

# Development of a Short Version of the Gender Role Beliefs Scale

Michael J. Brown\*, Nancy Gladstone

Department of Psychology, State University of New York, College at Oneonta, Oneonta, NY, U.S.A

**Abstract** In Study 1, we examined the psychometric properties of the Gender Roles Beliefs Scale (GRBS)[8] with a sample of 451 undergraduate students and identified items that could be used to develop a short version of the scale. The GRBS demonstrated strong reliability; however, the unidimensionality of the scale noted by Kerr and Holden was not supported. Parallel analysis suggested a 2-factor solution. We retained 10 items from the GRBS to create a short version of the scale. In Study 2, the psychometric properties of the 10-item GRBS were examined with a sample of 233 non-student participants. Confirmatory Factor Analysis suggested a 2-factor solution. The scale's reliability and construct validity were also supported. In Study 3, the 10-Item GRBS showed strong test-retest reliability. Overall, the 10-item GRBS had strong reliability and demonstrated the same pattern of construct validity reported by the authors of the original scale.

**Keywords** Gender Role Beliefs Scale, Sex Roles, Psychometrics, Gender Differences

## 1. Introduction

Kerr and Holden's *Gender Role Beliefs Scale* (GRBS)[8] was one of the first concise, psychometrically sound measures that differentiated gender role ideology and gender stereotypes. Gender stereotypes are "descriptive beliefs about gender characteristics and differences"[7], whereas gender role ideology is concerned with prescriptive beliefs about gender roles. As Kerr and Holden noted[8], this is an important distinction because it is possible to believe in the existence of differences between the sexes without believing that these differences *should* exist. Understanding the prescriptive beliefs about appropriate behavior for men and women is important when examining issues concerning feminism, gender role attitudes, and related areas. The GRBS is a widely-used measure[2],[4],[6],[9],[10],[11] of assessing these prescriptive beliefs.

The GRBS includes 20 items with responses measured on a 7-point scale where 1 equals "strongly agree," 4 equals "undecided," and 7 equals "strongly disagree." Six items are reversed scored. Total scores on the scale range from 20 to 140, with higher scores indicating more feminist gender role beliefs and lower scores indicating more traditional gender role beliefs. The authors found strong internal consistency ( $\alpha = .89$ ) for the GRBS and performed an extensive evaluation of the scale's construct and criterion validity. Although the GRBS was deemed unidimensional after parallel analysis

was used, the authors did not provide any additional information (factor loadings, parallel analysis cutoff values, etc) about the scale's factor structure.

A number of studies have confirmed the reliability of the GRBS[9],[11]. However, to our knowledge, no research has verified the dimensionality noted by Kerr and Holden[8]. Furthermore, although the GRBS is brief compared to similar measures[12], researchers could benefit from a shorter version of the scale, especially when the GRBS is embedded in a series of questionnaires or when gender role beliefs does not serve as the primary dependent variable.

## 2. Study I

The purpose of this study was to examine the factor structure of the GRBS and to identify items that could be used to develop a short version of the scale.

### 2.1. Participants

Data from 451 undergraduate students (74% female, 24% male, and 2% who did not indicate gender) were used in this analysis. The mean age was 22.61 ( $SD = 5.13$ ) and ranged from 18 to 55 years. The sample was racially diverse: 53% White, 20% Black, 8% Hispanic, 9% Asian, 8% "other," and 2% who did not indicate race.

### 2.2. Scale Development

The mean total GRBS score for this sample was 90.78 ( $SD = 18.64$ ), indicating moderately feminist gender role beliefs. In terms of reliability, the GRBS had strong internal consistency ( $\alpha = .83$ ). The mean item-total correlation

\* Corresponding author: Michael J. Brown, Ph.D.

Michael.Brown@oneonta.edu

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was .38, which is in the range specified by Briggs and Cheek[1] for optimal levels of homogeneity.

A Principal Components analysis with oblimin rotation revealed four factors with eigenvalues  $> 1$ : 4.71, 2.34, 1.27, and 1.14. Parallel analysis, using ViSta “The Visual Statistics System”[13] suggested that two factors should be retained (the 95<sup>th</sup> percentile eigenvalue cutoff was 1.38). We reran a Principal Components analysis for a 2-factor solution. The first factor had an eigenvalue of 4.71 and accounted for 23.56% of the variance. Factor 1 included 11 items (Q14, Q5, Q17, Q3, Q9, Q12, Q7, Q10, Q16, Q18, and Q11) with factor loadings ranging from .29 to .74. Evaluation of items loading on Factor 1 suggested that it provided an assessment of beliefs about women’s roles in the household and the workplace. The second factor had an eigenvalue of 2.34 and accounted for 11.70% of the variance. Factor 2 included 9 items (Q2, Q20, Q19, Q4, Q1, Q8, Q15, Q13, and Q6) with factor loadings ranging from .30 to .70. Evaluation of items loading on Factor 2 suggested that it provided an assessment of beliefs related to protectionism and chivalry toward women.

To create a 10-item version of the GRBS, we selected five items with the strongest loadings on each factor. From Factor 1, we selected Q18, Q7, Q11, Q9, and Q16. These items had factor loadings ranging from .56 to .74. From Factor 2, we selected Q1, Q13, Q19, Q4, and Q15. These items had factor loadings ranging from .50 to .69. In terms of reliability, the 10-item GRBS had strong internal consistency ( $\alpha = .74$ ). The mean item-total correlation was .39, which is in the range for optimal levels of homogeneity. There was also a strong correlation between total scores on the 10-item GRBS and the original 20-item version ( $r = .91, p < .001$ ). The 10-item GRBS maintains the scoring system of the original scale - with responses measured on a 7-point scale where 1 equals “strongly agree,” 4 equals “undecided,” and 7 equals “strongly disagree.” Thus, possible scores range from 10 to 70, with higher scores indicating more feminist gender role beliefs.

### 3. Study II

The purpose of this study was to examine the reliability, factor structure, and construct validity of the 10-item GRBS.

#### 3.1. Participants

A separate sample of 233 adults (52% female, 48% male) served as participants in this analysis. Participants were recruited from online classifieds and represented all regions of the United States, including 25 states and the District of Columbia. The mean age of participants was 29.31 ( $SD = 10.88$ ). The sample was racially diverse: 65% White, 11% Black, 6% Hispanic, 11% Asian, and 7% “other.”

#### 3.2. Materials and Procedures

After providing informed consent, participants were directed to a website that hosted the study materials, which

included the 10-item GRBS, Herek’s *Attitudes Toward Lesbians and Gays - Short Version* (ATLG-S)[3], and a demographics questionnaire. Possible scores on the ATLG-S range from 10 to 90, with higher scores indicating more negative attitudes toward lesbians and gays. In this sample the mean ATLG-S total score was 31.13 ( $SD = 20.47$ ), indicating relatively positive attitudes toward lesbians and gays. The ATLG-S also had strong internal consistency ( $\alpha = .92$ ). In the demographics questionnaire, participants were asked to rate their religiosity on a scale of 1 (not at all religious) to 7 (very religious) and their political ideology on a scale of 1 (liberal) to 7 (conservative).

#### 3.3. Descriptive Statistics

The mean total 10-item GRBS score for this sample was 48.13 ( $SD = 11.32$ ), indicating moderately feminist gender role beliefs. Descriptive statistics for individual items, and each of the factors, are presented in Table 1.

**Table 1.** Means, Standard Deviations, and Skewness Values For Individual Items and Scale Factors

Item	<i>M</i>	<i>SD</i>	<i>Sk</i>
1. It is disrespectful to swear in the presence of a lady.	3.89	1.88	0.10
2. The initiative in courtship should usually come from the man.	4.02	1.94	0.11
3. Women should have as much sexual freedom as men.	2.23	1.82	1.34
4. Women with children should not work outside the home if they don't have to financially.	5.40	1.85	-1.02
5. The husband should be regarded as the legal representative of the family group in all matters of law.	5.54	1.86	-1.04
6. Except perhaps in very special circumstances, a man should never allow a woman to pay the taxi, buy the tickets, or pay the check.	4.70	2.12	-0.40
7. Men should continue to show courtesies to women such as holding open the door or helping them on with their coats.	2.69	1.66	0.90
8. It is ridiculous for a woman to run a train and a man to sew clothes.	5.72	1.79	-1.32
9. Women should be concerned with their duties of childbearing and housetending, rather than with the desires for professional and business careers.	5.86	1.65	-1.50
10. Swearing and obscenity is more repulsive in the speech of a woman than a man.	4.54	2.07	-0.22
Factor 1	28.30	6.58	-1.03
Factor 2	19.83	6.82	0.06
Scale total	48.13	11.32	-0.31

#### 3.4. Reliability and Factor Structure

The 10-item GRBS had strong internal consistency ( $\alpha = .81$ ), as did both of its factors ( $\alpha = .78$  and  $.74$  for Factors 1 and 2, respectively). The mean item-total correlation for the 10-item GRBS was .48, which is in the range for optimal levels of homogeneity. An item-test analysis revealed that

Cronbach's alpha would not increase if any of the items were eliminated. Among female participants, the 10-item GRBS had strong internal consistency ( $\alpha = .81$ ), as did Factor 1 ( $\alpha = .81$ ) and 2 ( $\alpha = .77$ ). Likewise, the 10-item GRBS had strong internal consistency ( $\alpha = .76$ ), as did Factor 1 ( $\alpha = .71$ ) and 2 ( $\alpha = .68$ ) among male participants.

Based on the results of our exploratory analysis in Study 1, we used Confirmatory Factor Analysis (CFA) to establish a model with the closest fit to our data. Using AMOS 7 for our analysis, we specified a two-factor model with each item loading on its respective factor. Following the two-index presentation strategy recommended by Hu and Bentler[5], we used The Root Mean Square Error of Approximation (RMSEA) and the Standardized Root Mean Residual (SRMR) fit indices to examine our model. Using the combinatorial cutoff of RMSEA  $< .06$  and SRMR  $< .09$ , the two-factor structure suggested by our exploratory analysis was confirmed (RMSEA = .059, SRMR = .042).

Because studies on gender role beliefs have consistently shown gender differences[2],[8], we conducted a CFA examining the factor structure of the 10-item GRBS between our male and female participants. In our model, we specified that item responses for both male and female participants would load on the same factors. Our model was a good fit for the data (RMSEA = .04, SRMR = .04), suggesting that a 2-factor solution is appropriate for responses from both male and female participants. Factor loadings are presented in Table 2. The results of our reliability and factor analyses suggest that the 10-item GRBS is a multidimensional measure with strong internal consistency. The factor structure and reliability indices were consistent across participants' gender.

### 3.5. Construct Validity

Next, we assessed the construct validity of the 10-item GRBS by examining its relationship with participants' gender, religiosity, political ideology, and scores on the ATLG-S. Consistent with previous findings[8], we expected women to score higher than men on the 10-item GRBS and its two factors. Overall, women ( $M = 50.60$ ,  $SD = 10.81$ ) reported more feminist gender role beliefs than did men ( $M = 44.20$ ,  $SD = 11.04$ ),  $t(330) = -5.21$ ,  $d = .59$ ,  $p < .001$ .

Likewise, women's scores on Factor 1 ( $M = 29.73$ ,  $SD = 6.22$ ) were significantly higher than men's scores ( $M = 26.01$ ,  $SD = 6.51$ ),  $t(330) = -5.21$ ,  $d = .58$ ,  $p < .001$ . Women's scores ( $M = 20.87$ ,  $SD = 6.88$ ) on Factor 2 were also significantly higher than men's scores ( $M = 18.19$ ,  $SD = 6.41$ ),  $t(330) = -3.55$ ,  $d = .40$ ,  $p < .001$ .

Consistent with previous research[2], we expected lower levels of religiosity, a liberal political ideology, and positive attitudes toward lesbians and gays to be associated with higher scores on the 10-item GBRS and its two factors. Among female participants, all of the correlations for total scale scores were significant ( $p < .001$ ) and in the predicted direction: religiosity ( $r = -.34$ ), political ideology ( $r = -.29$ ), and ATLG-S ( $r = -.50$ ). The same pattern of results was found for both factors. All of the correlations for total scale scores were also significant and in the predicted direction among male participants: religiosity ( $r = -.32$ ), political ideology ( $r = -.49$ ), and ATLG-S ( $r = -.57$ ). The same pattern of results was also found for both factors.

## 4. Study III

**Table 2.** Item Factor Loadings Across Participants' Gender

Item	Males ( <i>n</i> = 128)		Females ( <i>n</i> = 204)		Total ( <i>n</i> = 332)	
	Factor 1	Factor 2	Factor 1	Factor 2	Factor 1	Factor 2
5. The husband should be regarded as the legal representative of the family group in all matters of law. (11)	.859	-	.801	-	.825	-
9. Women should be concerned with their duties of childbearing and houseending, rather than with the desires for professional and business careers. (18)	.606	-	.806	-	.729	-
8. It is ridiculous for a woman to run a train and a man to sew clothes. (16)	.503	-	.778	-	.667	-
3. Women should have as much sexual freedom as men. (7) <sup>R</sup>	.462	-	.588	-	.564	-
4. Women with children should not work outside the home if they don't have to financially. (9)	.434	-	.539	-	.527	-
1. It is disrespectful to swear in the presence of a lady. (1)	-	.441	-	.778	-	.650
10. Swearing and obscenity is more repulsive in the speech of a woman than a man. (19)	-	.514	-	.634	-	.626
6. Except perhaps in very special circumstances, a man should never allow a woman to pay the taxi, buy the tickets, or pay the check. (13)	-	.674	-	.687	-	.611
2. The initiative in courtship should usually come from the man. (4)	-	.685	-	.550	-	.591
7. Men should continue to show courtesies to women such as holding open the door or helping them on with their coats. (15)	-	.375	-	.561	-	.547
RMSEA:	.071		.051		.059	
SRMR:	.062		.039		.042	
Correlation between factors:	$r = .653$		$r = .571$		$r = .684$	

Note: (#) indicates the item number of the original scale[8]. "R" indicates the item is reverse-coded.

The purpose of this study was to examine the test-retest reliability of the 10-item GRBS.

#### 4.1. Participants

A sample of 84 undergraduate students (58% female and 42% male) participated in this study for extra credit. The mean age of participants was 19.67 ( $SD = 2.46$ ) and ranged from 18 - 36 years. The sample was moderately diverse: 83% White, 3% Black, 7% Hispanic, 5% Asian, and 2% "other."

#### 4.2. Materials and Procedures

The experimenter greeted participants upon arrival and informed them that the purpose of the study was to examine people's attitudes toward social issues. After providing informed consent, participants were asked to create a unique, but personally unidentifiable, code that could be used to match their responses on both administrations of the 10-item GRBS. Participants wrote this code on the test and retest packets, which included the GRBS and a demographics questionnaire. The experimenter administered the retest approximately six weeks after participants first completed the 10-item GRBS. Of the initial 110 participants who completed the first administration of the test, 76% ( $n = 84$ ) completed the retest. There was no significant difference in total scores on the first administration of the test between those who completed the retest ( $M = 48.78$ ,  $SD = 7.15$ ) and those who did not ( $M = 47.65$ ,  $SD = 7.01$ ),  $t(108) = 0.71$ ,  $d = .16$ ,  $p = .48$ .

#### 4.3. Results

There was a strong positive correlation between total scores on the test and retest of the 10-item GRBS ( $r = .86$ ). This pattern of results was seen among both female ( $r = .78$ ) and male ( $r = .91$ ) participants. A paired-samples  $t$ -test revealed no significant difference between mean total scores on the test ( $M = 49.39$ ,  $SD = 9.62$ ) and retest ( $M = 48.95$ ,  $SD = 8.97$ ),  $t(83) = 1.66$ ,  $d = .09$ ,  $p = .10$ . There were also no significant differences between test and retest scores on any of the individual scale items ( $p > .11$ ). We deemed the 10-item GRBS to be a stable measure in terms of test-retest reliability.

### 5. Discussion

The original 20-item GRBS demonstrated strong internal consistency. However, our data did not support the factor structure noted by Kerr and Holden[8]. Parallel analysis suggested a multidimensional measure. The 10-item GRBS we created had strong reliability, and CFA supported a 2-factor structure. The 10-item GRBS demonstrated the same pattern of construct validity reported by the authors of the original measure. As expected, women reported more feminist gender roles beliefs than did men. Furthermore, lower levels of religiosity, a liberal political ideology, and positive attitudes toward lesbians and gays were all significantly correlated with feminist gender role beliefs in

the predicted directions.

#### 5.1. Limitations

Although we examined the reliability and factor structure of the 10-item GRBS with a diverse and sizable sample, further replication of our findings with larger sample sizes is necessary. It is possible that sample selection can help explain the differences in the GRBS's dimensionality we found – compared to the original authors. However, we examined the factor structure of the GRBS with more sophisticated statistical techniques (i.e. CFA) and were able to replicate our results with two separate samples. The original GRBS was constructed over 15 years ago, and it is likely that gender role beliefs have changed considerably since then. It is possible that these changes can account for the difference in dimensionality of the GRBS we found. Scores for both male and female participants were higher on factor 1 than on factor 2 – suggesting that participants endorsed more feminist beliefs about women's roles in the home and the workplace while endorsing traditional chivalrous beliefs.

Another limitation that should be noted is that we used single-items to measure participants' religiosity and political ideology. Replication of our findings with valid and reliable scales to assess these variables is warranted. Social desirability effects should also be taken into account. All of the measures included in our analyses were self-reports. It is possible that some participants responded in a socially desirable way. Also, unlike the authors of the original scale[8], we did not include a criterion-group validity assessment. Because there were significant intercorrelations among the variables we used to evaluate construct validity, a path analysis, which controls for the shared variance among these variables, would be valuable in terms of identifying the best predictors of the 10-item GRBS scores.

### 6. Conclusions

The results of our studies suggest that the 10-item GRBS is a psychometrically sound measure of gender role beliefs. The 10-item GRBS has strong test-retest reliability and repeatedly demonstrated strong internal consistency and a multidimensional factor structure. Based on our findings, the 10-item GRBS can provide researchers with a reliable and shorter measure of gender role beliefs, especially when the 10-item GRBS is embedded in a series of questionnaires or when gender roles beliefs do not serve as the primary dependent variable, without sacrificing the construct validity of the original scale.

By treating the two factors of the scale as subscales, researchers can also differentiate between different types of traditional gender role beliefs: Those relating to women's roles in the household and the workplace, and those related to protectionism and chivalry toward women. Understanding individuals' prescriptive beliefs about these roles might help us better understand the dynamics involved in hostile and

benevolent sexism. Our findings attest to the strong psychometric properties of the 10-item GRBS, and we encourage the use of the scale in future research.

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