people with schizophrenia, besides providing the care needed for them to feel comfortable and be well fed.	0.49	0.24
2. People should feel m'ore pity for people with schizophrenia.	0.50	0.25
3. People with schizophrenia are like large children.	0.64	0.41
4. People with schizophrenia need caregivers 24 hours a day.	0.67	0.45
5. Some things cannot be said to people with schizophrenia because anything can affect them.	0.33	0.11
6. People with schizophrenia are unaware of things; therefore, they need caregivers.	0.75	0.56
7. I believe people with schizophrenia are defenseless.	0.62	0.39
Number of items	7	
Eigenvalue	3.03	
Explained variance (%)	34.74	
Cronbach's alpha (α)	0.77	

Analysis of Table 1 shows that the factor loadings of all the items started at 0.33, which evidences the one-dimensional structure of the construct. A single factor was identified, which might be named Benevolence Toward Schizophrenia, with marginally acceptable internal consistency (Cronbach's alpha = 0.77) for a total of seven items, which demonstrates the stability of the scale (Pasquali, 2010). However, upon acknowledging the essentially exploratory nature of the statistical technique used *a priori* (exploratory factor analysis by means of the ULS method), we decided to perform a second study to confirm the nature of the scale, this time through structural equation modeling/confirmatory factor analysis (goodness-of-fit), to test the model fit to the data corresponding to the factor structure of the EBE Scale, as developed in Study 1.

Study 2

Verification of the factor structure of the EBE Scale: Model goodness-of-fit analysis

Method

Participants

A total of 200 undergraduate students at public and private universities in different towns in the state of Paraíba, aged 16 to 52 years old ($M = 24.82$; $SD = 6.97$) and mostly female (63.0%), participated in this study. Most participants were in the Physical Therapy (32.0%), Psychology (29.0%), Mathematics (18.0%) or Civil Engineering (10.0%) programs. Approximately 91.7% of the sample reported not having close contact with an individual with schizophrenia. The participants were selected by non-probabilistic convenience sampling.

Instrument

The instrument used was the EBE Scale, exploratorily developed in Study 1, composed of items that analyze benevolence toward schizophrenia. The items are answered on a Likert scale ranging from (1) “fully disagree” to (5) “fully agree.”

The participants also answered questions about their sex, age, program and whether they had close contact with someone with schizophrenia. These questions served to characterize the sample.

Ethical issues and data collection procedure

The ethical requirements and data collection procedures were the same as in Study 1.

Data analysis

The program AMOS was used to perform confirmatory factor analysis considering the covariance matrix and using the ULS method as an estimator, because factor analyses including estimators based on polychoric correlations tend to more often identify the correct number of factors underlying the data, thus resulting in more consistent parametric estimates of factor loadings and correlations among factors (Asún et al., 2016; Holgado-Tello et al., 2010; Lara, 2014). Missing data were replaced by the mean score on each item. Indicators recommended in the literature were used to test the model fit (Dantas, 2014; Garson, 2012). Composite factor reliability was also tested, which indicates whether a given factor consistently measures a construct; the limit of acceptance is 0.70, according to De Bem, Lanzer, Tambosi Filho, Sanchez, & Bernardi Junior (2011).

Results and Partial Discussion

Confirmatory factor analysis (investigation of goodness-of-fit) was performed to test various EBE Scale structures. We tested the one-factor structure detected in the previous study; the goodness-of-fit indicators

obtained were acceptable (Hair, Black, Babin, Anderson, & Tatham, 2009): [$\chi^2/df = 1.52$, Goodness-of-Fit Index (GFI) = 0.97, Comparative Fit Index (CFI) = 0.98, Tucker-Lewis Index (TLI) = 0.97, Root Mean Square Error of Approximation (RMSEA) (90% CI = 0.01–0.09) = 0.05, Consistent Akaike Information Criterion (CAIC) = 109.451 and Expected Cross-Validation Index (ECVI) = 0.248]. All loadings (λ , lambda) differed significantly from zero ($\lambda \neq 0$; $z > 1.96$, $p < 0.05$) varying from 0.35 to 0.74, with a mean loading of 0.63. Mean loading values greater than 0.5 evidence the construct validity of an instrument, as they indicate that the items do reflect this factor and saturate it very strongly (Hair et al., 2009; Marôco, 2014). These values are depicted in Figure 2.

The value for composite reliability was 0.83, which denotes stability of the one-dimensional model including all the items, as the acceptance limit is 0.7 (Hair et al., 2009; Marôco, 2014). However, we call attention to the standardized loading value for the factor of item #01 (0.31), which is below the overall mean obtained, suggesting that the hypothesized dimensional representation for this item is inadequate.

We tested the one-dimensional model with six items, following the exclusion of item #01; the resulting goodness-of-fit indicators were acceptable [$\chi^2/df = 19.44$, GFI = 0.97, CFI = 0.97, TLI = 0.95, RMSEA (90% CI = 0.03–0.12) = 0.07, CAIC = 95.02 and ECVI = 0.218]. We performed the χ^2 difference test between the two tested models to investigate whether there was a significant difference in their quality of fit. The result, $\Delta \chi^2 (5) = 1.83$, $p > 0.05$, indicates there was no significant difference between the models with seven or six (following exclusion of item #01) items.

Therefore, the results indicate that although item #01 exhibited poorer performance compared to all others, its exclusion did not result in gains for the analyzed scale. In contrast, all the indicators pointed to some, albeit nonsignificant, loss in the goodness-of-fit. Since the indicators of goodness-of-fit exhibited acceptable values, we believe that the one-factor, seven-item model is viable, with the caveat that this is a pilot version whose structure might be improved upon in future studies, such as through the inclusion of negative items and further review of the items proposed in this study.

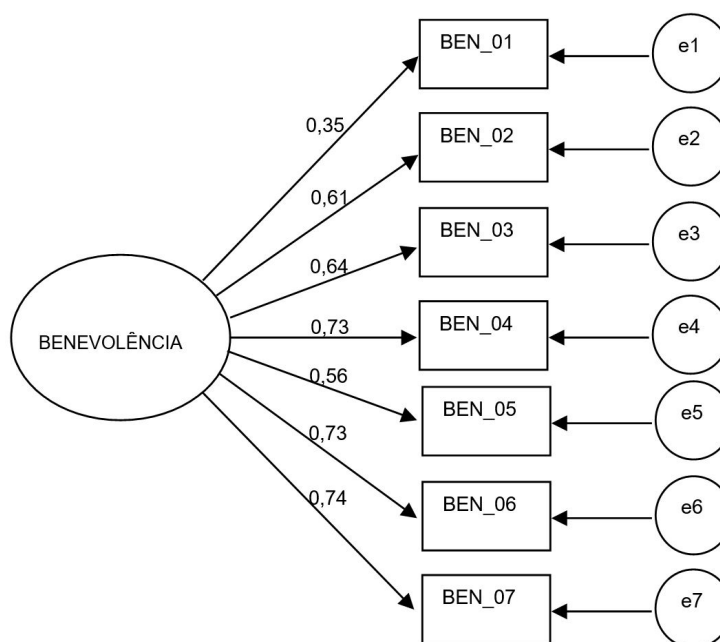


Figure 2. Factor structure of the one-factor model and its corresponding loadings.

It is worth noting that retaining item #01 in the scale confers greater variability to the behavioral representation of the construct and thus increases the probability of response variability, which is relevant for construct measurement (Pasquali, 2008). The results of this study indicate that the instrument is adequate and serves to measure the intended phenomenon.

General Discussion

The study of prejudice is one of the main fields of research in applied social psychology, particularly at the present time, as this phenomenon can be detected in several different contexts, but in a subtle form, which hinders its study and measurement. This situation led researchers in this field to address this subject again, especially the development and adaptation of measurement instruments that might facilitate research and intervention in this area.

Given this scenario, we performed two studies: one to construct and seek evidence for the validity of the EBE Scale, and the second to verify the goodness-of-fit of the factor structure of the scale constructed in the first study. Both aims were accomplished, resulting in a scale with acceptable and satisfactory psychometric properties. Therefore, the EBE Scale might be used in correlational and experimental studies as a single instrument or together with other attitude and behavior scales.

The present study brings light into the investigation of prejudice against individuals with severe mental disorders, especially of subtle prejudice against schizophrenia, through the development of a Brazilian instrument with adequate psychometric properties. Future studies may seek to adapt this scale to other contexts, considering the relevance of studies on prejudice for social inclusion/exclusion measurement, particularly given current social inclusion policies and the Psychiatric Reform in Brazil.

Final Considerations

Benevolence is an expression of prejudice that does not diminish its target directly and openly but covertly. Individuals who adopt this attitude resort to seemingly correct, nonprejudiced and socially acceptable justifications to discriminate against a given social group. Thus, they bypass antiprejudice norms and continue legitimizing discrimination against individuals—in the specific case of the present study, against individuals with schizophrenia.

Considering the relevance of studying subtle prejudice against schizophrenia and of the development of the EBE Scale, we call attention to the fact that this scale exhibits some unique features compared to others. First, it specifically targets prejudice against schizophrenia, whereas all other scales address mental disorders in general; therefore, it might be very useful to investigators who study this condition in particular. In addition, the EBE Scale focuses exclusively on benevolence and considers aspects of childishness and exaggerated dependence involved with this attitude, which are not addressed in any of the other scales that measure this construct. Finally, this instrument is more parsimonious, as it comprises just six items comprehensible to university students, in addition to exhibiting satisfactory internal consistency and construct validity.

As possible limitations, the samples were selected by means of convenience sampling and comprised university students only, which does not allow generalization of the results. In addition, the samples in both studies included higher proportions of women. Nevertheless, the validity of the data cannot be dismissed, as two separate studies confirmed the factor structure of the scale, indicating that it is a satisfactory instrument for assessing benevolence toward schizophrenia in the Brazilian context. Future replication studies with other samples more satisfactorily representative of the Brazilian population may corroborate the applicability of this instrument or may also include other instruments able to measure attitudes toward schizophrenia to investigate their mutual correlation.

Contributors

J.R.F. MELO responsible for the study Idea and design, data collection, discussion and analysis and manuscript writing. S.C. MACIEL responsible for the study idea and design, data discussion and analysis, manuscript writing and final review. M.X. OLIVEIRA helped in data analysis and interpretation. L.F. CAMINO responsible for the study idea design and final manuscript review. T.A. CARVALHO helped in data analysis and interpretation and final manuscript review.

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