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Conception and validation of the Behavioral Intentions Scale of Organizational Citizenship (BISOC)

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Abstract

This study aimed to construct and validate the Behavioral Intentions of Organizational Citizenship Scale (BISOC). Organizational citizenship consists of measures of voluntary behaviors, which are beneficial to organizations and are not explicit in employment contracts. To investigate the psychometric properties of BISOC, we selected 767 employees in different cities from the states of Bahia and Pernambuco (Brazil). The validation procedures adopted, which used techniques from both Classical Test Theory and Item Response Theory, showed that the BISOC has a unidimensional structure. From the initial set of 42 items, 35 items met the validation criteria. By presenting suitable psychometric parameters, BISOC is the first measure of organizational citizenship behaviors developed and validated to assess behavioral intentions.

Keywords: Organizational citizenship, Scale of behavioral intentions, Construct validity, Rasch model

Background

Interest in the study of organizational behavior has increased since the 1980's. The main concern of these studies is to determine the reasons why some employees perform activities that are not part of the job description whereas others perform only duties described in their employment contract. These characteristics are referred to as "Organizational Citizenship Behavior (OCB)" or just "citizenship behavior" or "organizational citizenship".

Citizenship behavior can be defined as the expression of beneficial and voluntary behavior towards the organization that are beyond the formal obligations and are not directly recognized by the formal reward system (Organ 1988). Although Organ's definition is straightforward, there is no consensual definition of organizational citizenship thus far. There are three potential reasons for that: 1) The polysemy of citizenship behavior and the lack of agreement regarding the dimensionality of the construct, 2) The lack of a measurement of OCB that takes into account the complexity of its dimensional structure; several instruments have been developed for different fields, such as the environment (Boiral and Paillé 2012), and virtual teams (Robertson 2013), but none of them target behavioral intentions, and finally, 3) The incompatibility between the definition of OCB and the types of scales used to assess it; OCB is defined as the employees' expressed behaviors, but it is usually measured from purely attitudinal scale items.

Building on these problems, this study aimed to develop and validate an instrument based upon a broad review of the dimensionality of OCB and that allowed one to measure the construct by focusing on the behavioral component. This instrument, called Behavioral Intentions Scale of Organizational Citizenship (BISOC), differs from others currently available in the literature as it measures behavioral intentions, which are better predictors of behavior than attitudes (Ajzen and Fishbein 1977). The development of the BISOC brings to the field of Organizational Behavior a new perspective on the concept and measurement of OCB and can therefore contribute to the theoretical discussion that pervades the research on this construct.

The dimensionality of citizenship behavior

The dimensions (also known as factors or components) that compose OCBs have been investigated in different ways. There are some studies which report only one

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dimension (Bateman and Organ 1983; Hoffman et al. 2007; LePine et al. 2002), and others that include up to five dimensions (Podsakoff et al. 1990; Ramasamy and Thamaraiselvan 2011), such as altruism, conscientiousness, sportsmanship, courtesy and civic virtue.

In order to systematize the knowledge concerning the dimensionality of the OCB and to collapse it into fewer dimensions, we carried out a thorough literature review of various validated measures of OCB. Although the findings revealed that up to thirty different factors and more than 280 descriptors have been reported in literature, four macro-dimensions of citizenship behavior are common to most of them. The first one is *Voluntarism*, which includes: voluntary actions towards a co-worker when they have problems related to work, capability to deal with interpersonal conflicts in order to keep a peaceful work environment, encouragement and positive reinforcement of co-workers' achievements, and finally, actions that lead to the aversion of problems, such as planning and preventing. Podsakoff et al. (2000); Organ et al. (2006) state that voluntarism conceptually overlap with other dimensions of citizenship behavior, such as courtesy (Podsakoff et al. 1990), altruism (Farh et al. 1997; Podsakoff et al. 1990; Smith et al. 1983; Organ 1988), pacifying (Podsakoff and Mackenzie 1994), and cheerleading or encouraging (Podsakoff and Mackenzie 1994). The following dimensions could also be identified in the literature as being associated with the voluntarism dimension of citizenship behavior: interpersonal help (Moorman and Blakely 1995), interpersonal harmony (Rego 1999) and interpersonal facilitation (Van Scotter and Motowidlo 1996).

The second macro-dimension, *Individual Initiative*, includes: communication in work environment, actions to improve individual and group performance, being politically engaged in the organization, expressing opinions and encouraging co-workers to do the same, and voluntary actions of creativity and innovation, ranging from small actions to significant interventions. It is also conceptually associated with factors, such as organizational participation (Van Dyne et al. 1994), creative suggestions to the system (Siqueira 1995; Porto and Tamayo 2003), voice (Van Dyne and LePine 1998), initiative (Rego 1999), and civic virtue (Graham JW. *Organizational citizenship behavior: Construct redefinition, operationalization, and validation.* Loyola University of Chicago; 1989. Unpublished work paper), (Organ 1988; Podsakoff et al. 1990; Podsakoff and MacKenzie 1994).

Extra Commitment is the third macro-dimension and describes employees' commitment and dedication towards the organization. It includes: working extra shifts, working more than the required hours, participating in events considered relevant when there is no clear obligation to do so, spending time studying topics that can improve their own performance at work, and reading the organization newsletter to be up to date with possible issues inside the workplace. A conceptual overlap in Extra Commitment can be found in the literature with regard to extra-role behavior (Pearce and Gregersen 1991), functional participation (Van Dyne et al. 1994), dedication to work (Van Scotter and Motowidlo 1996), personal industry (Moorman and Blakely 1995), and conscientiousness (Organ 1988; Podsakoff et al. 1990).

The fourth macro-dimension is *Organizational Defense*. This factor defines: actions, such as voluntarily promoting the organization's image out of the work environment, defending the organization against external threats, and contributing to the improvement of the organization's reputation. Organizational Defense is closely related to the dimensions of protection of organization resources (Borman and Motowidlo 1997; Farh et al. 1997; Siqueira 1995; Porto and Tamayo 2003; Rego 1999) and loyal supporter (Moorman and Blakely 1995).

The four aforementioned macro-dimensions would constitute a more accurate and parsimonious model of citizenship behavior, which can therefore help reduce the conceptual fragmentation and the lack of a clear definition of organizational citizenship behavior. Most of the scales available to measure OCB utilize attitudinal scale items, which describe someone's feeling rather than his or her behavioral intention toward and evaluation of some object or event. If, for instance, the attitudinal item "I like sharing new ideas with my colleagues" is administered to some workers who chose the option "strongly agree" in a five-point Likert scale, the idea behind "like sharing" does not necessarily imply that these workers actually have the intention to share their ideas since this might even be motivating, but in practice this could represent an additional work in which they are not willing to do so. Conversely, using the same example above for a behavioral intention item, people would be expected to respond to an item similarly to this one: "If I had new ideas, I would share them with my colleagues". In this case, not only the implicit attitude of like/dislike is measured, but also the behavioral intention that can effectively leads someone to make a decision. According to Ajzen and Fishbein (1977), attitudes are less strongly correlated to actual behaviors than behavioral intentions are. That is, attitudes and behaviors are articulated in the *behavioral intention* component, which can be used to predict future actions. Under the Theory of Reasoned Action (TRA), these authors devised the general principles of this perspective from which the Behavioral Intentions Scale of Organizational Citizenship (BISOC) was developed and validated. BISOC is therefore the first scale developed to fill the gap between the attitudinal and behavioral approaches of measuring organizational citizenship.

Methods

Participants

The sample consisted of 862 employees, which were interviewed using convenience sampling. From this initial sample, 95 cases were deleted due to their score above 12 on the Validity Scale (more details in the next section), and the remaining 767 employees (60.0 % males and 40.0 % females) were included in the study. The average age was 30.2 years old (SD = 11.7) and most of the employees had a high school degree (73.7 %), whereas 16.1 % had a bachelor degree. A total of 46.5 % of the participants are single and 42.1 % informed they are married. Employees who reported not having children accounted for 52.2 % of the sample.

Most of the employees reported a monthly income that ranged from 546 to 1,635 Brazilian Reais (R$) and represented 55.8 % of the sample. The average working time in the same job/position was 2.8 years (SD = 3.48). Managers comprised 22.6 % of the total sample, employees/workers 63.4, and 14 % were self-employed.

The test results were gathered from different sectors of the economy: primary (31.1 %), secondary (14.3 %), tertiary (48.6 %), and others (6.0 %). Most of the cases were collected in the state of Bahia, in the cities of Vitória da Conquista (33.0 %), Juazeiro (25.4 %), Luís Eduardo Magalhães (13.1 %), Barreiras (6.4 %) and Salvador (4.7 %). Cases were also collected in the state of Pernambuco, in the city of Petrolina (17.4 %).

Regarding the organizations investigated, 34.8 % have more than 500 employees and 21.1 % have from 250 to 499 employees. In the sample, 81.2 % of the companies are private, whereas only 15.6 % are public. Data were collected in 2012 from four private companies. All companies are based in the states of Bahia and Pernambuco (Brazil).

Instruments

The development of the Behavioral Intentions Scale of Organizational Citizenship was based on a comprehensive literature review, which listed more than 280 descriptors divided into four macro-dimensions. The first version of the scale comprised 59 items that were initially submitted to judge analysis. We gathered six experts in OCB to evaluate whether the items were related to the construct and to identify to which dimension each item belonged.

After the rater analysis, 17 items were excluded from the scale (three items for not representing the construct adequately, and 14 items for not meeting the required agreement level of 80 % among the experts). The remaining 42 items were sent to semantic analysis (Pasquali 2003), and the results from this analysis were combined with a critical review of the items in order to improve the quality of the scale. Finally, the operational version of the scale was created with 42 items, split up into four dimensions: 15 items to measure Voluntarism, nine items to Individual Initiative, 15 items to Extra Commitment, and three items to Organizational Defense.

As was mentioned above, the development of the scale was based on the Theory of Reasoned Action (TRA). Therefore, each item was developed to measure behavioral intentions. The items were designed as a problem-solving situation in which the subject had to decide between two mutually exclusive behaviors. These two options were separated by a semantic differential scale (Osgood et al. 1957) with seven intervals of response. Figure 1 presents an example of one of the items of the BISOC.

In addition to BISOC items, three more items were added to the scale. They composed the Validity scale, which evaluates the consistency of the responses to BISOC. In other words, it verifies whether the subjects responded to the scale with attention or if the subjects understood the task presented in the item. For a protocol to be considered valid, the sum of the responses on the Validity Scale must be less than or equal to 12, corresponding to all of the three items being scored as at most as four on the seven-point Osgood scale. The higher the total score on the Validity Scale, the stronger the concordance with the unrealistic situations presented.

The last instrument used was a Sociodemographic questionnaire that investigated some personal and professional characteristics, such as sex, age, marital status, time of service and organization size, among others.

Data collection procedures

All data were collected in the participating organizations during working hours. The questionnaire is self-explanatory, but a research agent previously trained to administer the instrument and answer any queries supervised the whole administration process.

The School of Nursing Ethics Committee at the Federal University of Bahia reviewed and approved this research. Therefore, all methods in this study followed the

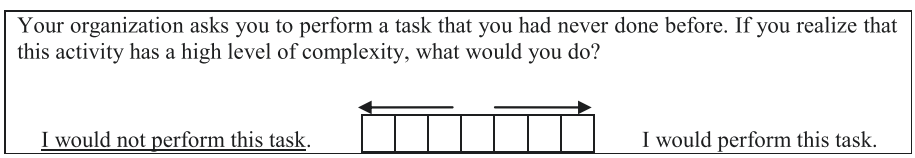

Fig. 1 Example of a BISOC item

requirements and instructions of the Resolution 196/96 of the Brazilian National Health Council (1996).

Data analysis procedures

In order to study the construct validity of BISOC, we applied different techniques from Classical Test Theory (CTT) and Item Response Theory (IRT). The first step to take before carrying out the analysis was to investigate through CTT if the individual's responses were evenly distributed across the scale intervals. As stated by Sisto et al. (2006), an interval with less than 15 % of responses may suggest that it was not chosen by the majority of the respondents and could be therefore withdrawn or collapsed with another interval. Based on the principles of the IRT, the intervals of a scale should be analyzed in terms of the order of their thresholds, which are the boundaries between categories. Disordered thresholds may represent a violation of the measurement construct since that a higher interval (e.g., 5-point) cannot assume the position of a lower interval (e.g., 4-point) in the latent trait scale. Similarly, if one of the intervals overlaps with others this means that the scale has probably been using more intervals than necessary to measure the construct.

To investigate whether one of these aforementioned situations holds true, we used the Rating Scale Model (Andrich 1978) to test if the category response curves were disordered. The results showed a very low variability across the intervals, with the category 1 overlapping the categories 2, 3 and part of the 4, and the category 7 also overlapping part of the category 4, in addition to the categories 6 and 5. Since the individual's responses are polarized on the extreme intervals of the scale, a dichotomous scale was defined accordingly. The scale was then summarized into two categories: 1 – "Manifest OCB" and 2 – "Do not manifest OCB".

After the scale has been set in two main categories, a Principal Component Analysis was performed based on the CCT assumptions, using the tetrachoric correlation among the items of BISOC. The aim of this analysis was to identify the factor structure that best describes the explained variance of the construct. Authors advise that the minimum value of factor loadings for interval scales should be greater than .30, given that the sample has 350 subjects (Hair et al. 2005). However, in this study we utilized a minimum value of .40 due to the dichotomization process and the resulting reduction of the scale intervals.

Under the assumptions of the IRT, a Full Information Factor Analysis (FIFA) was performed. This analysis allowed going further into the examination of the correlation matrix by investigating the individual's patterns of responses. After that, the items were examined taking into account the three-parameter logistic model (a - discrimination, b - difficulty, and c - pseudo-guessing). An item thought to be discriminant should have a score greater than 0.35. Items with an average difficulty level are those in the Range of Validity determined by the Test Information Curve. The more the pseudo-guess parameter approaches zero, the better the quality of the measurement.

With the purpose of verifying the pattern of unexpected item responses, a residual analysis was performed using Rasch model (one-parameter logistic model). In this analysis the parameters evaluated were the infit mean square, which attenuate the importance of extreme residuals, and the outfit mean square, which is useful for the detection of extreme residuals (outliers) with misfit away from the latent trait of the subject. The fit values (infit and outfit) for samples with less than 1,000 subjects must be between 0.70 (presence of responses in the unexpected direction) and 1.30 (item more discriminant than the predicted by the Rasch Model (Bond and Fox 2007).

The reliability was finally examined with two methods. First, the Test Information Function (TIF) was calculated based on the sum of the information function for each item. The TIF gives the Test Information Curve that indicates the lower and upper bounds within the theta levels are valid and those in which they are not (Pasquali 2003). The quality of the item information increases when: a) the parameter b is close to theta, b) the parameter a presents high values, and c) the parameter c is close to zero. According to Hambleton (2004), the TIF value must be equal to or greater than 10 so that it guarantees an adequate level of precision in the measurement. Finally, the Kuder-Richardson (KR) coefficient was also calculated. Hair et al. (2005) suggest that a value of KR equal to or greater than .70 can be considered satisfactory.

Results and discussion

To investigate the factor structure of BISOC, a principal component analysis was initially performed to test the four-factor theoretical hypothesis. This factor solution was compared to a number of other competing models (three-, two-, and one-factor). The model that showed a better fit was the unidimensional model. This decision was based on the following criteria: 1) High eigenvalue for the first factor when compared with the second. The eigenvalue for the first factor was 20.165, whereas for the second factor was 1.619, followed by 1.263 and 1.202 for the third and fourth factors, respectively. The screeplot showed an inflexion point on the factor 2, and the differences in the explained variances for this factor were not significant, 2) After testing the unidimensionality using oblique rotation (*Promax*) of the tetrachoric intercorrelation matrix, a strong correlation was found between the first factor and a hypothetical second-order factor ($r = .70$; $p < .01$). This demonstrates that if a second factor existed, it would be so strongly correlated with the first dimension that they

would show a conceptual overlap, which is sometimes called second-order factor, 3) The Goodness-of-Fit Index (GFI) was 0.9875, above the indicated 0.90 (Weston and Gore 2006). Under the CTT, no items had factor loadings below .40.

The FIFA (IRT) findings were similar to the results obtained from the factor analysis using tetrachoric correlation, which supports the decision towards a unidimensional structure. Only seven items presented factor loadings below .40. Three of them belonged to the former macro-dimension of Extra Commitment, three to Voluntarism and one to Organizational Defence. The percentage of explained variance for the first factor was 36.94 %, followed by 5.24 % for the second factor, 4.33 and 2.23 % for the third and fourth factors, respectively.

Considering the calibration of the items from the three-parameter logistic model, four items presented estimates different from expected. The first item of the factor Voluntarism presented a difficulty level below −1.62, which is the lower bound of the range of validity, depicted in Fig. 2. The item 21 of the dimension Extra Commitment presented a discrimination value below 0.35. The items 5 and 35 were not calibrated due to their negative slopes (below −0.15).

The residual analysis calculated from the Rasch Model showed that the *infit* mean square was 1.00 (SD = 0.21) and the outfit mean square was 0.90 (SD = 0.35). This result indicates that most of the items were answered accordingly to the expected, which is the value of 1.00. The infit per item indicated that the range lies between 0.71 and 1.92, with four items above 1.30 (overfit). Items with values below 0.70 (underfit) were not found. For the outfit values, on the other hand, the items lie in the range between 0.46 and 2.30, with five items with overfit and 12 with underfit.

Figure 3 presents the item-person map, which graphically shows the estimates of OCB (θ) in relation to different levels of item difficulties, that is, how difficult it would be for a person with a specific θ to agree with each item of the scale, given different levels of OCB. The difficulty level is illustrated in a logit scale, which can vary from −4 to +4, including 99.99 % of the cases. The left side in Fig. 3 represents the θ of the subjects, that is, the levels of organizational citizenship. The right side demonstrates the items according to their difficulty. The closer the theta of the subjects is to the items difficulty level, the better the model fit is and the greater the information function provided by the items is. Therefore, if the average difficulty of the items is, for instance, 0.00, the average theta for the subjects is expected to be close to this value.

In the item-person map, the misfit of some items can be identified considering that the difficulty mean is 0.00 (SD = 0.66) and the theta mean is 1.73 (SD = 1.40), which suggests that most of the subjects easily accepted the OCB intentions. On the map, the mean values are represented by the letter "M," one standard deviation with the letter "S," and two standard deviations with the letter "T." The items 5, 6, 9, 11, 12 and 21, which already demonstrated low factor loadings for the FIFA, are close to the theta average, but distant from the average level of difficulty of the other items. Item 1 is distant from both the mean level of difficulty of the items and the mean of the subjects, which confirms its "weak" estimates obtained from the three-parameter logistic model.

Item 35 of the macro-dimension Organizational Defense presented a negative slope. However, considering that its other psychometric parameters meet the expected standards, we decided to keep the item. It was also detected that 12 items presented underfit for the outfit, but for the same reasons they were kept. The sensibility of the outfit was also taken into account to detect extreme values of residuals, as can be noted in the item-person map through the Rasch model in the Winsteps.

The values of TIF and KR were investigatedto evaluate the reliability of the scale. The mean TIF for the 42 items was 11.04, above the indicated value of 10.0 (Hambleton 2004), reaching maximum information at 14.95.

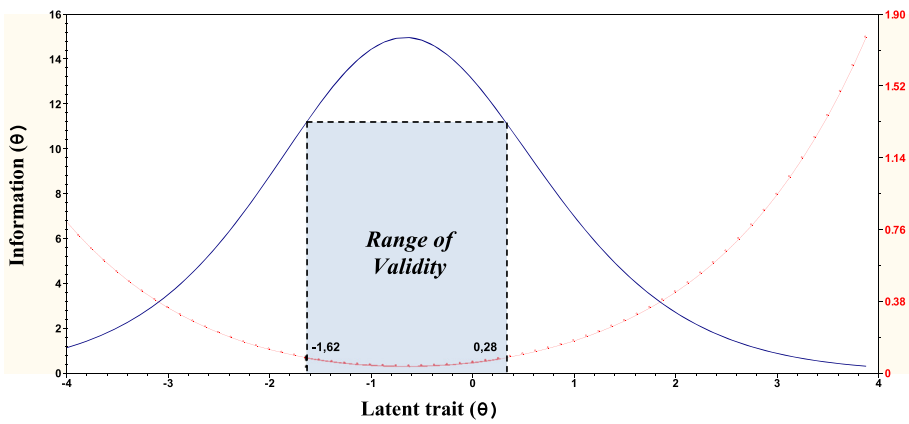

Fig. 2 Range of validity of BISOC with the lower and upper bounds for item difficulty

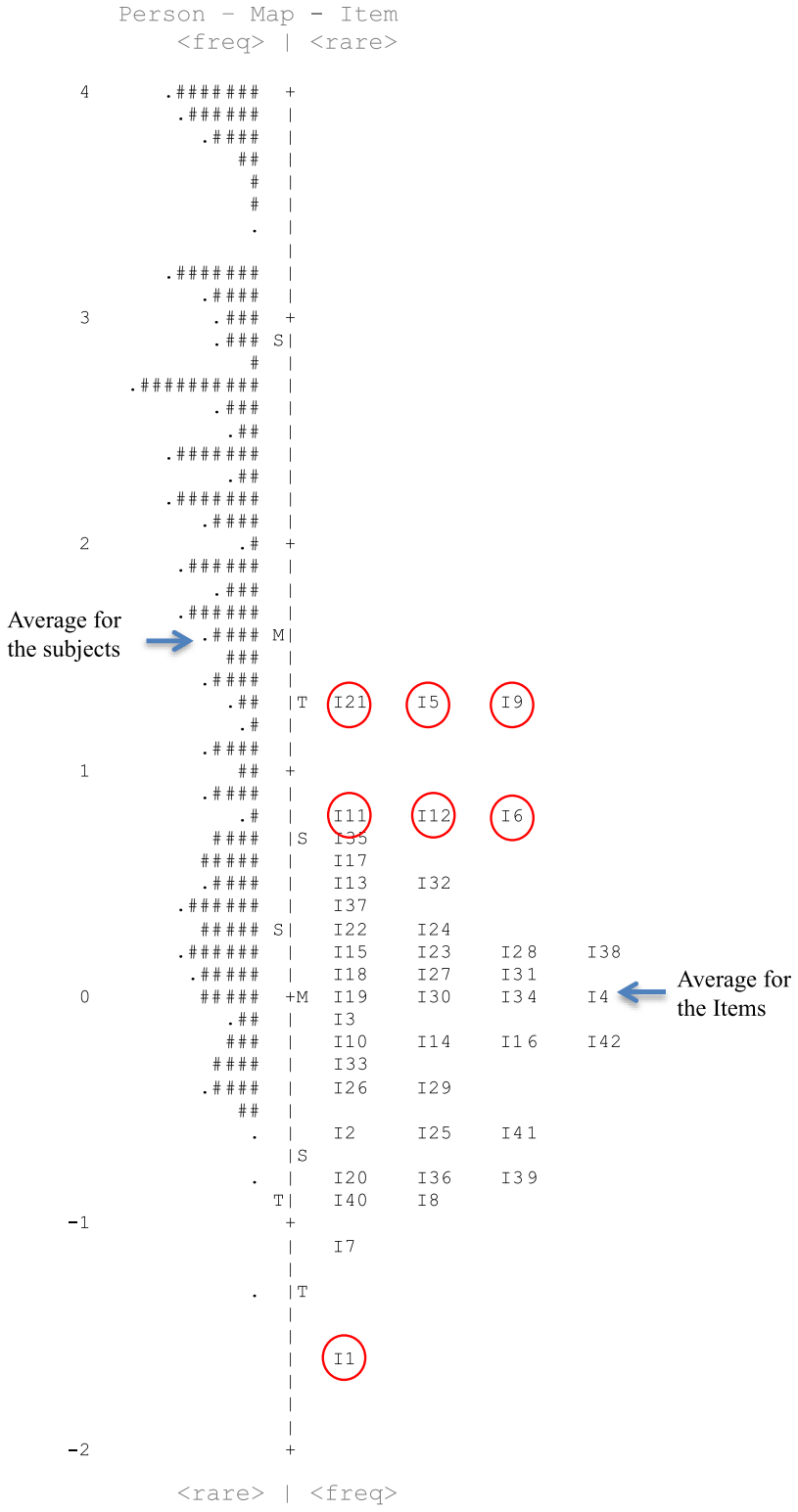

Fig. 3 Item Person Map of BISOC

Four items were excluded from the dimension Voluntarism for presenting overfit in either the infit or outfit measures, and/or factor loadings less than .30. From Extra Commitment dimension, two items were excluded due to misfits between theta value and difficulty on the Item-Person map. One of the items also presented values close to 1.30 for the infit and outfit, and negative discrimination. Finally, one item was deleted from the dimension Organizational Defense for also demonstrating misfits between theta value and difficulty on the Item-Person map, infit and outfit values close to 1.30, and factor loading less than .30. A total of 7 items were excluded from the final version of BISOC.

After dropping the items, the mean information improves to a value of 12.20 and reaches the maximum at 18.25. The calculated KR was 0.927 for the 42 items and 0.924 for 35 items, which demonstrates strong internal consistency. After the validation studies were conducted, the final version of BISOC was composed of a unidimensional scale with 35 items, which present the best psychometrics properties to measure citizenship behavior.

Conclusion

The Behavioral Intentions Scale of Organizational Citizenship (BISOC) was developed with the aim of creating an instrument that allows for the measurement of behavioral intentions of organizational citizenship. The development of BISOC was based on a systematic literature review of the definitions and previous measures constructed to assess the construct, which finally unveiled four macro-dimensions. In spite of this, the empirical results showed that the unidimensional model was considered the most appropriate to describe the data collected.

Citizenship behavior, which can be associated with characteristics such as cooperation, voluntarism, initiative, participation, commitment and organizational defense, can be understood as a homogeneous construct reflecting a more comprehensive meaning of what an organizational citizen is. This means that being an organizational citizen would involve establishing a set of standards of conduct aimed not only to organizational effectiveness, but also to keep the balance and quality of social relations established within the context of work. Thus, organizational citizenship would approach the most modern notion of civic citizenship, described by Janoski and Gran (2002) as the passive and active participation of individuals in a nation-state, with universal rights and obligations in a specified level of equality.

Comparing the citizenship relations established between the worker and their organization with those held between members of civil society and the nation-state, it is noticeable that inside the organization people tend to feel the necessity of being proactive, participating in the organization, performing duties and contributing with the well-being of co-workers. However, at the same time individuals have to follow norms and rules determined by the institution in order to enforce their rights as employees/citizens. The unidimensionality of OCB lies precisely in this cohesive relationship between the four macro-dimensions, reflected in the way OCB is managed and issued by the subjects. Previous studies also started from a multidimensional theoretical framework to assess the organizational citizenship, but ended up finding the same unidimensional structure for the construct (Bateman and Organ 1983; LePine et al. 2002; Hoffman et al. 2007; Pearce and Gregersen 1991).

Although organizational citizenship behaviors have been initially evaluated in this study from a graduated semantic differential scale, we have an idea of why the subjects have not explored all the scale intervals. This hypothesis is related to the fact that organizational citizenship, measured as behavioral intentions, would be closer to the actual behaviors in which the subject could hardly find different levels of intensity for making decisions. For instance, the item 36 proposes the following situation: "You have your daily activities to perform and one of you co-workers asks for your help in his/her activities. What would you do?" In answering this question, the individual must choose, based on the graduated scale, to either adjust his or her schedule to help colleagues, or not help them at all. Nevertheless, although the graduated scale had been previously proposed, choosing whether or not to adjust one's schedule tends to be a dichotomized decision (adjust/not adjust the schedule).

Although BISOC proved to be valid and internally consistent, possible limitations of this study can be outlined. First of all, the research sample was drawn in order to increase the power of generalization of the measure, with the participation of various private and public organizations, from different economic sectors, and workers in different occupations. However, it is noteworthy that BISOC was validated in a particular professional and cultural context, so that there may be other contexts in which the instrument provides a different factor structure. As Farh et al. (1997) pointed out on their study of citizenship behaviors in Eastern culture, organizational citizenship has contextual and cultural sources that may influence the dimensionality of the construct in different cultures. Thus, for a cross-cultural validation it is important that samples be extended to geographical regions that have not yet been investigated.

The validation process of BISOC has not tested the scale against actual behavioral data, meaning that further studies should evaluate whether the intentions indeed predict employees' behavior. Therefore, it is advisable to verify whether supervisors or colleagues agree with other participants' self-reports in future research. Although this can be accounted for as a limitation in the study, the

authors believe there is a number of evidence suggesting that behavior can be better predicted by behavioral intentions (Greaves et al. 2013; Ajzen 2011).

With the development and validation of BISOC we sought to bring theoretical and empirical contributions to the research on the field of Organizational Behavior. In the theoretical view, this study sheds light on the dimensionality and consequently on the definition of organizational citizenship. In the professional view, the BISOC represents a reliable tool for measuring the organizational citizenship behaviors in different occupational settings.

Competing interests

The authors declare that they have no competing interests.

Authorrs' contributions

All authors contributed equally for this paper. Furthermore, all authors read and approved the final manuscript.

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