



# Do people see the way things are as they should be? Measuring the individual differences in system justification

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## Abstract

System justification theory contends that people are motivated to consider the social arrangements as just, legitimate and necessary. The adequate assessment of individual differences regarding this motivation is a critical issue in this field, especially in a cultural context of profound social inequalities like Brazil. We addressed this issue by proposing an adapted and modified version of the General System Justification Scale (GSJS). In Study 1, we explored the content validity of the GSJS through expert analysis. In Study 2 ( $n = 305$ ), we conducted exploratory factor analysis and found a single-factor structure. In Study 3 ( $n = 307$ ), we confirmed this factorial structure. In Study 4 ( $n = 227$ ), we estimated the convergent-discriminating and incremental validity of the SJS by comparing it with correlated constructs. Finally, in Study 5 ( $n = 100$ ), we experimentally manipulated a news story about a high (vs. low) threat to the Brazilian system, and observed the predictive validity of the GSJS. In general, the results showed that the new version of the GSJS is a valid and reliable measure. Furthermore, they suggest the new version of the GSJS is a useful tool to measure individual differences in justification of social inequalities in a context of deep social disparities.

**Keywords** System justification · Measures · Social inequality · Status quo · Perception of justice

## Introduction

Brazil is represented in the popular imagination as a country with many natural resources (e.g., diversity of Amazonian fauna and flora), affable culture (e.g., inferred from the value given to carnival festivities) and good performance in some collective sports (e.g., football, or soccer, and volleyball) (Da Matta, 1986). However, it is also recognized as having one of the largest levels of socioeconomic inequality in the world (World Inequality Lab, 2018), where the wealth accumulated by the richest 1% is equivalent to that of the 100 million poorest people in the country. In this context, it is estimated that an ordinary worker needs work for 19 years uninterruptedly, without spending a cent during this period, to accumulate what a rich person earns in a month (IBGE, 2019). Undoubtedly, socioeconomic inequality is part of the

reality of the Brazilian population, and even though it is understood as the root of most other problems (Moreira, 2019), it ironically causes strong resistance to social change (Jost, 2015). This resistance is rooted in the history of the cultural formation of the country, which has not yet been able to completely break with the slaveholding structure regulating social relations (Santos & Pereira, 2021). The social resistance to change of the Brazilian status quo may indicate that the slaveholding system that regulates social relations in Brazil is being legitimized by the population. This means that many Brazilians are motivated to justify the social system in which they live as being fair, legitimate and necessary, perceiving the social and economic reality in which they live as natural and immutable. That is, there are signs that Brazilians are motivated to justify the social system in which they live despite the great disparities.

This system justification is manifested in different ways in Brazil. A more illustrative example of this phenomenon occurred in presidential election of 2018. The voters massively supported and elected the candidate who more strongly defended conservation of the national status quo by promising to reinforce the social hierarchies based on racial, homophobic, misogynistic and classist criteria, largely as a

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backlash against the huge corruption scandals under previous administrations and high violent crime rates (Bittencourt, 2020). In contrast, the voters strongly opposed any candidate that proposed change in the system of social hierarchies (Almeida, 2019; Franco, 2018). This example suggests the presence of a pattern of behavior that is consistent with the hypothesis of a motivation for system justification (Jost & Banaji, 1994; Jost & van der Toorn, 2012). The question we raise involves knowing how to measure individual differences in system justification in a social context characterized by extreme social inequalities, as observed in Brazil. This issue is crucial because the instruments available were not designed to measure phenomenon in such socially unequal environments. To address this issue, we conducted five studies aiming to develop and validate a measure of individual differences regarding system justification.

### System Justification Theory

The system justification theory (SJT) proposes that individuals are motivated to justify and defend the social, political and economic system as fair, legitimate and necessary (Jost et al., 2019). The system justification is defined as “the psychological process by which existing social arrangements are legitimized, even at the expense of personal and group interest” (Jost & Banaji, 1994, p. 2). According to this theory, people are motivated to justify individual and collective phenomena through three different justifications or motives, specifically: the “ego justification” (e.g., Freud, 1974), which motivates people to justify their actions to maintain positive self-image; the “group justification” (e.g., Tajfel & Turner, 1979), which motivates people to justify the actions and privileges of their groups to maintain a positive and distinctive ingroup social identity; and the “system justification” (e.g., Jost & van der Toorn, 2012), a psychological motivation that leads people to seek explanations/justifications about how the social system is organized, which can legitimize social arrangements as natural and immutable. Although the three types of justification are interrelated, the system justification motive focuses on how people legitimize the status quo, and this has been explored in various studies in social psychology (for a review, see Jost, 2019).

The system justification tends to work differently for socially advantaged and disadvantaged group members (Jost & Hunyady, 2002). For advantaged social groups (e.g., Western, Educated, Industrialized, Rich and Democratic – WEIRD), the system justification is aligned with the preservation of positive self-image, which is consistent with the motivation for promoting positive distinctiveness (e.g., Tajfel & Turner, 1979). On the other hand, for members of disadvantaged social groups (e.g., non-WEIRD ingroups), the system justification makes people accept social inequality as a natural and inevitable process (Jost et al., 2004).

In fact, there is consolidated evidence that members of minority groups also reinforce equally (e.g., Jost & Banaji, 1994) or even more the social system that disfavors them in comparison with majority groups (e.g., Jost et al., 2002). According to Jost and Hunyady (2002), system justification occurs when individuals use ideologies that function as palliatives that attenuate the dissonance caused by awareness of the low social value of the ingroup and the motivations of self-promotion and positive distinctiveness of the ingroup identity.

In this sense, the adoption of ideologies that justify the status quo (e.g., meritocracy, belief in a just world, conservatism, etc.) help individuals convince themselves that the world is controllable and just, where all people have the same opportunities for social ascension (Whitson et al., 2015), and use this ideology to maintain psychological well-being, since the threat to the system can impair cognitive balance. This process is called the palliative function of system justification and has been studied in more than 18 countries around the world (Vargas-Salfate et al., 2018). These studies have both manipulated and measured individual differences in individuals’ expression of system justification.

### System Justification Measurement

System justification has been observed in experimental studies that place participants in situations that threaten the system (e.g., Kay et al., 2005) or suggest its stability (e.g., Kay et al., 2009, Study 1) and highlights its inflexibility to change (e.g., Laurin et al., 2010, Study 3). Individual differences in system justification can be also measured by means of a self-reported scale. The first and most used scale is the General System Justification Scale (GSJS; Kay & Jost, 2003). The GSJS assess the extent to which people consider the general system (i.e., social, political and economic system) as fair, legitimate and necessary. It is composed of eight items answered in seven response categories (1 = totally agree and 7 = totally disagree). It was originally developed for the context of the United States and its validation study showed a unifactorial structure (e.g., system justification), with good internal consistency ( $\alpha = .87$ ). Sample items include “In general, the American political system operates as it should,” “Everyone has a fair shot at wealth and happiness,” and “American society needs to be radically restructured.” Recent studies have shown that this scale converges with social/cultural, economic (e.g., Badaan et al., 2020) and political attitudes (e.g., Kay & Jost, 2003; Jost et al., 2017), predicts negative attitudes towards black people (e.g., Phelan & Rudman, 2011) and homosexuals (e.g., Pacilli et al., 2011), as well as opposition to equality (e.g., Jost & Thompson, 2000), and high levels of obedience to the authorities (e.g., van der Toorn et al., 2011) and institutional trust (e.g., Tan et al., 2016), working to increase

psychological well-being (e.g., Vargas-Salfate et al., 2018). These relationships have been observed in people with high and low social status.

In addition to this general measure, two other scales have been built to assess specific contexts of social inequality: the Economic System Justification Scale (ESJ; Jost & Thompson, 2000) and the Gender-Specific System Justification Scale (GSSJS; Jost & Kay, 2005). The ESJ is based on the meritocratic ideology, which hypothesizes that if people work hard, they almost always get what they want. It contains 17 items (e.g., “If people work hard, they almost always get what they want,” and “Economic positions are legitimate reflections of people’s achievements”) that are answered in a 9-point Likert scale (1 = totally disagree and 9 = totally agree), aiming to assess individual differences in the justification of socioeconomic inequalities. It has a unifactorial structure, adequate internal consistency ( $\alpha = .73$ ), and convergence with the GSJS. The ESJ related to the social dominance orientation measure (Martin et al., 2015) predicts negative attitudes towards economic equality policies (Jost & Thompson, 2000), and apathy towards social inequalities (Goudarzi et al., 2020).

The GSSJS, in turn, evaluates individual differences in endorsement of gender inequality, assuming that social relations between men and women are hierarchized and unfair. The scale has eight items ( $\alpha = .65$ ) based on the GSJS, so that the higher the respondents’ scores, the greater the endorsement of social disparities between men and women (e.g., “In general, relations between men and women are fair,” and “For women, the United States is the best country in the world to live”). The GSSJS is unifactorial and correlated with ambivalent sexism (e.g., Glick & Fiske, 1996), and predicts negative gender stereotypes used in legitimizing the status quo (e.g., Jost & Kay, 2005).

These scales are widely used to evaluate justification of the general, economic and social system (for a review, see Jost, 2019). However, the GSJS is used the most, having been adapted to the contexts of a wide range of countries, such as Canada, Poland (Laurin et al., 2010), United Kingdom, Turkey, Israel (Jost et al., 2005), Germany (Ullrich & Cohrs, 2007), Lebanon (Badaan et al., 2020), Italy (Mosso et al., 2013; Roccato et al., 2014), China (Li et al., 2019) and Hungary (Berkics, 2009; Jost & Kende, 2020). In addition, the GSJS has also inspired other instruments, one of the most recent examples being the Democratic System Justification Scale (DSJS) for the Italian context (Rutto et al., 2014). The DSJS evaluates individual differences in endorsement of the democratic system of a country. As in the original scale, the higher the score is, the greater the personal motivation for the system justification is.

In sum, the GSJS has been used in different countries and has become a starting point for the development of new scales to measure individual differences in system

justification. However, previous studies carried out in countries where social inequality is lower have produced results indicating very good validity and reliability parameters, which has not occurred in more unequal or underdeveloped countries. When adapted for the United Kingdom (Zmigrod et al., 2018), for example, the measure has presented good internal consistency ( $\alpha = .88$ ). On the other hand, when administered in Lebanon (Badaan et al., 2020), a country recognized for its highly unequal social system, the same coefficient is low ( $\alpha = .67$ ). In Brazil, where social inequalities are extreme, Sousa et al. (2016) found a bifactorial structure of the GSJS, with internal consistency coefficients equal to .56, in contrast to the findings of studies using the original version (Kay & Jost, 2003). These discrepancies suggest that the GSJS’s items do not adequately measure individual differences in system justification in very asymmetric contexts such as Brazil. In contexts like that, the content of the items frequently used in the system justification scales are ambiguous and blatantly unrealistic. For example, items like “most policies serve the greater good” are completely unrealistic (e.g., do not represent the social reality of Brazilian issues), which can cause ambiguities in individuals’ responses and undermine the validity and reliability of the measure. For this reason, it is necessary to develop a more contextualized scale’s version whose item contents are more realistic in very unequal social contexts. Thus, we developed a new version of the GSJS to measure individual differences in system justification of adult people from the general Brazilian population.

## Overview of Studies

We conducted a set of five studies to gather evidence of construct validity and internal consistency of the new version of General System Justification Scale (GSJS). In Study 1, we developed the scale’s items and examined their content validity. In Studies 2 and 3, we analyzed the factor structure of the scale. In Study 4, we analyzed the convergent-discriminant and incremental validity of the GSJS, investigating its relationship with other measures that evaluate correlated constructs (convergent validity) and non-correlated constructs (discriminant validity), as well as its predictive effect of a criterion variable controlling for the effect obtained with other measures of system justification (incremental validity). Finally, in Study 5 we analyzed the predictive validity of the GSJS, using an experimental manipulation of the threat to the Brazilian general system. The research protocol was approved by the local ethics committee of the first author’s institution (protocol number: 12868319.0.0000.5188). In all studies, the inclusion criteria for participants were: being a Brazilian citizen, residing in any region of the country, and

being of legal age (older than 18). The data and materials are publicly available via the Open Science Framework.

## Study 1: GSJS Development and Content Validity

Brazil is a country with a slaveholding tradition of which vestiges endure to the present, resulting in a system of strongly hierarchical and deeply unequal social relations. This social organization is a prologue to different strategies for justifying injustices, such as the socioeconomic gap between rich and poor and the hierarchization of social groups along racial, gender, sexual and social class systems. In view of the substantial inequality in the Brazilian system, it is necessary for the new version of the general system justification scale to contemplate these different facets of social disparities in the elaboration of its items.

Taking into account the social history of the formation of the Brazilian system in general, we followed the three steps recommended by Nunnally and Bernstein (1994) for the development of psychological instruments, namely: (1) identification of the psychological domain/construct, (2) generation of items, and (3) formalization of the initial version of the instrument. For the identification of the psychological construct (step 1), we considered the system justification theory (Jost & Banaji, 1994) and evaluation of existing measures of this construct. This theory assumes that the system justification motivates individuals to perceive the current social arrangements as just, legitimate and necessary. This definition and the original items of the new GSJS (Kay & Jost, 2003) served as the basis for operationalization of the GSJS items. Thus, we formulated a set of eight items (see Table 1), taking care to ensure that the content of the items addressed the peculiarities of the Brazilian social system (step 2), the items' wording was accessible to the target audience, the time required for application (average of 5 min) was acceptable, and the specificity of the tool

(self-reported) was adequate. Finally, after development of the set of items, we structured the initial version of the new system justification measure (step 3). The GSJS is structured with a six-point Likert scale, ranging from 1 (strongly disagree) to 6 (strongly agree), where the individuals' level of system justification is obtained by averaging the scores across the items. Thus, the higher the total score, the higher the respondent's system justification is.

### Items' Comprehensibility

Before conducting the content validity analysis of the scale, we checked whether the items' wording was clearly understood by people of the target-population. For this, we asked seven adults from the general Brazilian population, with incomplete high school education, fluent in Portuguese spoken in Brazil, to inform us of the level of understanding of each of the items. No participant indicated the need for wording alteration or any difficulty regarding understanding, signaling the possibility of continuing the GSJS content validity analysis.

### GSJS Content Validity

For the content validity, we evaluated whether the content of the items indeed reflects the latent trait we seek to measure (Nunnally & Bernstein, 1994). In the case of GSJS, the items must demonstrate that they adequately reflect the theoretical definition of the construct to be evaluated (Wynd et al., 2003), that is, the system justification. We submitted the set of items for evaluation by experts in the field of system justification theory, who evaluated the items according to three criteria: representativeness (the degree to which the item reflects the operationalized construct), relevance (importance of the items to explain the construct) and clarity (accessibility for comprehension) (Grant & Davis, 1997). At the end of the analysis, we verified the degree of agreement between the experts of each

**Table 1** New version of GSJS content validity coefficients

Items	CVC		
	Representa- tiveness	Relevance	Clarity
Come to think of it, our society is fair.	1.00	.90	.80
Generally speaking, things in Brazil are as they should be.	.80	.80	.80
Brazilian society should be completely restructured. (R)	1.00	1.00	.80
Brazil is the best country in the world to live in.	.80	.80	.90
Most things happen because it's the best thing for society.	1.00	1.00	.80
Everyone has the same opportunities to seek wealth and happiness.	1.00	1.00	.90
Our society is getting worse every year. (R)	1.00	1.00	.90
The society is organized to people get what they deserve.	1.00	1.00	.90

(R) = Reversed item score. CVC = Content Validity Coefficient

item, as well as the scale in general, by calculating the content validity coefficient (CVC). This procedure allowed us to obtain more reliable parameters about the analysis of the content validity of the measure. Thus, we expected the experts to evaluate the proposed items (and the overall scale) as representative, relevant and clear.

## Method

**Participants** We submitted the eight items to the analysis of five expert raters, aged between 30 and 57 years old ( $M = 39.00$ ,  $SD = 5.54$ ), three females and two males. All five expert raters had PhDs in Social Psychology, with experience in the construction and validation of psychological instruments, besides being specialists in the study of justice perception and the processes of legitimization of social inequalities.

**Measures** The content experts received the first version of the scale organized in a table containing the theoretical definition of system justification, the items proposed for the scale, and spaces to evaluate the representativeness, relevance and clarity of the items. The experts indicated how much each item measures each category in the 6-point rating scale, ranging from 0 (not representative; not relevant; not clear) to 5 (very representative; very relevant; very clear). Thus, the higher the score, the more representative and/or relevant and/or clear the item was considered to assess the construct.

**Procedures** Initially, we selected experts by the analysis of their curriculum vitae (CV) in the Lattes Platform (Brazilian online résumé system). Specifically, we used the following selection criteria: (a) having a PhD; (b) being an active researcher in social psychology; (c) having knowledge about the process of constructing psychosocial assessment instruments; and (d) having knowledge about topics related to system justification. After analysis of the CV, we invited the content experts via e-mail, reporting the purpose of the scale. After acceptance, we forwarded both the informed consent form (ICF) and evaluation questionnaire with the eight-items proposed for the GSJS.

**Data Analysis** We analyzed the agreement of the experts through the judgment-quantification by the content validity coefficient (CVC, Aiken, 1980). Specifically, we calculated the CVC for each item ( $CVC_i$ ), for each content expert's judgment ( $CVC_j$ ), and for the total scale (CVCt). In all cases, we used  $CVC \geq .80$  as the criterion for content validity (Aiken, 1985).

## Results

As shown in Table 1, all  $CVC_i$  coefficients were above .80. Regarding the evaluated aspects, we found that the CVCs for representativeness, relevance and clarity were .90, .93 and .84, respectively. Regarding the individual analysis of each expert on the overall quality of the scale, all  $CVC_j$  were greater than .80. This means that all experts considered the scale to be of good quality in their individual evaluations. The  $CVC_t$  was .90.

## Discussion

In this study, we developed the initial version of the new version of the general system justification scale and found evidence of its content validity. The set of results showed that the eight items developed for the new version of the GSJS were considered comprehensive by people of the target population and evaluated as representative, relevant and clear by experts. Thus, we concluded that the new version of the GSJS presents initial evidence of content validity for measuring individual differences in system justification. However, despite the importance of this study for the development of a new version of the GSJS, it concerns only the initial stage of the process of construction of a psychological instrument, since it is limited to analyzing only one aspect of the set of procedures for scale validation (Kyriazos & Stalikas, 2018). So, we conducted additional studies to analyze the factorial structure of the scale in a Brazilian sample.

## Study 2: Exploratory Factor Analysis of the New Version of the GSJS

In this study, we took a step forward, seeking to analyze the qualities of psychometric parameters of factorial validity and reliability of the new version of the GSJS. We explored the factorial structure of the new version of the GSJS (i.e., Exploratory Factor Analysis), the individual parameters (i.e., Item Response Theory) and its internal consistency. Furthermore, we based our analysis on system justification theory, according to which justification is a general motivation for individuals to perceive things as just, legitimate and necessary. This suggests that the justification of the system can be evaluated in a single general dimension (e.g., Kay & Jost, 2003). Thus, we hypothesized that the new version of the GSJS would have a unifactorial structure and good internal consistency.

## Method

### Participants

We defined the sample size based on the criterion of having at least 15 participants per item. Thus, three hundred five

( $N=305$ ) Brazilians from the general population participated of this study. Most of them were male (66.9%), aged between 18 and 58 years old ( $M=27.18$ ,  $SD=7.23$ ), and single (71.8%).

## Measures

We administered a questionnaire composed of the eight-item proposed for the new version of the GSJS developed in Study 1. The participants indicated how much they agreed with each item using a response scale ranging from 1 (strongly disagree) to 6 (strongly agree). The higher average was, the greater was the motivation to justify the system.

## Procedures

We collected data online using the *Qualtrics* platform. Participants were invited via posts on social media (Facebook, Instagram, Whatsapp, Twitter, etc.). Before starting the study, we presented to them the informed consent form (ICF), comprising information regarding the objective of the research, the voluntary nature of their participation, as well as the guarantee of confidentiality, anonymity and respect for ethical guidelines for research with human beings (World Medical Association, 2001).

## Data Analysis

To evaluate the structure of the GSJS, we used Factor 10.10.03 (Ferrando & Lorenzo-Seva, 2017). To determine the number of factors, we considered the Parallel Analysis based on the minimum rank factor analysis (Timmerman & Lorenzo-Seva, 2011), and the Hull method (Lorenzo-Seva et al., 2011). We used the polychoric correlation matrices, 500 random correlation matrices and a random permutation of the raw data (Buja & Eyuboglu, 1992). For the Hull method (Lorenzo-Seva et al., 2011), we used the Comparative Fit Index (CFI) to evaluate the number of common factors.

We used the Diagonal Weighted Least Squares (DWLS) estimator implemented in the polychoric matrix of correlations. To assess model fit, we specified the following criteria:  $\chi^2/df$  (ratio of chi-squared to degrees of freedom) less than 5; TLI (Tucker-Lewis Index) and CFI (Comparative Fit Index) both greater than .90; RMSEA (Root Mean Square Error of Approximation) and SRMR (Standardized Root Mean Squared Residual) less than .06 (Hu & Bentler, 1999). We assessed the dimensionality of the GSJS by calculating the Unidimensional Congruence (UniCo), the Explained Common Variance (ECV) and the Mean of Item Residual Absolute Loadings (MIREAL). Values greater than .95 for UniCo or .85 for ECV indicate unidimensionality; and for MIREAL, a value less than .30 indicates a unidimensional

factor structure, as described in Factor 10.10.03 (Ferrando & Lorenzo-Seva, 2017, 2018).

For the internal consistency of the GSJS, we calculated Cronbach's Alpha ( $\alpha$ ) and McDonald's Omega ( $\omega$ ) coefficients, considering values of .70 or higher acceptable (Trizano-Hermosilla & Alvarado, 2016). Finally, we assessed the quality of the items using item response theory (IRT). We used the package *mirt* (Chalmers, 2012) in R to calculate the parameters "a" (discrimination;  $a > .50$ ) and "b" (difficulty;  $-5.0 < b < 5.0$ ) (Baker, 2001; Baker & Kim, 2017). We also analyzed the items' qualified systematic psychometric information by calculating their trace line information. This procedure provides information about the extent to which the items capture systematic variance from the trace (theta;  $\theta$ ). For this analysis, we used the Graded Response Model (GRM; Samejima, 1969), which accounts for the ordinal polytomous nature of the items.

## Results

First, the Kaiser-Meyer-Olkin test ( $KMO = .78$ ) and the Bartlett sphericity test ( $\chi^2(28) = 1089.7$ ;  $p < .001$ ) proved the adequacy of the sample and the factorability of the polychoric correlation matrix. The parallel analysis showed that only the value of the first simulated percentage of variance of the real data was lower than the variance of the real data, and that all variances thereafter necessarily decreased. Specifically, the percentage of variance explained for the first factor in the real data was 57.74%, while it was 25.49% in the simulated data set (for the second factor, the percentage of variance in the real data was 19.02%, while it was 21.32% in the simulated data set). Thus, these results indicate the extraction of a single factor with eigenvalue of 3.77. This structure was supported by the Hull method ( $CFI = .954$ ;  $g1 = 20$ ; Scree test = 23.01), in addition to some of the estimated indicators of unidimensionality [UniCo = .751 (95%CI = .735; .763), ECV = .749 (95%CI = .688; .797), and MIREAL = .244 (95%CI = .188; .283)], in addition to some indicators of goodness of fit of the model [ $\chi^2 = 1126.42$ ,  $df = 28$ ,  $p < .001$ ,  $\chi^2/df = 40.22$ ,  $CFI = .961$ ,  $RMSEA = .141$  (95%CI = .067; .151), and  $SRMR = .067$ ].

The results suggested that some indicators were not sufficient to ensure the unidimensionality of the scale. With this in mind, we used IRT to examine the quality of the items, with the aim of analyzing how the items in the new version of the GSJS distinguish individuals with different levels of system justification, and their thresholds (i.e., item difficulty). As can be seen in Table 2, except for Item 3 ( $a = -.29$ ) and Item 7 ( $a = -.13$ ), all items had appropriate discrimination scores, ranging from .91 (Item 4) to 2.47 (Item 5). Except for Item 3 ( $b1 = 12.32$ ) and Item 7 ( $b1 = 18.92$ ), all items had appropriate difficulty values that ranged from  $-1.28$  ( $b1$  of Item 4) to 3.92 ( $b5$  of Item 4).

Finally, we assessed the item information curve and the test information curve of the scale (Fig. 1).

As can be seen in Fig. 1, the items in the scale were more meaningful for the portion of the underlying trace between points 1 and 4. On the other hand, there is also less information in theta for the general negative values and the scale’s positive extreme values. In addition, it can be seen that items 1, 2, 5, and 8 were the most informative, therefore, have greater significance in justifying the system. Items 3 and 7,

on the other hand, were non-informative and non-discriminatory. Thus, we removed these two items from the scale due to their low discriminatory power and following Baker’s (2001) suggestion for similar cases.

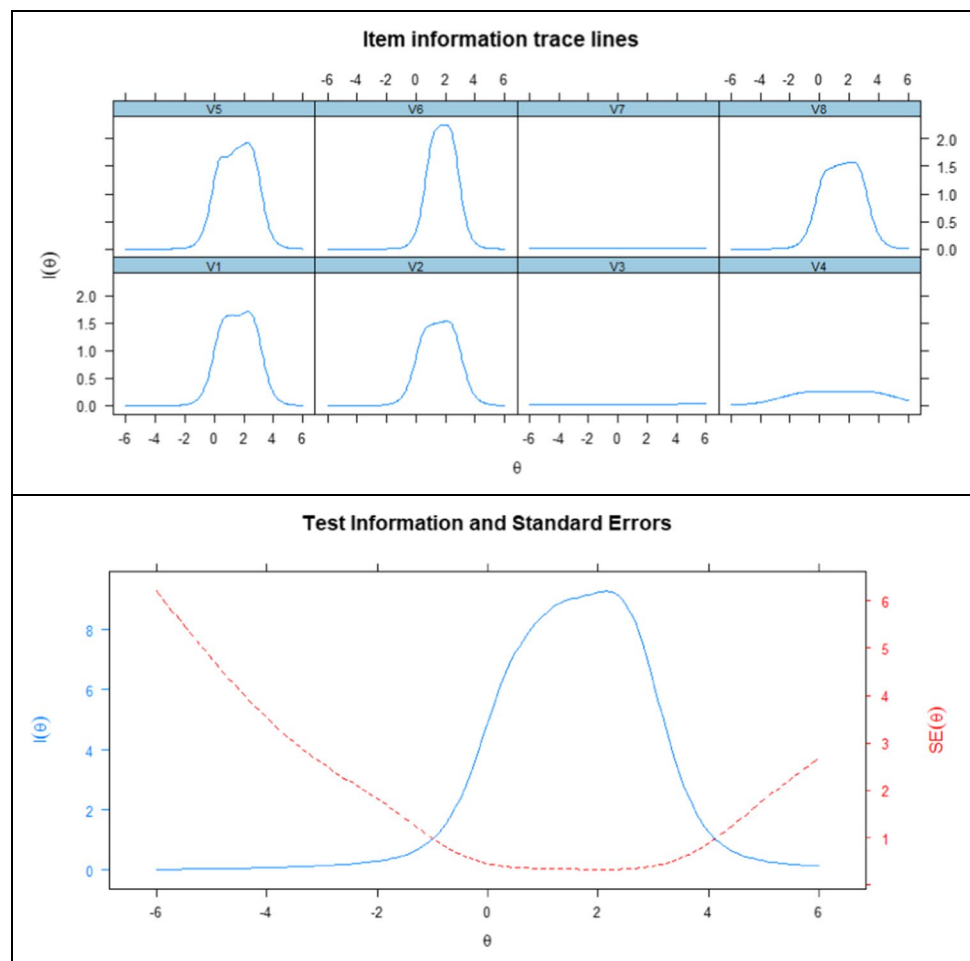
After excluding the two items, we conducted a new EFA using the same parallel analysis criteria and the Hull method. The results of the parallel analysis, now performed with the 6 remaining items, showed that only the value of the first simulated percentage of variance in the real data was

**Table 2** IRT parameter estimates (a, b1-b5) for the new GJSJ items fitted with Graded Response Model

Items	a	b <sub>1</sub>	b <sub>2</sub>	b <sub>3</sub>	b <sub>4</sub>	b <sub>5</sub>
1	2.33	.50	1.24	2.05	2.49	2.70
2	2.21	.54	1.35	2.07	2.38	2.54
3	-.29	12.32	10.12	6.12	3.35	.27
4	.91	-1.28	.08	1.76	3.26	3.92
5	2.47	.38	1.38	2.09	2.44	2.66
6	2.67	1.11	1.63	2.14	2.36	2.46
7	-.13	18.92	12.74	5.67	-.31	-5.61
8	2.24	.31	1.20	1.93	2.50	2.74

a = discrimination parameter; b = difficulty parameter

**Fig. 1** Item and scale information trace lines for the 6-item GSJS. *Note.* The curves represent the relationship of each item to the construct (theta) and show how much qualifying information the item addresses in the construct. Items 3 and 7 have the lowest slope and are therefore the least informative items



**Table 3** Parallel Analysis based on minimum rank factor analysis (Timmerman & Lorenzo-Seva, 2011) using Polychoric correlation matrices with 500 number of random correlation matrices and random permutation of the raw data (Buja & Eyuboglu, 1992) performed in each EFA

Variable	EFA 1			EFA 2		
	Real-data % of variance	Mean of random % of variance	95 percentile of random % variance	Real-data % of variance	Mean of random % of variance	95 percentile of random % variance
1	57.74*	25.49	30.16	70.98*	33.91	41.97
2	19.02	21.32	24.80	13.12	26.33	31.23
3	7.76	17.58	20.14	7.64	19.65	24.07
4	6.18	14.08	16.41	6.19	13.19	17.66
5	4.86	10.64	13.36	2.04	6.90	12.09
6	3.16	7.09	10.05	–	–	–
7	1.24	3.77	7.00	–	–	–

\* = Advised number of dimensions

lower than the variance in the real data, and that all further variances necessarily decreased. Specifically, the percentage of explained variance of the first factor in the real data was 70.98%, while it was 33.91% in the simulated data set (for the second factor, the percentage of variance in the real data was 13.12%, while it was 26.33% in the simulated data set), as described in the Table 4. Also, these results indicate the extraction of a single factor with eigenvalue of 3.77, and this structure was supported by the Hull method (CFI = .986,  $g_1 = 9$ ; Scree test = 64.95). Moreover, the

estimated indicators of unidimensionality also supported this structure: UniCo = .986 (95%CI = .959; .995), ECV = .887 (95%CI = .843; .942), and MIREAL = .235 (95%CI = .179; .279). The fit of this unidimensional model of the GSJS with 6 items was also excellent [ $\chi^2 = 14.97$ ,  $df = 9$ ,  $p = .980$ ,  $\chi^2/df = 1.66$ , TLI = .991, CFI = .994, RMSEA = .047 (95%CI = .001; .087), and SRMR = .021]. Finally, the coefficients for internal consistency showed high reliability of the GSJS, with both Cronbach's alpha and McDonald's omega greater than .80. The standardized factor loadings and

**Table 4** Standardized factor loadings of the new version of the GSJS items by EFAs and internal consistence analysis

Items	EFA1		EFA2	
	Factor loading	$h^2$	Factor loading	$h^2$
01. Come to think of it, our society is fair. [ <i>Pensando bem, a nossa sociedade é justa</i> ]	.66	.43	.80	.64
02. Generally speaking, things in Brazil are as they should be. [ <i>De uma maneira geral, as coisas no Brasil são como devem ser</i> ]	.65	.42	.64	.40
03. Brazilian society should be completely restructured. (R) [ <i>A sociedade brasileira deveria ser completamente reestruturada</i> ]	-.10	.01	–	–
04. Brazil is the best country in the world to live in. [ <i>O Brasil é o melhor país do mundo para se viver</i> ]	.40	.16	.43	.18
05. Most things happen because they are the best thing for society. [ <i>A maioria das coisas acontecem por serem o melhor para a sociedade</i> ]	.68	.46	.74	.54
06. Everyone has the same opportunities to seek wealth and happiness. [ <i>Todo mundo tem as mesmas oportunidades para buscar riqueza e felicidade</i> ].	.71	.50	.84	.70
07. Our society is getting worse every year. (R) [ <i>Nossa sociedade está se tornando pior a cada ano</i> ]	-.20	.04	–	–
08. Society is organized for people to get what they deserve. [ <i>A sociedade está organizada para que as pessoas consigam o que merecem</i> ]	.66	.43	.87	.75
<b>Eigenvalue</b>	3.77		3.77	
<b>Explained Variance (%)</b>	57.74		70.98	
<b>Cronbach's Alpha</b>	.65		.81	
<b>McDonald's Omega</b>	.75		.82	

EFA1 = 8-item Exploratory Factor Analysis. EFA2 = 6-item Exploratory Factor Analysis. Parallel Analysis.  $h^2$  = communality

internal consistency coefficients are presented in Table 3. Participants' average scores of system justification were 1.71 ( $SD = .76$ ).

## Discussion

In this study we obtained preliminary evidence of the new version of GSJS's factor validity and reliability. The results of IRT showed that two items of the eight-item version of GSJS were not discriminatory in the assessment of system justification (items 3 and 7). For this, we decided to exclude them of the scale, based on suggestion of Baker (2001). In addition, item 4 had a flat information curve compared to all other items. However, this item had an acceptable factor loading (.43 in the final version), and the results of the previous study showed its content validity for assessing system justification. Moreover, its content is theoretically relevant as it addresses the individual's upper estimate of national qualities, consistent with the theoretical description of motivation for system justification (Jost & Banaji, 1994). We decided to retain the item in the final version of the scale for these reasons (Table 4).

Furthermore, the main results showed that the remaining six items of the new version of the GSJS measure a single factor structure, with adequate psychometric indicators, aligned with previous research in system justification theory and the original scale of general system justification (Jost & Banaji, 1994; Kay & Jost, 2003). The values of parallel analysis based on minimum rank factor analysis (Timmerman & Lorenzo-Seva, 2011), CFI (Hull method; Lorenzo-Seva et al., 2011), UniCo, ECV and MIREAL suggested that the data can be treated as unidimensional (Ferrando & Lorenzo-Seva, 2018). Moreover, the new version of the GSJS showed high internal consistency.

These results were an important step in the validation procedures of the GSJS. However, the approach we used here was mainly exploratory, so that the results needed to be replicated using other procedures aiming at reinforcing the empirical evidence of the quality of this instrument for measuring individual differences in system justification. Thus, we conducted a new study seeking to confirm the one-dimensionality of the six items of the GSJS.

## Study 3: Confirmatory Factor Analysis of the New Version of GSJS

In the present study, we performed confirmatory factor analysis (CFA) of the new version of the GSJS. Thus, we expected that the scale's unifactorial structure would have a good fit for the six new version of the GSJS items, with adequate internal consistency.

## Method

### Participants

We defined the sample size a priori based on the criterion of having at least 15 participants per item. Thus, three hundred seven ( $N = 307$ ) Brazilians from the general population participated of this study. Most of them were aged between 18 and 60 years old ( $M = 28.12$ ,  $SD = 8.15$ ), and single (73.6%).

### Measures

We administered a questionnaire composed of six items of the new version of GSJS, plus sociodemographic questions (e.g., gender, age, and marital status).

### Procedures

We proceeded in the same way as in the Study 2 for data collection, organizing the instruments in an online questionnaire and inviting the participants through social media.

### Data Analysis

We used IBM SPSS (version 24.0) to calculate descriptive statistics. We performed the CFA with Mplus (version 8.3, Muthén & Muthén, 2017) using the DWLS (Diagonally Weighted Least Squares) as estimator, and stating the following criteria for evaluation of model fit:  $\chi^2/df$  (ratio of chi-square and degrees of freedom) lower than 5; TLI (Tucker-Lewis Index) and CFI (comparative fit index) both greater than .90; RMSEA (root mean square error of approximation) and SRMR (Standardized Root Mean Squared Residual) lower than .06 (Hu & Bentler, 1999). We assessed the internal consistency of the GSJS through the coefficients Cronbach's Alpha, McDonald's Omega (Omega Total formula based on the variance of the general factor, as performed by the JASP software; JASP Team, 2020) and composite reliability (CC), considering the minimum value of .70 as acceptable (Trizano-Hermosilla & Alvarado, 2016; Hair et al., 2006). Also, we estimated the average variance extracted (AVE), establishing AVE greater than .50 as adequate (Fornell & Larcker, 1981).

## Results

We performed the CFA by specifying a single factor model in Mplus. Results showed acceptable goodness-of-fit indices for the single-factor structure of the GSJS, with:  $\chi^2 = 23.115$ ,  $df = 9$ ,  $\chi^2/df = 2.56$ ,  $p = .006$ ; TLI = .986; CFI = .992; RMSEA (CI 90%) = .072 (.036, .108); SRMR = .056. Factor loadings of the items ranged from .50 (item 3) to .79 (item 1). Cronbach's alpha, McDonald's omega, CC, and AVE

were .77, .79, .77, and .53, respectively. Participants in this study rated the justification of the system as 1.72 on average ( $SD = .78$ ).

## Discussion

The set of results here provided additional evidence of the factorial validity and internal consistency of the new version GSJS. The value of the RMSEA was above the established threshold, but some studies discuss that values below .080 are considered acceptable to demonstrate the relatively good fit of the model (MacCallum et al., 1996; Kenny et al., 2014), as we found in this study, especially because the other indices consistently indicated the good fit of the model. So, our results demonstrated the satisfactory adjustment indices of the unifactorial model of the GSJS and good indicators of internal consistency. In this sense, the results indicated the GSJS is an adequate and reliable instrument to measure individual differences in system justification. However, it is important to observe how the new version of the GSJS can relate to other existing measures for the justification of the system and related constructs (e.g., social dominance orientation) and its predictive effect on a criterion variable (e.g., belief in a just world).

## Study 4: Convergent-Discriminant and Incremental Validity of the New Version of the GSJS

In the previous studies, we found evidence of content and factorial validity of the new version of the GSJS, confirming its unifactorial structure. In this study, we went further, seeking to find evidence of the measure's convergent-discriminant and incremental validity. For this, we analyzed the relation of the new version of the GSJS and other constructs with which we expected correlated (i.e., convergent validity) and non-correlated constructs (i.e., discriminant validity). In addition, we analyzed whether the new version of the GSJS predicted a criterion variable after controlling for other system justification measures (i.e., incremental validity).

Previous research has shown that system justification is related to the social dominance orientation (e.g., Vargas-Salfate et al., 2018) and belief in a just world (e.g., Schlenker et al., 2012), with implications for the support of economic system (e.g., Azevedo et al., 2017). But little is known about the relationship between the system justification and personality characteristics of individuals. In this sense, we reasoned that if the new version of the GSJS really evaluates the system justification, it should then converge with the Economic System Justification Scale (ESJ, Jost & Thompson, 2000), the Global Belief in a Just World Scale (GBJWS, Lipkus, 1991) and the Social Dominance Orientation Scale (SDO,

Sidanius & Pratto, 1999). Moreover, since system justification is a basic psychological motivation that drives individuals to perceive social arrangements as being fair, legitimate and necessary, this motivation should be little related to individuals' idiosyncratic characteristics. For this reason, we expected the new version of the GSJS to be little affected by personality traits because they represent individuals' enduring standard to behave in a similar way across different situations, which is different from the general tendency to perceive social arrangements as justifiable, legitimate and necessary. Thus, we analyzed the relationship between the new version of the GSJS and the big five personality traits evaluated with the Ten-Item Personality Inventory (TIPI, Gosling et al., 2003). Finally, for incremental validity, we estimated a hierarchical regression model using the new version of the GSJS, ESJ and SDO as predictors, and the GBJWS as criterion variable. We reasoned that if the new version of the GSJS has incremental validity relative to previous system justification and justice perception measures, then it should predict the criterion over and above the effect of those existing measures.

## Method

### Participants

Two hundred and twenty-seven ( $N = 227$ ) Brazilians from the general population participated of this study. Most of them were female (60.4%), aged between 18 and 64 years old ( $M = 28.66$ ,  $SD = 8.44$ ) and single (68.7%). We conducted a power-sensitive analysis using WebPower (Zhang & Yuan, 2018), which showed that this sample size had a power of .80 to detect an effect size of  $r = .19$  for a specific slope representing an association between two variables; and also to detect an  $R^2 = .05$  or higher in multiple regression analyzes (with  $p = .05$ , two-sided).

### Measures

We administered an online questionnaire composed of sociodemographic items (e.g., age, gender and marital status) and the following scales:

**New Version of the General System Justification Scale (GSJS)** We used the 6-item version of the new version of the GSJS used in Study 2 ( $\alpha = .74$ ,  $\omega = .78$ ). In this study, a single-factor CFA with diagonally weighted least squares estimation fit the GSJS items well:  $DWLS\chi^2 = 11.946$ ,  $df = 9$ ,  $\chi^2/df = 1.32$ ,  $p = .216$ ,  $TLI = .997$ ,  $CFI = .998$ ,  $RMSEA$  (CI 90%) = .038 (.000; .089), and  $SRMR = .049$ .

**Ten-Item Personality Inventory (TIPI, Gosling et al., 2003)** It is a brief self-reported assessment of the Big

Five personality dimensions, namely: extraversion (inter-items  $r = .50$ ,  $p < .001$ ), agreeableness (inter-items  $r = .25$ ,  $p < .001$ ), conscientiousness (inter-items  $r = .26$ ,  $p < .001$ ), emotional stability (inter-items  $r = .33$ ,  $p < .001$ ) and openness to experiences (inter-items  $r = .21$ ,  $p = .001$ ). The TIPI was adapted to the Brazilian context by Pimentel et al. (2014) and its 10 items are rated on a scale from 1 (strongly disagree) to 5 (strongly agree). Example items include, “I see myself as critical, quarrelsome” (Conscientiousness) and “I see myself as reserved, quiet” (extraversion).

**Economic System Justification Scale (ESJ, Jost & Thompson, 2000)** Participants were asked to complete the ESJ, which assesses individual differences in justifying the economic system, that is, how people perceive the inequality of the economic system as fair, legitimate and necessary. The Brazilian version was adapted by Lima (2016), including 12 items structured in three dimensions, namely: social mobility ( $\alpha = .77$ ), naturalization of social differences ( $\alpha = .70$ ) and social change ( $\alpha = .78$ ). Items are rated on a scale ranging from 1 (strongly disagree) to 7 (strongly agree). Example items include: “if people work hard, they almost always get what they want”, and “it is virtually impossible to eliminate poverty”. The ESJ showed high internal consistency ( $\alpha = .88$ ).

**Global Belief in a Just World Scale (GBJWS, Lipkus, 1991)** This is a unifactorial scale designed to measure individual differences of belief in a just world (BJW), that is, the motivation to believe that the world is a fair place. Participants were asked to complete the Brazilian adapted version (Gouveia et al., 2010). Example items included: “I feel that most people get what they are entitled to have”, and “I basically feel that the world is a fair place”. The participants rated the items on a scale ranging from 1 (totally disagree) to 6 (totally agree). Higher values indicate higher levels of BJW. The GBJWS showed high internal consistency ( $\alpha = .91$ ).

**Social Dominance Orientation Scale (SDO, Sidanius & Pratto, 1999)** The scale was designed to measure individual levels of social dominance orientation. The Brazilian version was adapted by Fernandes et al. (2007), and includes 16 items structured in two dimensions – 8 items to “dominance” (e.g., “the higher groups should dominate the lower groups”;  $\alpha = .84$ ) and 8 items corresponding to “egalitarianism” (e.g., “it would be good for all groups to be equal”;  $\alpha = .90$ ). Items are rated on a scale ranging from 1 (totally disagree) to 7 (totally agree). In this study the SDO scale showed high internal consistency ( $\alpha = .90$ ).

## Procedures

We proceeded as in the previous studies described above.

## Data Analysis

We used IBM SPSS (version 24.0) to calculate the descriptive statistics, Pearson correlations and multiple ordinary least squares regressions. For the analysis of convergent-discriminant validity, we calculated the pairwise correlations of the new version of the GSJS and TIPI, ESJ, GBJWS and SDO scales. For incremental validity, we estimated a hierarchical regression model establishing the GBJWS score as criterion variable and the ESJ, SDO and the new version of the GSJS scores as predictors. This procedure consisted of two steps. In step 1, we added to the model the existing scales (e.g., ESJ and SDO). In step 2, in addition to these scales, we inserted the new version of the GSJS to analyze whether this scale predicted the criterion over and above the other measures.

## Results

The new version of the GSJS correlated significantly and strongly with GBJWS ( $r = .66$ ,  $p < .01$ ), SDO ( $r = .57$ ,  $p < .01$ ) and ESJ ( $r = .60$ ,  $p < .01$ ), as summarized in Table 5. The results also showed correlations between the new version of the GSJS and social mobility factors ( $r = .59$ ,  $p < .01$ ), naturalization of social differences ( $r = .48$ ,  $p < .01$ ) and social change ( $r = .50$ ,  $p < .01$ ) of the ESJ. In addition, the new version of the GSJS correlated with egalitarianism ( $r = -.51$ ,  $p < .01$ ) and dominance ( $r = .48$ ,  $p < .01$ ) dimensions of the SDO. Thus, these results evidenced the convergent validity of the new version of the GSJS. Concerning discriminant validity, the correlations between the new version of the GSJS and TIPI factors were non-significant, except for emotional stability ( $r = .16$ ,  $p < .05$ ). Therefore, this result showed a very low correlation, indicating they are different constructs, evidencing the discriminating validity of the new version of the GSJS in relation to personality traits.

Finally, we analyzed the incremental validity of the new version of the GSJS by predicting the GBJWS. When considering only the ESJ and SDO, 43% of the variance of the GBJWS was explained. When we inserted the new version of the GSJS, the model had a significant improvement, increasing the variance explained to 53%. Moreover, the association of both the ESJ and SDO with the GBJWS decreased, while the effect of the new version of the GSJS was the strongest, as demonstrated by the regression coefficients in Table 6. Thus, the results showed that the new version of the GSJS provides an incremental explanatory effect of the GBJWS over and above the effects of the existing scales.

**Table 5** Matrix correlations and descriptive statistics of variables

Variables	1	2	3	3A	3B	3C	4	4A	4B	5	5A	5B	5C	5D	5E
1. GSJS	–														
2. GBJWS	.66**	–													
3. ESJ	.60**	.64**	–												
3A. Social Mobility	.59**	.72**	.81**	–											
3B. Naturalization of social differences	.48**	.50**	.88**	.61**	–										
3C. Social change	.50**	.51**	.90**	.59**	.70**	–									
4. SDO	.57**	.56**	.72**	.55**	.64**	.68**	–								
4A. Egalitarianism	-.51**	-.45**	-.69**	-.50**	-.58**	-.68**	-.88**	–							
4B. Dominance	.48**	.53**	.57**	.45**	.53**	.49**	.85**	-.51**	–						
5. TIPI															
5A. Extraversion	-.00	.07	.16*	.10	.15*	.16*	.07	-.03	.09	–					
5B. Agreeableness	-.07	-.04	.03	-.06	.10	.03	.13	-.07	.15*	–					
5C. Conscientiousness	-.07	-.10	.06	-.05	.12	.08	.01	.03	.06	.11	.30**	–			
5D. Emotional Stability	.16*	.14*	.03	.06	.02	.13	.10	-.08	.09	-.11	-.22**	-.14*	–		
5E. Openness to Experience	.11	.13*	.26*	.22**	.28**	.19**	.15*	-.11	.15*	.12	-.01	.13	-.05	–	
<b>M</b>	1.63	2.12	2.58	2.89	2.40	2.54	1.97	6.04	2.00	3.16	2.29	2.60	2.74	2.16	
<b>SD</b>	.69	1.04	1.13	1.41	1.25	1.25	1.03	1.24	1.14	.97	.69	.87	1.00	.91	

*n* = 227. GSJS = New Version of General System Justification Scale; GBJWS = Global Belief in a Just World Scale; ESJ = Economic System Justification Scale; SDO = Social Dominance Orientation Scale; TIPI = Ten-Item Personality Inventory. \* *p* < .05, \*\* *p* < .01

## Discussion

The set of results provides evidence of convergent-discriminant and incremental validity of the new version of the general system justification scale. In fact, the new version of the GSJS is positively and strongly associated with all the constructs we predicted it should be correlated with (e.g., belief in a just world, social dominance orientation and economic system justification). On the other hand, the new version of the GSJS is not associated with most of the personality traits used for the analysis of discriminant validity. Still, when compared with the existing scales, the new version of the GSJS predicted the criterion variable (i.e., GBJWS) even after controlling for the effect of the other measures.

Interestingly, we observed that the new version of the general system justification scale was weakly associated with the emotional stability trait of the personality measurement. The relationship itself was not strong enough to ascertain its discriminant validity, but it can be explained theoretically by the palliative function of system justification. It is possible that people use system justification as a mechanism for maintaining their emotional state (Harding & Sibley, 2013; Jost & Hunyady, 2002; Vargas-Salfate et al., 2018), so that the more individuals justified the system, the more emotional stability they reported.

In general, in the last four studies we found evidence that the new version of the GSJS has content, factorial, convergent-discriminant and incremental validity, besides having good internal consistency. However, a new psychological instrument should also be evaluated in light of its sensitivity

to capture the effect of factors that theoretically influence the construct to be measured. Indeed, this an essential step for the validation process of a scale. In particular, this is a special case of the predictive validity of a measure (Nunnally & Bernstein, 1994), which was examined in the following study.

## Study 5: Experimental Predictive Validity of the New Version of the GSJS

In this study, we used a random-group experiment to manipulate social situations predicted to influence individuals' system justification. We relied on the results of previous research that has shown that threatening situations to the social, political or economic system motivate individuals to justify the system (Vargas-Salfate et al., 2018). That is, when the system is threatened, people tend to endorse the system more, to avoid psychological instabilities (Jost & van der Toorn, 2012). For example, in the American context, Kay et al. (2005) manipulated the threat to the status quo (i.e., the threat to the general system) and found that individuals, in the condition of a high (vs. low) threat system, exhibited higher levels of system justification. Thus, the threat to the system is predicted to be an antecedent of the motivation of individuals' engagement in system justification.

Accordingly, we reasoned that if the new version of the GSJS really measures individuals' differences in system justification, participants should behave in a similar way to those of the study conducted by Kay and Jost (2003), i.e., they should demonstrate greater system justification when the system is under threat. To test this hypothesis, we manipulated the threat to the Brazilian system in an experiment designed under two conditions (high vs. low threat). As in the study of Kay et al. (2005), participants were led to believe that Brazilians were disappointed (vs. satisfied) with the country's political, economic and social conditions, and therefore they were considering moving to other countries (vs. staying in Brazil). Thus, we expected the participants to have higher levels of system justification in the condition of high (vs. low) threat.

## Method

### Participants and Research Design

This was a unifactorial experimental study conducted between July and August 2019, in which we manipulated two news reports about the threat to the Brazilian system (high vs. low system threat). One hundred ( $N = 100$ ) Brazilians from the general population participated in this study. Most of them were female (71%), aged between 18 and 63 years old ( $M = 27.15$ ,  $SD = 8.74$ ) and single (75%).

**Table 6** Hierarchical regression model for the incremental validity of the new version of GSJS over GBJWS

	Unstandardized B	Std. Error	Standardized coefficients Beta	CI 95%	
				LB	UB
<b>Step 1</b>					
Intercept	.53 <sup>a</sup>	.13		.27	.79
ESJ	.45	.06	.49 <sup>***</sup>	.32	.59
SDO	.20	.20	.20 <sup>**</sup>	.06	.34
<b>Step 2</b>					
Intercept	.15 <sup>b</sup>	.13		-.10	.41
ESJ	.31	.06	.34 <sup>***</sup>	.18	.44
SDO	.08	.06	.08	-.05	.22
GSJS	.60	.08	.40 <sup>***</sup>	.43	.78

Std. Error = Standard Error; CI = Confidence Interval; LB = Lower Boundarie; UB = Upper Boundarie

CI's contain unstandardized values (i.e., the values in the last two columns are unstandardized)

<sup>a</sup> $F(2,224) = 87.10$ ,  $p < .001$ ,  $R^2 = .43$  ( $R^2$  adjusted = .43)

<sup>b</sup> $F(3,223) = 86.35$ ,  $p < .001$ ,  $R^2 = .53$  ( $R^2$  adjusted = .53)

\*\*  $p < .01$ , \*\*\*  $p < .001$

Participants were randomly allocated in one of two experimental conditions: high system threat ( $n = 52$ ) and low system threat ( $n = 48$ ).

## Measures

We used the six-item version of the new version of the GSJS ( $\alpha = .76$ ,  $\omega = .79$ ). Items are rated on a scale ranging from 1 (strongly disagree) to 6 (strongly agree), and higher average scores are associated with higher the levels of system justification.

## Procedures

As in the previous studies, we collected data online using the *Qualtrics* platform. Participants were invited via posts on social media. For experimental manipulation, we used a scenario similar to that of Kay et al. (2005) and Tan et al. (2016). Participants read a news report allegedly published in a national newspaper regarding the general Brazilian system. Depending on the experimental condition, the news highlighted the high (vs. low) threat scenario. Specifically, participants read the following text (in italics is the low threat condition):

Nowadays, many people in Brazil feel disappointed with the nation (vs. *Nowadays, despite the difficulties facing the country, most people in Brazil feel safer than in the past*). It seems that many countries in the world are enjoying better social, economic and political conditions than Brazil (vs. *It seems that, compared to other countries, Brazil's social, economic and political conditions are relatively good and stable*). The number of Brazilians who wish to leave the country and start a new life elsewhere is increasing (vs. *Few Brazilians express the desire to start a new life in other countries*).

After reading the news, we then asked participants to write a sentence about the content of the news that served as a manipulation check. If the participants wrote the content of the manipulation acceptably, we evaluated their answer as correct and considered their responses as valid in the analyses. To prevent participants from returning to the news and/or returning to the start of the form, we disabled the “return” option of the online platform and configured the response option to accept only one response per IP (internet protocol) address (attribute provided by *Qualtrics*). All participants correctly answered the manipulation check. Finally, participants responded to the new version of the GSJS. At the end of the questionnaire, we debriefed the

participants by informing them about the objectives of the study and the fictional nature of the news about the Brazilian general system.

## Results

The results showed a significant effect of the experimental manipulation on system justification [ $t(98) = -2.53$ ,  $p = .013$ ,  $d = -.51$ ]. Participants in high threat condition expressed more system justification ( $M = 2.04$ ,  $SD = .86$ ) than those in the low threat condition ( $M = 1.68$ ,  $SD = .50$ ).

## Discussion

The results confirm our hypothesis that the new version of the general system justification scale is sensitive to capture the effect of the threat to the system on individuals' differences in defending this system. In fact, we observed a significant effect of threat manipulation on system justification, so that participants scored higher in the new version of the GSJS in the high system threat condition than those in the low threat condition. However, participants did not score above the midpoint of the scale in any of the experimental conditions, which leads us to think about alternative hypotheses for this effect. Initially, we need to take into account that the disappointment of the Brazilian population with living conditions in the country has been increasing in recent years, which has led many Brazilians to change countries in search of better conditions (Marcus, 2009). Thus, given this emigration flow, it is likely that the two experimental manipulation conditions were not strong enough to lead participants to assume extreme values on the new version of the GSJS. Emigration to other countries is a desire of many Brazilians, which may have led participants to observe the content of the news not as a major threat to the Brazilian system, but as reality experienced in the country, which would explain the low rates of system justification in both experimental conditions. This result may also be signaling that, in extremely unequal contexts such as Brazil, that the content of the Kay and Jost (2003) paradigm is not as realistic in extremely unequal social contexts as it has been the case in other countries with greater equality.

However, even with this limitation, the scale was sensitive enough to capture the effect of system threat on individual difference in defending this system. The results of this experiment demonstrate that the new measure has a special type of predictive validity, since the GSJS scores corresponded to a criterion that acted as a causal antecedent of the construct intended to be measured (Nunnally & Bernstein, 1994). Thus, we gathered experimental data indicating that the new version of the GSJS assesses system justification under different conditions of system threat.

## General Discussion

Based on system justification theory (Jost, 2019; Jost & Banaji, 1994; Jost & van der Toorn, 2012), this paper presents the results of a research program in which we developed and validated a new version of the General System Justification Scale (GSJS). During four empirical studies, we demonstrated evidence of content validity (Study 1), a unifactorial structure (Studies 2, 3 and 4), convergent-discriminant and incremental validity (Study 4), and predictive validity (Study 5) of the new version of the GSJS. In general, our results showed satisfactory psychometric evidence of validity and reliability of the new version of the GSJS to assess individual differences in system justification.

The content validity procedure (Study 1) is a crucial step of the hypothetical-deductive process of scale validation, in which we developed a set of items from which only the most representative of the construct were kept in the final version of the scale. In fact, we found in the content validity study that, from a theoretical point of view, each of the items corresponded to the concept of system justification, as proposed by Jost and Banaji (1994). The expert raters, after evaluating the written formulation of each item, considered them to be representative, relevant, and clear to denote the system justification construct. This initial approach was a fundamental step in the development of the new version of the GSJS, as it allowed items to be proposed that covered the entire theoretical definition of the construct, as recommended in psychological assessment procedures (Grant & Davis, 1997).

The results also showed evidence of factor validity. Indeed, exploratory, and confirmatory factor analyses (Studies 2 and 3, respectively) composed the second step in the process of evaluating the construct validity of the scale. Our findings provided the first empirical evidence that the scale captures the latent structure that it is proposed to evaluate (i.e., factorial validity; Nunnally & Bernstein, 1994). In fact, these findings indicate that the new version of the GSJS's items loaded on a single factor that measure individual differences in system justification, confirming the conceptual proposition of system justification theory and the original latent structure proposed in the first scale to measure this construct (Kay & Jost, 2003).

In Study 4, we followed the validation process by investigating the relationship of the new version of the GSJS with other existing scales. This step showed empirical evidence of convergent (i.e., association with related constructs), discriminant (i.e., low association with different constructs) and incremental validity (e.g., contribution of the scale to explain variance of a criterion variable beyond other scales that measure similar constructs). This step is

important for developing a new instrument because it is a theory-based evaluation that indicates the strength with which the score of a new measure converges or diverges in relation to data obtained from other instruments that the theory predicts should be related, respectively. Importantly, incremental validity goes further, by showing the extent to which the new measure explains additional variance in a relevant criteria variable after controlling for the effect of similar measures (Hunsley & Meyer, 2003). Indeed, corroborating previous studies based on system justification theory (e.g., Jost, 2019), we found that the new version of the GSJS was positively, strongly and significantly correlated with measures of belief in a just world, economic system justification and social dominance orientation, but was not related to personality traits. Moreover, the new version of the GSJS explained considerable and additional variance in belief in a just world beyond the effect of these other variables. The results of the CFA conducted with this study's sample also supported the uni-dimensional structure of the GSJS.

Finally, in Study 5, the experimental test with random groups allowed us to demonstrate the sensitivity of the new version of the GSJS to capture the effect of a variable that is predicted, by theory and previous studies, to influence individual differences in system justification, as is the case of system threat (Tan et al., 2016). In fact, individuals in the system threat condition exhibited more support for system justification as measured by the new version of the GSJS than the participants in the system affirmation condition. In addition, along the five studies, our findings showed the new version of the GSJS's reliability as indicated by the strong internal consistency coefficients. These results reinforced the empirical evidence of new version of the GSJS consistency and accuracy to measure individual differences in system justification.

## Theoretical Implications

While we have demonstrated that new version of the GSJS is a valid and reliable instrument, the studies presented here represent an important step to overcome a gap in the literature: the measure of the system justification in contexts marked by profound social disparities. This is the case in Brazil, an emblematic country from the standpoint of social inequalities, where 5% of the population concentrates the same wealth as the remaining 95%, where women earn 38% less than men in equal positions, and where black people's salaries are usually 45% lower than those of whites (DIEESE, 2019). In this context, the new scale's version is adequate to measure individual differences in the perception of social arrangements as fair, legitimate, and necessary (Jost & Banaji, 1994). In fact, existing measures have been developed in countries where these disparities are milder

(e.g., USA). In contexts like Brazil, items such as “In general, the American [Brazilian] political system operates as it should” and “Most policies serve the greater good” are not realistic and thus introduce noise and ambiguities in individuals’ answers. In the Brazilian-Portuguese language, the expressions “political system” and “politics” do not have the same meaning for all persons in different national contexts. They are polysemous expressions whose sense depends on giving participants additional information about the more specific contextual aspects that the term is supposed to have, which is not appropriate for an item scale like the one we propose. For example, “politics” can mean “egalitarian public policy” (i.e. a threatening policy of system justification) or a government-specific policy that might take a proto-fascist political position in the current and particular political environment, or it can mean anything but nothing related to the idea of system justification implied in the original scale. In Brazil, for example, blatant corruption and the lack of egalitarian public policies mean that both items do not work as they should to assess individuals’ support of the social system. For this reason, we argue that it could not work in the Brazilian context.

Moreover, the new version of the GSJS can be useful to assess the effectiveness of intervention programs that consider individual positioning in the political, economic and social system (e.g., Costa-Lopes et al., 2013). In general, the use of this new version of the GSJS can help find answers about the reasons why a portion of the Brazilian population resist social change strategies, such as opposition to social policies of equal access to health (e.g., National Health Service) and income transfers (e.g., *Bolsa Família* – Family Grant - program). Thus, the new version of the GSJS can be a useful tool for the construction and implementation of public policies, in view of its ability to measure how people perceive the established social arrangements in the country.

### Limitations, Further Directions, and Conclusions

Even though our results provide evidence of new version of the GSJS’s validity and internal consistency, our studies have some limitations. First, at the time the data were collected, between April and August 2019, Brazil was undergoing strong political and ideological tensions, given the election of a president with populist far-right orientation after 13 years of a populist left-wing government. In the meantime, the political conception of most people was unstable, which may have influenced the participants’ responses. That is, we did not control for the influence of contextual variations on the political position of the participants. Although our studies did not specifically address the economy or the rights of Brazilians, the items in the scale assess how people perceive the Brazilian social system, leading us to believe that some participants may have answered the new version of

the GSJS based on their attitudes toward Brazil as a nation, rather than specifically on their justification of the system. We suspect that this may influence the level of justification of the system in our sample.

Another limitation concerns the predictive validity. Specifically, we did not use a behavioral criterion as being evaluated in the future. Instead, we focused on the experimental effect of a well-established predictor of individuals’ endorsement of system justification. We have also a limitation concerning the reliability approach. In our studies we used only the internal consistency approach, which makes it necessary to evaluate reliability through other methods in future studies (e.g., test-retest, parallel forms). Another limitation corresponds to the sampling procedure. We used only convenience samples, which were not representative of all population, thus limiting generalization of the results. Although a crucial aspect of system justification theory is the assumption that individuals are strongly motivated to justify the status quo and see it as stable and desirable (Jost, 2019), the results seem to contradict this assumption, as participants were below the middle on the scale. Although Study 5 attenuated this tendency in the experimental system threat condition in a direction predicted by the theory (Kay et al., 2005), individuals generally showed low agreement with the GSJS. These findings open up new questions about the scope, limitations, and difficulties of assessing individual differences in motivational dimensions of social behavior through self-report instruments. For this reason, it will be interesting for future studies to address this issue directly by analyzing the relationship of self-reported and implicit system justification to determine the nature of the correspondence between them and to specify better whether people score low on both types of measures or whether this is a peculiarity of self-report scales. In addition, future studies can use qualitative approaches (e.g., interviews, focus groups, discursive analyzes) to investigate why Brazilians choose such low scale points and explore narrative dimensions that organize contextual motivation to justify the Brazilian social system.

In addition, we did not collect detailed demographic information about the sample (e.g., social class, income, skin color, education level), so we were unable to examine the possible association between these variables and GSJS scores in each study. Also, future studies can examine how these variables explain individual differences in system justification as measured by the new version of the GSJS. In addition, sociocultural factors such as gender, social class, and income should be considered in the analysis of invariance of the GSJS structure, as these variables form the basis of social inequalities.

In this sense, because system threat can influence psychological well-being (Vargas-Salfate et al., 2018), a new

study can analyze the mediating role of system justification in this relationship, given their palliative effect in reducing anxiety and cognitive dissonance. Furthermore, given that system justifications are influenced by ideologies and political positions (e.g., Caricati, 2019), the new version of the GSJS can assess the influence of threatening situations on individuals with different political leanings. Analyzing this influence is a critical aspect of system justification theory. This theory predicts a strong palliative effect on individuals in a disadvantaged social situation. This effect should be particularly prominent in cultural contexts where social inequality is extreme, such as Brazil. For instance, given that conservative individuals are happier than progressives (Newman et al., 2018), it is probable that the role played by system justification in psychological well-being depends on individuals' political orientation.

In addition, Study 4 revealed an exciting effect for which we could not predict theoretical explanations. On average, participants rated the statements justifying the system in a way that they seemed to disagree with the system justification statements (see Table 4). This was also evident in participants' response patterns on all of the attitude measures we used in Study 4. They were systematically well below the midpoint of the scale, with the exception of the egalitarianism scale. Since the instruments we used are self-report scales, they could reflect the tendency of respondents not to express their opinions on socially sensitive issues. They may also reflect the current socio-political context, which may have activated a pessimistic general worldview associated with the negative consequences of living in a pandemic in a proto-fascist environment. The results of Study 5, in which we manipulated the threat to the system, are even more telling, as simply highlighting this threat in a simple text reading procedure was sufficient to significantly increase the scores measured by the GSJS for the expression of system justification. That is, in a typical situation where no specific content was highlighted (i.e., a standard control condition), participants appeared to inhibit or use even the lowest scores on the response scale. However, when in more concrete social situations, they tended to align their attitudes with the content highlighted in the immediate context, which was adequately captured by the instrument we validated in the various studies presented in this article.

Despite the limitations highlighted here, the results we obtained are robust enough to conclude that the new version of the GSJS is a valid and reliable measure to assess individual differences in system justification. The new version of the GSJS can be useful to improve empirical evidence of predictions based on system justification theory, especially in cultural contexts with strong social inequalities. Finally, using the new version of the GSJS can also contribute to

further empirical studies aiming at analyzing the psychosocial mechanisms leading to maintenance of social inequalities in countries with great socioeconomic disparities like Brazil.

**Data Availability** The datasets generated during and/or analyzed during the current study are available in the Open Science Framework repository, <https://osf.io/vrx8w/>.

## Declarations

**Conflict of Interest** We have no conflicts of interest to disclose.

**Ethical Statement and Informed Consent** We have complied with APA ethical standards in the treatment of our participants. All participants provided consent according to the Declaration of Helsinki and the American Psychological Association ethical standards. The research protocol was approved by the local Ethics Committee of the authors' institution.

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