

Psychometric validation of Ambivalent Sexism Inventory (ASI) using Rasch analysis on Indian sample

Suparna Jain^{1*}, Shradha Jain², Manpreet Kaur³

ABSTRACT

This study, employing Rasch analysis, aimed at evaluating the psychometric properties of Ambivalent Sexism Inventory (ASI) using an Indian sample of 245 participants. ASI was originally developed by Peter Glick and Susan Fiske in 1996 and has since been used in many research studies measuring hostile and benevolent sexism across cultures. Due to a lack of its psychometric validation on Indian sample, it has not been used in Indian researches. In the present work, the results of Rasch analysis indicated the appropriateness of Ambivalent Sexism Inventory among Indian population. Implications of the findings are briefly discussed.

Keywords: *Ambivalent Sexism Inventory, Rasch analysis, India*

Gender is an area of research that continues to interest psychologists and sociologists across the globe. However, a gender sensitive society is still a far-fetched idea. Continuous research efforts in the direction of improving gender balance and spreading gender sensitivity are required. The state of affairs is especially poor in South Asian countries. According to the United Nations Development Programme (UNDP), 2016, they have the lowest Gender Development Index (GDI). The report stated that GDI is calculated on the basis of the disparity between the Human Development Index (HDI) of men and women -- the higher the disparity, the lower the GDI. The gender equality and women's empowerment were fundamental dimensions of human development.

India has been ranked 131st among 188 countries on HDI. India's GDI is 0.819, compared to the developing country average of 0.913. Among South Asian countries, only Afghanistan fares worse than India, in terms of gender inequality. India scored 0.563 on the gender inequality index and ranked 127th out of 146 countries (United Nations Development Programme, UNDP, 2016). The ranking portrays an "extremely high" level of gender inequality. The sex ratio of the nation has stooped to a new, worse low since independence with there being 918 girls for every 1000 boys (Census of India, 2011). Male literacy rate (83%) is higher than female literacy rate (68%) (NSSO report, 2014).

¹Department of Psychology, Daulat Ram College, University of Delhi, New Delhi, India

²Department of Psychology, Daulat Ram College, University of Delhi, New Delhi, India

³Department of Psychology, Daulat Ram College, University of Delhi, New Delhi, India

*Responding Author

Received: May 27, 2020; Revision Received: June 20, 2020; Accepted: June 25, 2020

Psychometric validation of Ambivalent Sexism Inventory (ASI) using Rasch analysis on Indian sample

Indian men are found to exert a lot of power over women. More than 45 per cent of the women in India believe that their husband is justified in beating them for reasons such as neglecting children, going out without permission, refusal of sex, or burning food (Mohan, 2017). Women empowerment is a paramount issue for the country. Many NGOs are working on this cause and various laws have been passed. For instance, 'Beti Bachao, Beti Padhao' movement, was launched in 2015 by the Prime Minister.

In the modern day, "high society" of India, feminism is an evolving term. It is fought for and preached. Despite this, it is often found that either the people in the country do not understand the meaning of feminism or have a double-edged way of thinking. A study was conducted by Narayan (2018) in the major cities of India (such as New Delhi, Mumbai, Bangalore, and Ahmadabad) and they found that the modern, young woman in India still encountered widespread inequality. They found existing internal conservative attitudes towards women's social roles. Further studies also claim that men use sexist and homophobic jokes due to insecurity over their masculinity. They feel the need to reaffirm their own sense of self (Hosie, 2017).

Ambivalent sexism (Glick and Fiske, 1996) views sexism as a multidimensional construct that encompasses two sets of sexist attitudes: hostile and benevolent sexism. Benevolent Sexism allows the acceptance of facetious attitude towards sexism and needs to be addressed. The nation is progressing and women empowerment is focused upon, with little if any substantial change. Ambivalent Sexism Inventory can help explore the dual nature of sexism towards women.

Validity studies for the ASI have been conducted in several countries in Latin America (Argentina, Colombia, Cuba, Mexico, Peru), Europe (England, Germany, Italy, the Netherlands, Portugal, Spain), the Middle East (Syria, Turkey), and Australasia (Australia, Singapore, Taiwan) with consistently appropriate findings (Glick et al, 2000). The findings undergirded Glick and Fiske's ideology of ambivalent sexism and authenticated the ASI as a valid and reliable tool for measuring sexism.

However, no such studies have been undertaken in India. To ensure stringent assessment, validation of the ASI as a measure of sexism in India would be the first step. Hence, the primary objective of this study is to explore and validate the psychometric properties (structure, reliability, validity) of the ASI for use in the Indian scenario.

METHODOLOGY

Data Collection Procedures

Prospective participants were contacted thereafter letter of information and consent letters were given to them. The ones who agreed to take part in the study returned the signed consent letters, and completed the questionnaire.

Sample

A total of 245 Indian residents (female = 135 [55%], male = 110 [45%]; Mage = 23.08 years, SD = 8.73) from the northern part of India took part in the present study. Initially 283 participants were given the questionnaire, however, 38 of them were rejected due to missing responses.

Psychometric validation of Ambivalent Sexism Inventory (ASI) using Rasch analysis on Indian sample

India being a country with diverse religious affiliations, participants belonging to different religions were sought for so as to increase the generalizability of the findings. Out of 245 participants 200 (81.6%) were Hindus (Hinduism is the most practiced religion in India) and 45 (18.4%) were Non Hindus. Non Hindus comprised of Muslims, Sikhs, Jains, Christians and Buddhists).

Instruments

- 1. Demographic Questionnaire.** The demographic questionnaire included questions related to participants' gender, age, religion, native place and educational qualifications.
- 2. ASI –Ambivalent Sexism Inventory.** This 22 item measure was developed by Peter Glick and Susan T. Fiske in 1996 based on their theory of ambivalent sexism. It taps two positively correlated components of sexism that nevertheless represent opposite evaluative orientations toward women: sexist antipathy or Hostile Sexism (HS) and a subjectively positive (for sexist men) orientation toward women, Benevolent Sexism (BS). There are three sub dimensions of the BS scale - Protective Paternalism (e.g., "Every woman should have a man to whom she can turn for help in times of trouble"), Complementary Gender Differentiation (e.g., "Many women have a quality of purity that few men possess"), and Heterosexual Intimacy (e.g., "People are not truly happy in life unless they are romantically involved with a member of the other sex"). ASI has strong convergent, discriminant and predictive validity. The alpha reliability coefficient for ASI is .90, for HS alone is .89 and for BS alone is .83 (Glick et al., 1996).

Statistical Analysis

The statistical computation began only after data cleaning wherein the patterns of responses were assessed using IBM SPSS STATISTICS 20. It was made sure that the participants did not mark their responses in a set pattern such as selecting only extreme options or seeking the safety of the middle option. After checking the response pattern, the missing data was removed which otherwise can hamper the accuracy of the findings.

Rasch model (Rasch, 1980) was used to psychometrically validate the Ambivalent Sexism Inventory. The Rasch analysis software, Winsteps (Version 4.1.0; [Linacre, 2018]), was used to conduct the analyses. The following procedures were used: First, the stability and accuracy of the scale was analyzed employing Linacre's (2004) six criteria, namely, category frequencies, average measures, threshold estimates, category probability curves, and category fit. Second, the unidimensionality of the scale was established by conducting a Rasch principal components analysis (PCA) of the standardized residuals (see Linacre, 1998). Third, the item and person fit statistics were assessed to detect measurement disturbances. Fourth, the indices for person and item separation as well as for person and item reliabilities were examined.

RESULTS AND DISCUSSION

For assessment of the stability and accuracy of the scale, firstly, it was analyzed that sufficient number of observations were there for each of the six response categories (>10), and the average measures increased from Category 1 to 5 (see Table 1 and Figure 1).

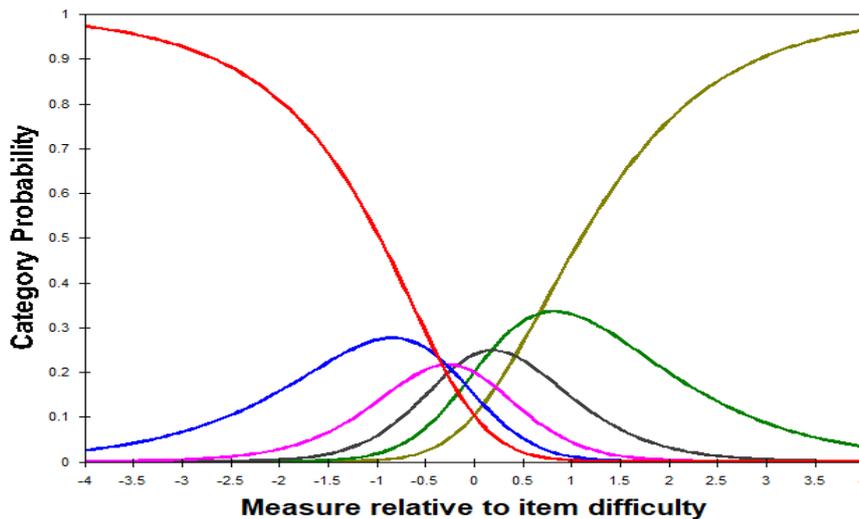
Psychometric validation of Ambivalent Sexism Inventory (ASI) using Rasch analysis on Indian sample

Table 1 Summary of Category Structure for Ambivalent Sexism Inventory

Category Label	Observed Count (%)	Threshold Calibration	Average Measure	Infit MNSQ	Outfit MNSQ
0	15	None	-1.93	1.01	1.03
1	15	-.37	-.84	.99	.98
2	18	-.29	-.27	.93	.91
3	21	-.18	.19	.97	.94
4	19	.18	.82	.97	.99
5	13	.66	2.10	1.05	1.13

Source: Author's own

Figure 1 Category Probability Curves for the 6-Point Ambivalent Sexism Inventory.



Source: Author's own

Secondly, the values of infit and outfit mean squares (MNSQ) of the six response categories demonstrated that respondents' use of these response categories was useful for measurement ($>.06$ and <1.4 ; see Linacre, 2015a). Thirdly, the point-measure correlations i.e. item to measure correlations revealed that all of them, except one, were greater than zero, suggesting item polarity (see Table 2). Item 18 (“There are actually very few women who get a kick out of teasing men by seeming sexually available and then refusing male advances.”), had a point measure correlation of $-.09$, indicating that this item was not working well with the other ASI items (see Table 2).

Table 2 Ambivalent Sexism Inventory Item Statistics

Item Label	Item Descriptor	Difficulty	Infit MNSQ	Outfit MNSQ	PTMA
1	No matter how accomplished he is, a man is not truly complete as a person unless he has the love of a woman.	-.28	1.03	.99	.65
2	Many women are actually seeking special favors, such as hiring policies that favor them over men, under the guise of asking for "equality."	-.18	.77	.79	.49
3	In a disaster, women ought not necessarily	.16	1.34	1.42	.23

Psychometric validation of Ambivalent Sexism Inventory (ASI) using Rasch analysis on Indian sample

Item Label	Item Descriptor	Difficulty	Infit MNSQ	Outfit MNSQ	PTMA
	to be rescued before men.				
4	Most women interpret innocent remarks or acts as being sexist.	-.01	.72	.75	.51
5	Women are too easily offended	.00	.91	.93	.54
6	People are often truly happy in life without being romantically involved with a member of the other sex.	.15	1.13	1.17	.28
7	Feminists are not seeking for women to have more power than men.	.37	1.17	1.21	.31
8	Many women have a quality of purity that few men possess.	-.19	1.09	1.09	.38
9	Women should be cherished and protected by men.	-.12	1.13	1.15	.52
10	Most women fail to appreciate fully all that men do for them.	-.12	.71	.71	.64
11	Women seek to gain power by getting control over men.	.20	.85	.87	.58
12	Every man ought to have a woman whom he adores.	-.32	.97	.93	.60
13	Men are complete without women.	-.17	1.47	1.54	.32
14	Women exaggerate problems they have at work.	.16	.71	.70	.65
15	Once a woman gets a man to commit to her, she usually tries to put him on a tight leash.	.19	.72	.71	.68
16	When women lose to men in a fair competition, they typically complain about being discriminated against.	.24	.85	.83	.55
17	A good woman should be set on a pedestal by her man	.18	.95	.95	.48
18	There are actually very few women who get a kick out of teasing men by seeming sexually available and then refusing male advances.	.16	1.38	1.57	-.09
19	Women, compared to men, tend to have a superior moral sensibility.	-.39	1.10	1.12	.33
20	Men should be willing to sacrifice their own well being in order to provide financially for the women in their lives.	.22	1.01	.99	.56
21	Feminists are making entirely reasonable demands of men.	.10	1.14	1.19	.19
22	Women, as compared to men, tend to have a more refined sense of culture and good taste.	-.33	.97	1.00	.41

Source: Author's own

Psychometric validation of Ambivalent Sexism Inventory (ASI) using Rasch analysis on Indian sample

expectations for every person's response to every item.: First, $\geq 40\%$ of the variance explained by the Rasch dimension; second, the percentage of variance explained by the largest potential additional dimension (i.e., the first contrast in the residuals) is $\leq 15\%$; and third, the eigenvalue of the first contrast is ≤ 3 . The results of the Principal Component Analysis (PCA) of the residuals indicated that the variance explained by the measure was 25.8% (Eigen value = 7.6), which was almost the same as the value predicted by the Rasch model, 26.1%. The largest secondary dimension accounted for 10.3% of unexplained variance, and had an eigenvalue of 3.0 (i.e., the strength of about three items). Furthermore, the variance explained by the item difficulties (21.4%) was less than 3 times the variance explained by the first contrast. All of these results were suggestive of unidimensionality of the Ambivalent Sexism Inventory (see Linacre, 2006, 2015a).

The person and item fit suggested that the overall fit for persons and items were within the acceptable range of .06 to 1.4 (see Linacre, 2015a). The average infit and outfit MNSQ values for persons were 1.02 and 1.03, respectively. The average infit and outfit MNSQ values for items were 1.01 and 1.03, respectively. An examination of individual item fit statistics revealed that Items 3 (“In a disaster, women ought not necessarily to be rescued before men.”), 13 (“Men are complete without women.”) and 18 (“There are actually very few women who get a kick out of teasing men by seeming sexually available and then refusing male advances.”) demonstrated underfit to the Rasch model (see Table 2, Figure 2)—they do not match the Rasch model’s theoretical expectation of item performance (see Bond & Fox, 2015). Deletion of all the three items - 3, 13 and 18 substantially improved both the item reliability of the scale and the person reliability of the scale and hence were excluded from subsequent analyses.

The person and item separation indices—spread of persons or items on the measured variable—were 2.08 and 4.68, respectively. The person and item separation indices should exceed 1.0 for an instrument to be minimally useful (see Bond & Fox, 2015). The person reliability, analogous to Cronbach’s α , was .81, and the item reliability was .96. When the three items (3, 13 and 18) were not excluded person reliability was .79, and the item reliability was .95. Thus it is suggested that items 3, 13 and 18 should be removed from ASI when being used with the Indian sample for adequate internal consistency reliability.

In Rasch measurement, the scale items should have similar response pattern for all the groups being assessed (Holland & Wainer, 2012). The Rasch-Welch and the Mantel tests, as well as the DIF contrast were examined for detecting age and religion as DIF. A DIF contrast of $>.64$ helps identify items that exhibit statistically significant DIF with meaningful effect size. DIF contrasts ≥ 0.64 logits indicate moderate to large DIF, whereas DIF contrasts ≥ 0.43 logits indicate slight to moderate DIF (Linacre, 2015a; Zwick, Thayer, & Lewis, 1999). The DIF contrasts in the study were less than .43 logits for all items across two age groups – young adults and middle adults and across two groups of religious affiliation – Hindus and Non Hindus (Sikhs, Muslims, Jains, Christians and Buddhists) suggesting the absence of DIF or invariance of the items across the subgroups.

CONCLUSION

based on the results of Rasch Analysis, ASI is an appropriate measure for assessing the extent of Sexism among Indian sample across different age groups and religions. The findings on Unidimensionality display high construct validity of the inventory. Further, removing items 3, 13 and 18 is suggested when using ASI with the Indian sample. Though,

Psychometric validation of Ambivalent Sexism Inventory (ASI) using Rasch analysis on Indian sample

their presence did not affect the person and item reliabilities to a great extent, however, even a slight increase in the reliabilities, after removing them, should not be disregarded. Further, future research is warranted to subject ASI to Confirmatory Factor Analysis with Indian sample. CFA would be able to analyze the best-fitting model (a) one factor and (b) two factors (with no sub factors): HS and BS. These models can be compared with a preferred full model: HS (no sub factors) and BS with three sub factors. A limitation of the present work is its small sample size. Replication studies are suggested to take a broader sample from more diverse parts of India.

REFERENCES

- Bond, T. G., & Fox, C. M. (2015). *Applying the Rasch model: Fundamental measurement in the human sciences* (3rd ed.). New York, NY: Routledge.
- Census (2011). Registrar General of India, Ministry of Home Affairs, Government of India. Retrieved from <http://censusindia.gov.in/2011-common/censusdataonline.html>
- Glick, P., & Fiske, S. T. (1996). The ambivalent sexism inventory: Differentiating hostile and benevolent sexism. *Journal of personality and social psychology*, 70(3), 491.
- Glick, P., Fiske, S. T., Mladinic, A., Saiz, J. L., Abrams, D., Masser, B., & Annetje, B. (2000). Beyond prejudice as simple antipathy: hostile and benevolent sexism across cultures. *Journal of personality and social psychology*, 79(5), 763.
- Holland, P. W., & Wainer, H. (2012). *Differential item functioning*. Routledge.
- Hosie, R. (2017, April 21). *Men use sexist and homophobic jokes due to insecurity over their masculinity, study claims - They feel the need to reaffirm their own sense of self*. Retrieved from <https://www.independent.co.uk/life-style/men-sexist-homophobic-jokes-masculinity-insecure-anti-gay-study-gender-roles-western-carolina-a7694591.html>
- Linacre, J. M. (1998). Detecting multidimensionality: Which residual data-type works best? *Journal of Outcome Measurement*, 2, 266-283.
- Linacre, J. M. (2004). Optimal rating scale category effectiveness. In E. V. Smith Jr., & R. M. Smith (Eds.), *Introduction to Rasch measurement* (pp. 258-278). Maple Grove, MN: JAM Press.
- Linacre, J. M. (2006). Rasch analysis of rank-ordered data. *Journal of Applied Measurement*, 7, 129-139.
- Linacre, J. M. (2015a). *A user's guide to Winsteps Ministep: Rasch-model computer programs*. Beaverton, OR: Winsteps.
- Linacre, J. M. (2018). *Winsteps [Computer program Ver. 4.2.0]*. Chicago, IL: winsteps.com.
- Mohan, D. (2017). *India's Gender Inequality in Ten Charts*. Retrieved from <https://thewire.in/economy/ten-charts-gender-inequality>
- Narayan, D. (2018). *Chup: Breaking the Silence About India's Women*. New Delhi, India: Juggernaut.
- National Sample Survey Office Report (2014). *Education in India*. Retrieved from http://mospi.nic.in/sites/default/files/publication_reports/nss_rep_575.pdf
- Rasch, G. (1980). *Probabilistic models for some intelligence and attainment tests*. Chicago, IL: The University of Chicago Press.
- United Nation's Development Report (2016). *Human Development Report*. Retrieved from <http://hdr.undp.org/en/composite/GDI>

Psychometric validation of Ambivalent Sexism Inventory (ASI) using Rasch analysis on Indian sample

Acknowledgements

The author appreciates all those who participated in the study and helped to facilitate the research process.

Conflict of Interest

The author declared no conflict of interest.

How to cite this article: S Jain, S Jain & M Kaur (2020). Psychometric validation of Ambivalent Sexism Inventory (ASI) using Rasch analysis on Indian sample. *International Journal of Indian Psychology*, 8(2), 988-996. DIP:18.01.117/20200802, DOI:10.25215/0802.117