

Validation of the Egyptian Version of the Birth Satisfaction Scale-Revised (BSS-R)

Background and Rationale

In Arab societies, discussions around childbirth satisfaction and emotional experiences remain culturally sensitive and underreported. Women often endure their symptoms silently, while healthcare providers may hesitate to ask, resulting in missed opportunities to improve maternity care. The Birth Satisfaction Scale Revised (BSS-R) is a validated 10-item tool originally developed in English to assess women's experiences during childbirth. However, no culturally adapted and psychometrically validated Arabic version has been available. This study aimed to fill this gap

Aim of the Study and objectives

- To translate and culturally adapt the BSS-R into Arabic.
- To assess the psychometric properties (validity, reliability, and factor structure) of the Arabic BSS-R among Egyptian postpartum women.
- To determine whether the Arabic BSS-R is a reliable and valid tool for evaluating birth satisfaction in Arab contexts

Methodology

Design: Cross-sectional psychometric validation

study Setting: Two hospitals in Cairo, Egypt
Participants: 200 postpartum women
Procedure: Translation and cultural adaptation of the BSS-R, Reverse coding of negatively worded items (G2, G4, G7, G8, G9)
Statistical analysis including: Descriptive statistics
Confirmatory Factor Analysis (CFA)
Exploratory Factor Analysis (EFA)
Internal consistency (Cronbach's α)
Test-retest reliability (ICC)

Results

Descriptive Findings:

Mean total BSS-R score: 31.2 (SD = 3.66), range: 23–39 –

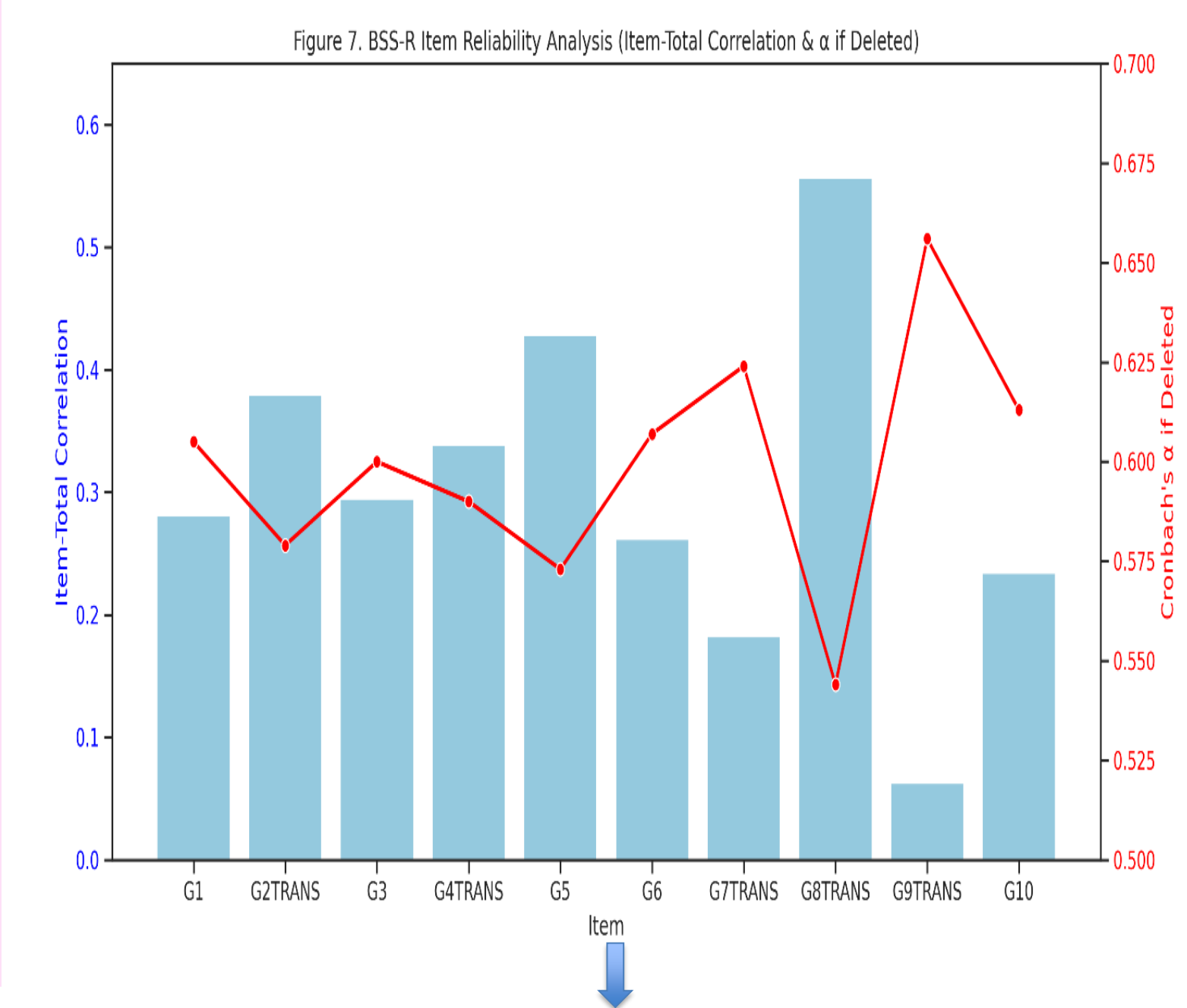
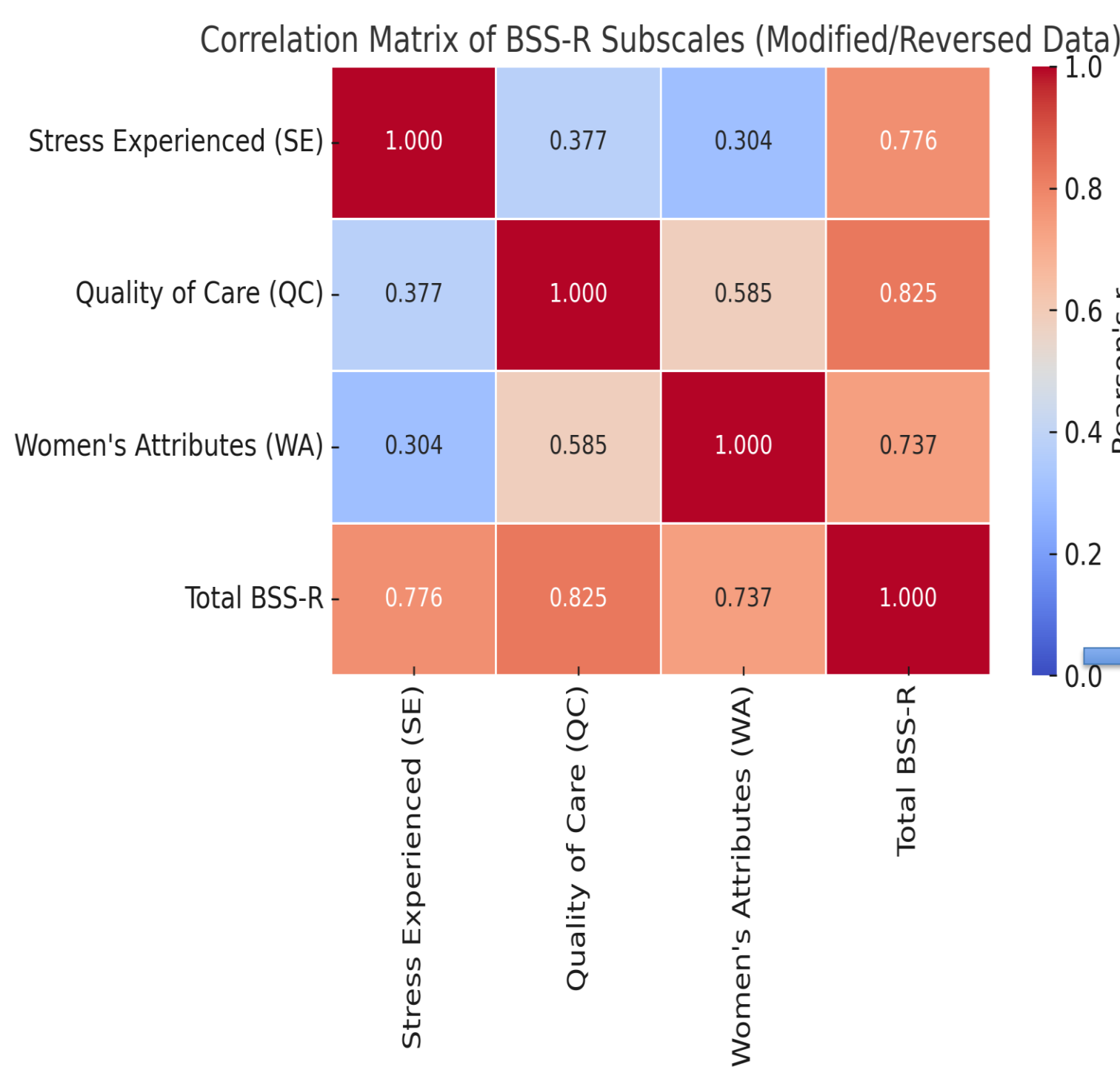
Subscale means: - Quality of Care (QC): 16.7/20 –

Stress Experienced (SE): 10.6/16 –

Women's Attributes (WA): 3.9/8

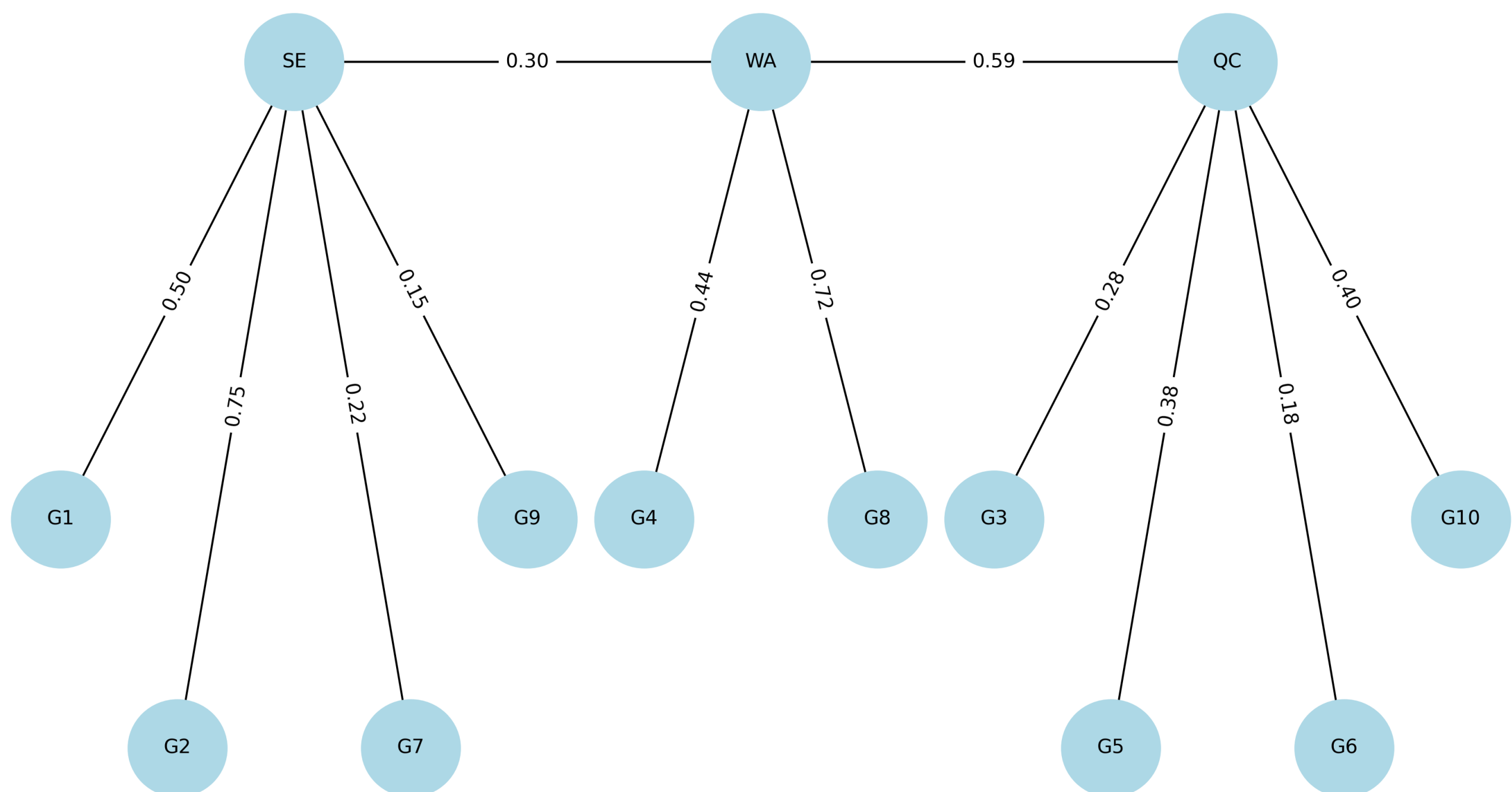
Factor Structure: - CFA supported a three-factor model with moderate fit (CFI = 0.66, RMSEA = 0.12) EFA revealed 3 factors explaining 36.5% of variance with overlapping loadings and high uniqueness for G9

Internal Consistency: - Overall Cronbach's α = 0.626 (moderate) - Highest item-total correlation: G8TRANS (0.56) - G9TRANS showed poor correlation (0.06), suggesting need for revision
Subscale Correlation: - Total BSS-R strongly correlated with QC (r = 0.825), SE (r = 0.776), and WA (r = 0.737), p < 0.001
Test-Retest Reliability: - ICC (Agreement) = 0.963; Light's Kappa = 0.895 for G1, indicating excellent stability

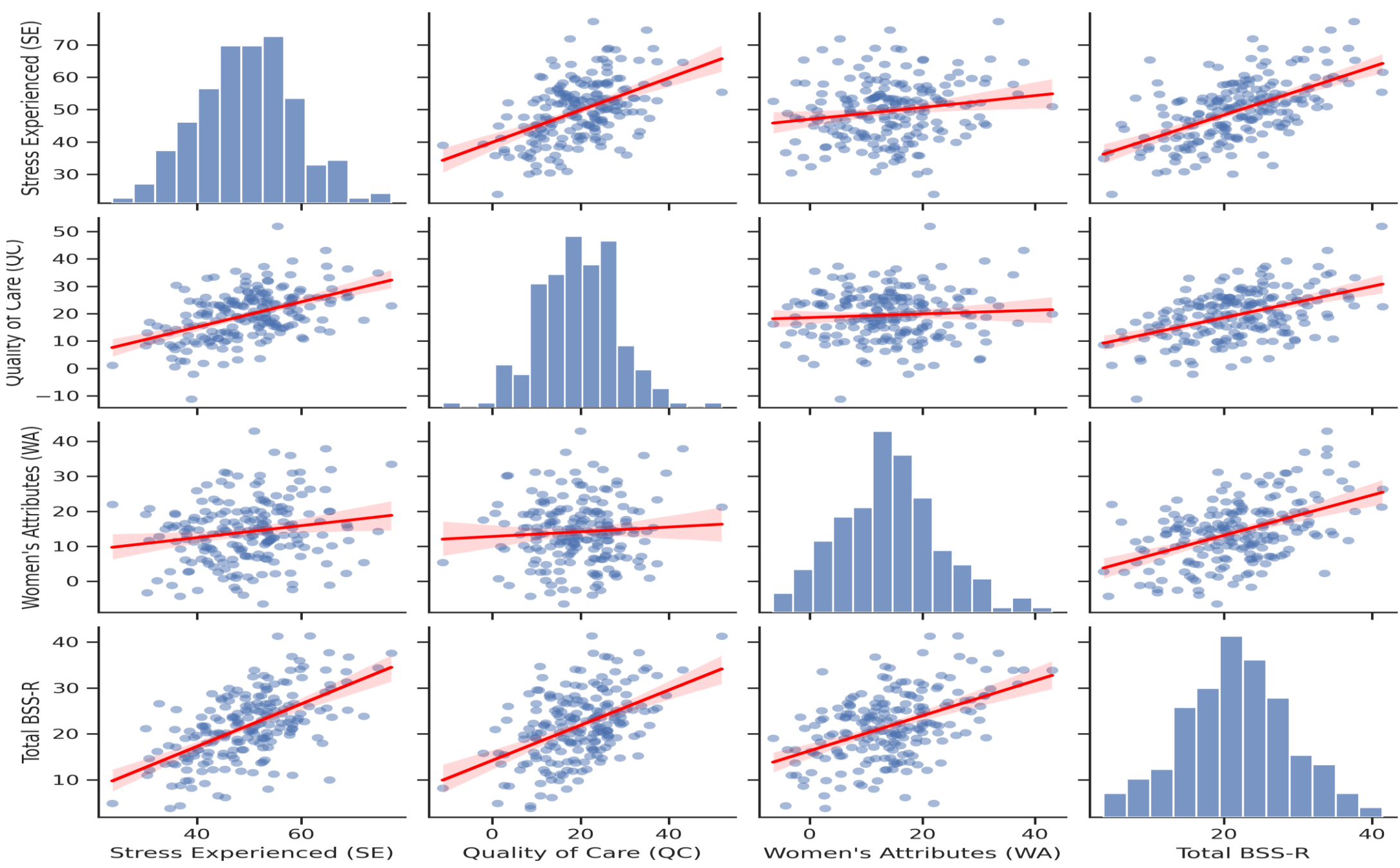


This figure displays the item-total correlations (blue bars) and Cronbach's alpha if each item is deleted (red line) for the BSS-R Arabic version. Items G9TRANS and G8TRANS show low item-total correlations, suggesting poor consistency with the overall scale. Notably, deleting G9TRANS would increase the overall Cronbach's alpha to 0.656, indicating that this item may be weakening the internal reliability and might require revision or removal.

This figure presents the standardized factor loadings from the confirmatory factor analysis of the BSS-R subscales. Items G1 and G2 under the "Stress Experienced" domain and G8 under "Women's Attributes" demonstrate strong loadings above the minimum acceptable threshold ($\beta \geq 0.3$), indicating good construct representation. In contrast, items G7, G9, and G6 exhibit weak loadings below the threshold, suggesting limited contribution to their respective latent constructs and warranting further review or potential revision.



Modified three-factor model with standardized item-factor loadings and correlations of the Arabic BSS-R, Strong loadings were observed for G2 and G8, while G7, G9, and G6 showed weaker associations.. The strongest inter-factor correlation was between QC and WA (r = 0.59), supporting the conceptual coherence of the model



Correlation Matrix of BSS-R Subscales and Total Score: Exploring Relationships Between Stress, Quality of Care, Women's Attributes, and Overall Birth Satisfaction

- Items G1 and G2 under "Stress Experienced" show strong factor loadings ($\beta > 0.5$).
- G8 (Women's Attributes) also demonstrates a high loading,
- Items G7 and G9 (Stress), and G6 (Most "Quality of Care" items load moderately, except G3 and G6, fall below the minimum acceptable loading ($\beta = 0.3$), suggesting weak association with their factors. which may require revision.

Retesting of reliability at two different time points

A high ICC indicates that the responses are stable and reliable over time,

Items	ICC between two time points T1 to T2	Interpretation
Item 1	0.963	Excellent reliability
Item 2	0.823	Good reliability
Item 3	0.920	Excellent reliability
Item 4	0.862	Good reliability
Item 5	0.8	Good reliability
Item 6	0.828	Good reliability
Item 7	0.921	Excellent reliability
Item 8	0.878	Good reliability
Item 9	0.98	Excellent reliability
Item 10	0.810	Good reliability

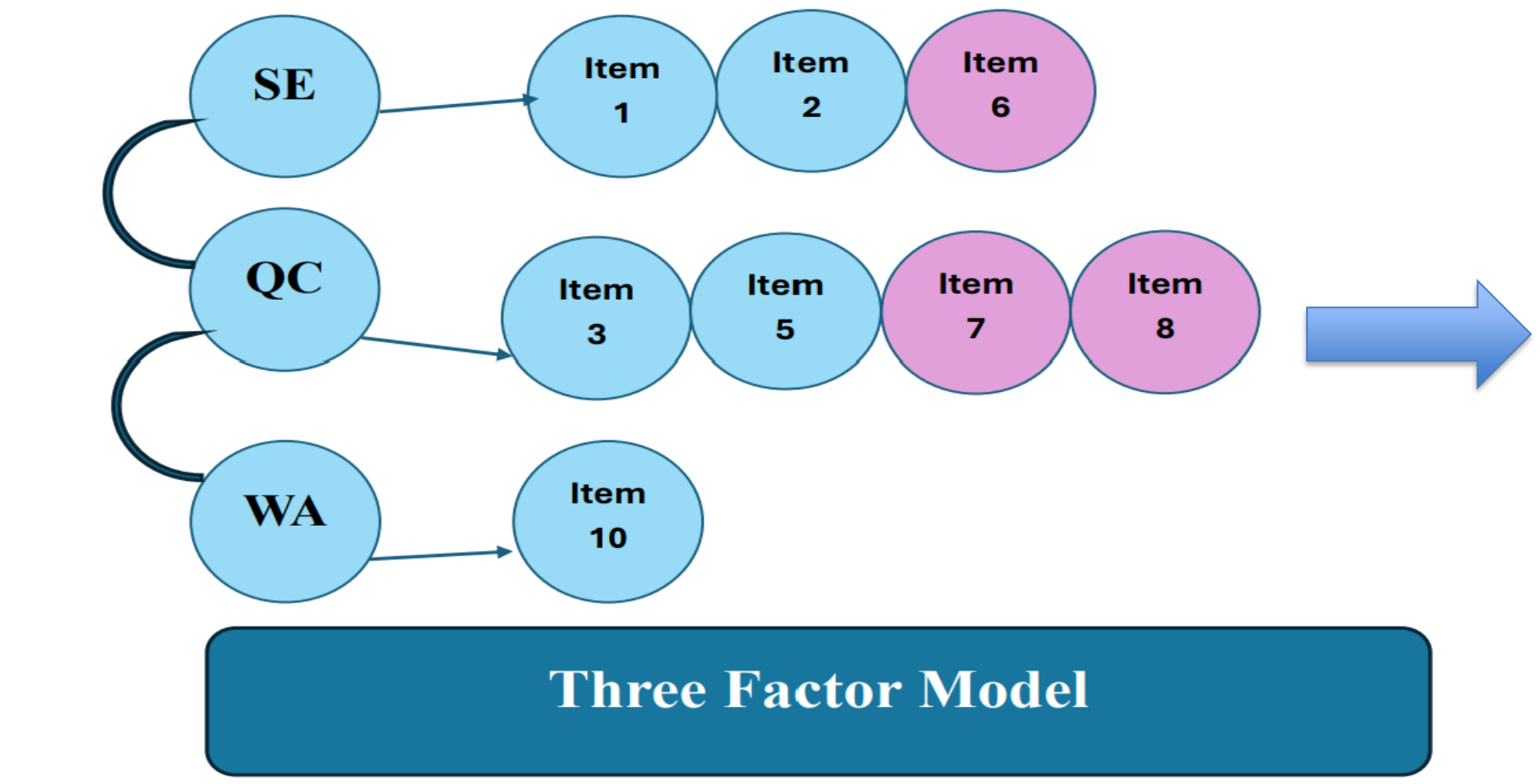
Conclusion

Although our analysis revealed meaningful correlations among the BSS-R subscales and a solid overall structure, the presence of low item-factor loadings—particularly for items G7, G9 (Stress Experienced), and G6 (Quality of Care)—highlights the need for targeted refinement. These weaknesses may reflect culturally nuanced interpretations of the items within the Arabic-speaking population. In response, a follow-up study is being initiated to retranslate and culturally adapt the BSS-R, with a focus on enhancing the psychometric validity of culturally sensitive items to ensure a more reliable and contextually appropriate tool.

Results

Sub-scale of BSS-R	Egyptian study (E-BSS-R) Correlation coefficient (r)	UK Study correlation coefficient (r)	Z	CI 95%	P-value
SE – WA	0.614	0.57	0.695	(-0.123, 0.253)	0.487
WA-QC	0.451	0.35	1.24	(-0.071, 0.302)	0.217
SE-QC	0.377	0.26	1.34	(-0.061, 0.311)	0.181
Total BSS-R-WA	0.749	0.80	-1.31	(-0.309 ,0.063)	0.190
Total BSS-R-SE	0.776	0.86	-2.65	(-0.421,-0.007)	0.008
Total BSS-R-QC	0.825	0.63	4.42	(0.235, 0.553)	<0.0001

To test internal consistency the cronbach's alpha for the E-BSS-R score was below the acceptable criterion (0.626). Upon recalculating Cronbach's alpha and eliminating **item 9**, which was a problematic in the EFA and therefore for CFA, there was an improvement in the alpha value which became 0.656, although it look like suboptimal. However, the alpha value was near closely from the acceptable alpha value ~ 0.7



Exploratory Factor Analysis (EFA) indicated that the original UK BSS-R three-factor model did not fit our data well, suggesting it may not be appropriate for our population. This misalignment could be due to poor participant understanding or the need for a larger, more diverse sample. In contrast, a bifactor model demonstrated a better fit. The three-factor model yielded suboptimal fit indices: CFI = 0.87, TLI = 0.806, SRMR = 0.115, RMSEA = 0.137, with $\chi^2(24) = 113$, $p < 0.0001$, and $\chi^2/df = 4.7$ —supporting the need for further testing and contextual adaptation.

For identifying the underlying factor structure and item-Factor relationships, we used the explore is not fit with our data and the BSS-R UK score is not aligned or fit with our population may be need further evaluation, retesting, increasing sample size, the women couldn't response well to this score . The EFA showed oratory factor analysis (EFA) which revealed that Three factor model of UK BSS-R that Bifactor model is the best model that fit with our data . Three factor model gave CFI = 0.87, $X^2 = 113$, $X^2/df = 4.7$, $df = 24$, $p = <0.0001$, TLI= 0.806, SRMR= 0.115, RMSEA= 0.137.

Recommendations

Although the BSS-R is recognized as a reliable psychometric tool for assessing birth satisfaction across countries, our study produced atypical results that diverged from the original structure. These discrepancies may stem from cultural and educational differences, poor item comprehension among participants, or limitations in how data were collected and explained by staff. Notably, items grouped under certain subscales in our bifactor model differed from those in the original BSS-R. Reapplying the tool across multiple centers with a larger sample and well-trained staff may yield more consistent and valid outcomes.

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