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Factor Structure of the Relationship Belief Inventory

Susan James,[1,4] **John Hunsley,**[2] **and David Hemsworth**[3]

The purpose of the study was to investigate the reliability and factorial validity of the Relationship Belief Inventory (RBI). Using data from 205 participants (106 women, 99 men) who were in married or cohabiting heterosexual relationships, exploratory and confirmatory factor analytic techniques were used to determine if the 5 subscales of the RBI were robust. Results indicated that a six-factor solution was preferable to the five-factor solution proposed by R. J. Eidelson and N. Epstein (1982). An analysis of reliability using Cronbach's alpha analyses revealed that there was substantial variability in the internal consistency of the subscales (ranging from .58 to .83). Although 3 of the original subscales were replicated in our analyses, the Sexes are Different and Partners Cannot Change subscales require substantial alteration before they can be deemed to be psychometrically sound.

KEY WORDS: couples relationship beliefs; factor structure; reliability; validity.

In recent decades, psychological theories of marital distress have been expanded to include an analysis of the couple's interpersonal skills, behavioral exchanges, and dysfunctional cognitions, and numerous researchers have begun to investigate whether spouses' thoughts and expectations about marriage contribute to marital distress (e.g., Baucom, Epstein, Sayers, & Sher, 1989; Bradbury & Fincham, 1990). To assess unrealistic beliefs about marriage, Eidelson and Epstein (1982) developed the Relationship Belief Inventory (RBI) to assess five unrealistic beliefs: (1) disagreement is destructive to a relationship; (2) partners should be able to mindread; (3) partners cannot change themselves or their relationship; (4) one should be sexually perfect; and (5) there are dramatic differences between men's and womens personalities and needs.

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Eidelson and Epstein (1982) developed the questionnaire by surveying 20 marital therapists to identify beliefs about intimate relationships that seemed to cause the most marital distress in their clients. An initial item pool of 128 items was reduced to a pool of 60 items by examining the item–total correlations and item-variances of the responses of 47 clinically distressed couples. These 60 items were then administered to 100 couples and, based on item characteristics, 40 items (in five subscales) were selected for inclusion in the final version of the measure. The authors found that the coefficient alphas for the subscales ranged from .72 to .81, with intercorrelations among the scales ranging from .17 to .44. Initial validity data indicated that the full measure was negatively correlated with marital satisfaction and positively correlated with early termination in marital therapy.

Since its inception a number of studies have been conducted using the RBI to investigate the relationship between dysfunctional beliefs and such factors as communication (Emmelkamp, Krol, Sanderman, & Ruphan, 1987), sex-role self-concept (Kurdek & Schmitt, 1986), perceptions of a hostile communication from partner (Gaelick, Bodenhausen, & Wyer, 1985), social desirability (Hunsley, Vito, Pinsent, James, & Lefebvre, 1996; Jensen, Witcher, & Lane, 1987), and marital adjustment (Moller & Van-Zyl, 1991). Although these studies have provided support for the construct validity of the measure and some of the subscales, the reliability of the measure has been criticized. More specifically, the coefficient alphas have been low in the only two studies that investigated internal consistency (mean $\alpha = .54$; Emmelkamp et al., 1987 and mean $\alpha = 0.67$; Bradbury & Fincham, 1993). The poor psychometric properties of the subscales are likely a result of poorly defined factors, a problem that has been overlooked because a factorial validation of the measure has never been conducted. Given the frequent use of the RBI, it is essential to determine the underlying structure of the measure in order to provide both theoretical and statistical support for the measure's validity (cf. Floyd & Widaman, 1995; Smith & McCarthy, 1995).

In order to address this shortcoming, this study will evaluate the factor structure of the RBI using exploratory factor analytic procedures. Using data from a survey of a community sample of married and cohabiting men and women, we hypothesized that, consistent with the subscales proposed by Eidelson and Epstein (1982), this analysis (CFA) would yield a five-factor structure. However, as there are indications that this five-factor structure may not be apparent, we also planned to test the fit of other factor structures. Confirmatory factor analysis will then be used to further explore the findings.

METHOD

Participants

The sample consisted of 210 participants, 110 women and 99 men, all of whom had been married or cohabiting with an opposite sex partner for at least 6 months. To be involved in the study it was not necessary for both partners of the relationship to participate in the study but many times both did. Consequently, there were 91 couples in which both partners provided data. As discussed in the Procedure section,

much of the advertisement for the study was conducted at the university and, thus, many of the participants were linked to the university in some way, such as being university students, individuals registered in upgrading courses at the university, or university employees.

The mean age of all of the participants was 29.4 years ($SD = 7.5$), with a range from 18 to 57 years of age. The mean age of the female participants was 28.2 ($SD = 6.9$) whereas the mean age for male participants was 30.6 ($SD = 7.8$).

Participants had been in their relationships for a mean of 5.4 years ($SD = 5.9$); 9.7% had been previously married and 27% of the participants had children with their current partner. Ninety-five percent of participants reported their combined household income: 45.9% had a combined income under $40,000, 28.6% reported a combined income between $40,000 and $70,000, and 20.4% reported a combined income greater than $70,000 (all amounts in Canadian dollars). In general, the participants were highly educated, with approximately 47% having some university or community college education and 43% having attained a university degree.

Measure

The Relationship Belief Inventory (RBI)

The RBI was designed to measure spouses' unrealistic beliefs about marriage (Eidelson & Epstein, 1982). The five eight-item scales of the RBI reflect beliefs that (1) disagreement is destructive to a relationship (e.g., "If your partner expresses disagreement with your ideas, s/he probably does not think highly of you"); (2) partners should be able to sense each other's thoughts and feelings without communicating them (e.g., "A partner should know what you are thinking or feeling without you having to tell"); (3) partners cannot change themselves or their relationship (e.g., "Damages done early in a relationship probably cannot be reversed"); (4) one must be a perfect sexual partner (e.g., "I get upset if I think I have not completely satisfied my partner sexually"); and (5) men and women have fundamentally different personalities and relationship needs (e.g., "You can't really understand someone of the opposite sex"). For each item the respondent indicates on a 6-point Likert-type scale the extent to which they believe the statement is true or false (0 = *I strongly believe that the statement is false*; 5 = *I strongly believe that the statement is true*). The RBI total score is obtained by summing the five scale scores.

Procedure

Participants for a study of couple relationships were recruited in several ways. First, posters describing the study and providing a contact phone number for more information were posted throughout the university campus. These posters requested participants who were married or living with a partner for at least 6 months. Second, an advertisement describing the study and providing the contact phone number was placed in the university staff newspaper and the university alumni magazine. Third, presentations were made at evening classes at the university and sign-up sheets were distributed in class. Interested individuals provided their names, phone numbers, and

addresses, either by indicating this information on class sign-up sheets or by leaving a message on a telephone answering machine at the contact number. The questionnaire package designed for the study included a number of demographic questions, the RBI, and several measures not relevant to the current analyses such as the Dyadic Adjustment Scale (Spanier, 1976), the Marital Adaptability and Cohesion Scales III (Olson, 1993), and the Enriching and Nurturing Relationship Issues, Communication and Happiness scale (Fournier, Olson, & Druckman, 1983). Participants were mailed questionnaire packages that included consent forms; if their responses were not returned within 6 weeks of mailing, participants were contacted by phone and encouraged to submit their completed questionnaires if they still wished to be involved in the study. Of the 508 questionnaire packages mailed to interested individuals, 217 were returned, resulting in a 43% response rate. This sampling strategy resulted in a wide range of participants, including university students, individuals registered in upgrading courses at the university, and university employees. Previous publications from this data set have focused on issues related to impression management (Hunsley et al., 1996) and the assessment of marital adjustment (James & Hunsley, 1995; Hunsley, Pinsent, Lefebvfe, James-Tanner, & Vito, 1995).

Data Screening

Various statistical techniques were used to examine the accuracy of data entry and missing values: after the preliminary analyses, 8 cases were missing greater than 10% of the responses and they were, therefore, eliminated from the analyses resulting in a sample size of 205 participants (106 women, 99 men). The data were then investigated for univariate (using casewise plots of standardized residuals) and multivariate outliers (using Cook's and Mahalanobis distances) and none were detected. Additionally, the item mean univariate skewness ($M = 0.65$) and kurtosis ($M = 0.075$) values were found to be within the range of -1.0 to $+1.0$, indicating that the data approximate a normal distribution (cf. Muthen & Kaplan, 1985).

Data Analysis

Overview

Data analysis was conducted in a two-stage procedure. First, using SPSS, exploratory factor analysis (EFA) procedures were conducted to determine the factor structure of the RBI. Second, CFA procedures were conducted to validate the six-factor structure demonstrated by the EFA and the original five-factor structure proposed by Eidelson and Epstein (1982), the authors of the instrument. Conducting an EFA and a CFA on the same data is not a standard procedure because of the increased potential for capitalizing on chance resulting in distorted CFA values. Although it is more favorable to use a different sample for the second analysis, as long as the results are interpreted with caution, the analyses can provide further insight into the factorial structure of the model (Byrne, 1991). Finally, the internal consistency of the factors was calculated.

Exploratory Factor Analysis (EFA)

An EFA procedure was conducted to validate the five-factor structure of the RBI proposed by Eidelson and Epstein (1982). Maximum likelihood extraction technique was used because it is a suitable technique when the number of variables is less than 60 and the correlation matrix is not singular. This procedure estimates population values for factor loadings by calculating loadings that maximize the probability of sampling the observed correlation matrix from a population (Tabachnick & Fidell, 1989). In addition, oblique rotation was used because there were moderate correlations (approaching .30) among the factors.

Confirmatory Factor Analysis (CFA)

The CFA model is proposed a priori based on theory and research (Byrne, 1989). The intent of the CFA is to determine the goodness of fit of the sample data with the hypothesized model. Researchers (Bollen, 1989; Joreskog, 1982) suggest that multiple criteria be utilized to assess the fit of models including theoretical, statistical (e.g., amount of variance/covariance explained by the model), and practical (e.g., percentage of covariance explained by the model) considerations. As an indication of the global assessment model fit, the following indices will be examined: (a) the chi-square likelihood ratio; (b) the chi-square/degrees of freedom ratio; (c) the goodness of fit index (GFI; Byrne, Shavelson, & Muthen, 1989); (d) the adjusted goodness of fit index (AGFI; Joreskog & Sorbom, 1996); (e) the Bentler (1990) revised normed comparative fit index (CFI); and (f) the root mean squared residual (RMR; (Joreskog & Sorbom, 1996). The critical value for adequacy of fit using the χ^2/df ratio has not yet been agreed upon but most researchers suggest that a value of less than 2.0 represents a feasible model (Byrne, 1991). The GFI indicates the amount of variances and covariances jointly explained by the model, where a value less than but close to 1.00 indicates a good fit (Byrne, 1989). The AGFI is the GFI adjusted for degrees of freedom in the model. Similar to the GFI, a value close to, but less than, 1.00 indicates a good fit. Similarly, a RMR of less than .05 and CFI values of greater than .90 suggest adequate fit (Bentler, 1990). Lastly, it should be noted that the polychoric correlation was used to estimate the correlation matrix between the ordinal level variables used in the scales in this study, and the fitting function was maximum likelihood.

Internal Consistency

Cronbach's alpha reliability coefficients for the subscales of the measure were calculated.

RESULTS

Independence of Data

Independence of the data is often a concern when data is gathered from both members of a dyad and the unit of analysis is the individual. Kenny (1995), however, investigated the effect of bias based on the degree of correlation between members

of the dyad and found that there is much less bias for dyadic than for group research. In the present research, of the 207 participants 91 were cohabiting or married dyads. The interitem correlation between the male and female of each dyad for each of 33 items used in the six-factor solution was calculated. The average interitem correlation was .16 indicating a rather low level of interdependence between the participants. According to Kenny (1995), independence at this level should be interpreted as minimal. It must be kept in mind that the focus of this study is on the comparison of the five- and six-factor models and that any bias due to independence, however small, will be in both and that their relative comparison is still valid.

Exploratory Factor Analysis

EFA techniques were used to investigate the factor solution of the RBI. Upon consideration of the sample size and case/variable ratio, .35 was chosen as the cutoff point for determining the importance of the factor loadings (Gorsuch, 1983). We started by testing a five-factor solution, as this was the expected result given that the RBI has five subscales.

Five-Factor Solution

According to Eidelson and Epstein (1982), there are five subscales in the measure and, thus, it was hypothesized that the EFA would yield a five-factor structure (with the following factors *Disagreement is Destructive, Mindreading is Expected, Partners Cannot Change, Sexual Perfectionism,* and *Sexes are Different)*. Specifically, it was hypothesized that all of the items in each of the subscales would load significantly (>.35) on the expected factor. Surprisingly, that was not the case. Although each of the five factors had several items that loaded significantly (>.35), they were not the factors proposed by Eidelson and Epstein (1982). The most striking result was that the *Sexes are Different* subscale divided into two factors; one representing *Sexes are Different in Needs* (SN; items 5, 20, and 30) and the other representing *Difficulty Understanding the Opposite Sex* (DU; items 10, 15, 35, and 40). The eight items of the *Partners Cannot Change (C)* factor did not consistently load on that factor. There was also one more item (14) that did not load on any factor and two that loaded on nontarget factors. In addition to the difficulty in interpreting the five-factor solution, the model was also poor statistically; it demonstrated less than adequate fit χ^2 (590) = 871.174 and explained 35.4% of the variance. Given that the five-factor solution generated from the EFA analysis was poor, it was not tested in any of the further analyses.

Examination of the eigenvalues extracted by the EFA indicated that there were six factors with eigenvalues greater than 1.0 (see Table I). In his seminal work Guttman (1954) indicated that a reasonable cuttoff point (named the K1 rule) for determining the number of solutions for a common factor analysis should include those factors that account for more than 1 unit of variance (i.e., eigenvalue >1). Therefore, a solution with greater than six factors was ruled out. Additionally, according to the K1 rule a six-factor solution rather, than the five-factor solution suggested by Eidelson and Epstein, would be appropriate. Also, it was apparent from the eigenvalues and scree plot (Cattell, 1966; Tabachnick & Fidell, 1989) that the first component

accounted for a large amount of the variance as compared to the remaining components (almost as much as the next three components combined) indicating that there is one very dominant factor in the solution.

As mentioned, when testing the five-factor solution, one of the hypothesized factors (subscales) divided into two factors. Thus, it was hypothesized that that testing solutions with fewer than five factors would produce results in which there would be an increase in the number of items loading on nontarget items. This is indeed what happened. Although solutions with fewer than five factors produced clearly delineated factors, these solutions were rejected for substantive and statistical reasons. Substantively, the one-, two-, three-, and four-factor solutions had a large number of items loading on nontarget factors and the results could not be meaningfully interpreted. Moreover, statistically these models explained a modest amount of variance.

Six-Factor Solution

Considering the substantive meaningfulness and the results of the statistical analyses, the six-factor solution was the most favorable structure. Four of the factors were the same as the subscales of the instrument: Disagreement *is Destructive* (D), *Mindreading is Expected* (M), *Partners Cannot Change* (C) and *Sexual Perfectionism* (S). On the other hand, the *Sexes are Different* (MF) subscale divided into two factors, *Sexes are Different in Needs* (SN; items 5, 20, and 30) and *Difficulty Understanding the Opposite Sex* (DU; items 10, 15, 35, and 40). The eigenvalues and the percentage of variance accounted for by the factors are presented in Table I. The six-factor solution accounted for 39% of the overall variance. The mean correlation among the factors was 0.15 (range: .02 to −.29). It is interesting to note that the correlation between SN and DU, the two factors that originally combined to form MF, was not high (.25), adding support to the finding that they are really two separate factors. To ensure that the internal consistency of the solution was good (i.e., the certainty that factor axes are fixed in variable space), we examined the squared multiple correlations (SMCs) of factors predicted from scores on observed variables (Tabachnick & Fidell, 1989). Given that SMCs ranging from 0 to 1 indicate a good solution, our results (ranging from .27 to .62) indicated that the internal consistency of the solution is good. The factor loadings (>.35) for each variable are presented in Table II.

Although the six-factor model was the best fitting model, there were seven items that did not load on the expected factor. The factor loadings on the target factor for these items, 3, 7, 12, 14, 18, 23, and 25, were .29, .22, .33, .14, .07, .20, and .30 respectively. Items 3, 18, and 23 did not load on the C factor (*Partners Cannot*

Table I. Eigenvalues and Percentage of Variance Accounted for by the Factors

Factor	Eigenvalue	Percentage of variance
1 (Disagreement is Destructive)	6.1	15.4
2 (Difficulty Understanding Opposite Sex)	2.4	6.0
3 (Mindreading is Expected)	2.3	5.7
4 (Sexual Perfectionism)	1.9	4.7
5 (Sexes are Different in Needs)	1.5	3.8
6 (Partners Cannot Change)	1.2	3.0

Note. Only factors with eigenvalues >1 are listed.

Table II. Factor Loadings of the Exploratory Factor Analysis of the Relationship Belief Inventory

RBI Item	Factor pattern loadings					
	Disagree (D)	Needs (SN)	Sex (S)	Mindr. (M)	Dif. (DU)	Change (C)
11. I take it as a personal insult when my partner disagrees with an important idea of mine.	.640					
21 I get very upset when my partner and I cannot see things the same way.	.639					
6. I cannot accept it when my partner disagrees with me.	.638					
31. When my partner and I disagree, I feel like our relationship is falling apart.	.636					
16. I like it when my partner presents views different from mine.	.555					
36. I do not doubt my partner's feelings for me when we argue.	.537					
26. I cannot tolerate it when my partner argues with me.	.508					
1. If your partner expresses disagreement with your ideas, s/he probably doesn't think highly of you.	.470					
12. I get very upset if my partner does not recognize how I am feeling and I have to tell him/her.	.428					
5. Men and women have the same basic emotional needs.		.885				
20. Men and women need the same basic things out of a relationship.		.737				
30. One of the major causes of marital problems is that men and women have different emotional needs.		.472				
39. When I do not appear to be performing well sexually, I get upset.			.631			
34. Some difficulties in my sexual performance do not mean personal failure to me.			.589			
29. If my sexual partner does not get satisfied completely, it does not mean that I have failed.			.576			
19. If I cannot perform well sexually whenever my partner is in the mood, I would consider that I have the problem.			.564			
24. I can feel OK about my lovemaking even if my partner does not achieve orgasm.			.540			
4. I get upset if I think I have not completely satisfied my partner sexually.			.485			

Table II. (*Continued.*)

RBI Item	Factor pattern loadings					
	Disagree (D)	Needs (SN)	Sex (S)	Mindr. (M)	Dif. (DU)	Change (C)
9. If I'm not in the mood for sex when my partner is, I don't get upset about it.			.357			
32. People who love each other know exactly what each other's thoughts are without a word even being said.				.729		
17. People who have a close relationship can sense each other's needs as if they could read each other's minds.				.646		
22. I do not expect my partner to sense all my moods.				.435		
37. If you have to ask your partner for something, it shows that s/he was not "tuned into" your needs.				.365		
40. Men and women will always be mysteries to each other.					.855	
15. Men and women probably will never understand the opposite sex very well.					.790	
35. You can't really understand someone of the opposite sex.					.707	
10. Misunderstandings between partners generally are due to inborn differences in psychological makeups of men and women.					.390	
33. If you don't like the way a relationship is going, you can make it better.						.569
38. I do not expect my partner to be able to change.						.530
28. If my partner wants to change, I believe that s/he can do it.						.491
13. A partner can learn to become more responsive to his/her partner's needs.						.439
8. My partner does not seem capable of behaving other than s/he does now.						.397

Note. Only factor loadings > .35 are presented. Rather than the traditional five subscales, we are presenting the factor loadings of a six-factor solution in which the *Sexes are Different* subscale is divided into two factors, *Sexes are Different in Needs* (SN) and *Difficulty Understanding the Opposite Sex* (DU), as described in the text. Other factors listed are Disagree (D) = *Disagreement is Destructive; Sex* (S) = *Sexual Perfectionism;* Mindr. (M) = *Mindreading is Expected;* Change (C) = *Partners Cannot Change*.

Change) as anticipated. The items that did load significantly on the C subscale ask about expectations of the partner (e.g., 28. "If my partner wants to change, I believe that s/he can do it") or relationships more generally (e.g., 13. "A partner can learn to become more responsive to his/her partner's needs"). The items that did not load on

that scale are not expectations but rather are predictions of future behavior based on past negative behaviors that may continue to be problematic (e.g., 3. "Damages done early in a relationship probably cannot be reversed"; 18. "Just because my partner has acted in ways that upset me does not mean that s/he will do so in the future"; and 23. "A partner who hurts you badly once probably will hurt you again").

Items 7 and 12 also did not load on the hypothesized factor, factor M (*Mindreading is Expected*). The other items in subscale M ask about what should happen in a relationship (e.g., 27. "A partner should know what you are thinking and feeling without having to tell"), whereas Item 7 focuses on the meaning of the behavior rather on what should be done (e.g., "If I have to tell my partner that something is important to me, it does not mean that s/he is insensitive to me). Similarly, Item 12 ("I get very upset if my partner does not recognize how I am feeling and I have to tell him/her") focuses on the feeling of being upset rather than solely on what should be done; this item had a significant loading only on factor D (*Disagreement is Destructive*). Out of all of the items that did not load significantly on the target factor, Item 12 was the only item that loaded significantly on another factor.

Lastly, Items 14 and 25 also did not load significantly on the target factor. It is not surprising that Item 14 did not load on the target S (*Sexual Perfectionism*) scale because it had a very different focus than the other subscale items. All of the S subscale items address questions about one's own lovemaking abilities except Item 14, which asks about a partner in general (e.g., "A good sexual partner can get himself/herself aroused for sex whenever necessary"). Also Item 25, originally constructed to load on the MF (*Sexes are Different*) scale did not load on any factor when the MF scale split into SN or DU. Upon examination, Item 25 ("Biological differences between men and women are not major causes of couples problems") is not similar to either the SN items that focus on differences in emotional needs, nor to the DU items that focus on difficulties understanding the opposite sex.

It seems that the problematic items (3, 7, 12, 14, 18, 23, and 25) do not load on the expected variables because they differ slightly in content from the other items in the target subscale. Even with the existence of problematic items, the six-factor model was the most plausible structure and a substantial improvement over the original five-factor model proposed by Eidelson and Epstein (1982). The original five-factor stucture was used as the comparison as that structure is the one on which the questionnaire is based. The six-factor model that we proposed was compared with the original five-factor model on tests for statistical robustness. As can be seen in Table III, the percentage of significant target loadings is 82% for the six-factor model, a substantial improvement over the 58% demonstrated by the original five-factor model. Similarly, the percentage of significant nontarget loadings (cross-loadings $>$ .35) is only 1% for the six-factor model compared with 27% for the original five-factor model proposed by Eidelson and Epstein (1982).

Confirmatory Factor Analysis (Post Hoc)

Post hoc analysis of the six-factor model was conducted using CFA techniques. The CFA is a more powerful test of factorial validity than the EFA because it can (a) produce a unique factorial solution; (b) define a testable structure; and (c)

Table III. Summary Statistics for EFA

	Five-factor model ($n = 209$)	Six factor model ($n = 209$)
Target loading[a]		
High	.86	.85
Low	.23	.22
Median	.60	.56
% ≥.35	58%	83%
Nontarget loadings[b]		
High	.33	.37
Low	.00	.00
Median	.08	.06
% ≥.35	27%	1%

Note. Target loadings are factor loadings on the factor that the item was designed to measure; nontarget loadings refer to all other factor loadings.
[a]40 factor loading.
[b]160 factor loadings for five-factor model; 200 factor loadings for six-factor model.

assess the extent to which a hypothesized model fits the data and suggest alternative parameterization for model improvement (Byrne, 1989).

To test the six-factor model, the subscales were maintained in their original form (as proposed by Eidelson and Epstein in 1982) with the exception of MF dividing into SU (items 15, 35, and 40) and SN (items 5, 20, and 30). Additionally, the seven problematic items (3, 7, 12, 14, 18, 23, and 25) were not included in the analysis. The goodness-of-fit indices for this model (Model 1) are presented in Table IV. The six-factor model that was tested is shown in Fig. 1. It was hypothesized that the RBI would be explained by six factors: Disagreement is Destructive (DISAGREE; $\varepsilon 1$), Mindreading is Expected (Mindreading, $\varepsilon 2$), Partners Cannot Change (Change; $\varepsilon 3$), Sexual Perfectionism (Sex; $\varepsilon 4$), Sex Differences in Needs (Needs; $\varepsilon 5$), Difficulties Understanding the Opposite Sex (Misunderstanding; $\varepsilon 6$). Also, it is posited that the subscales will have nonzero loadings on the target factors ($\lambda 1$, 1 to $\lambda 31$, 6) and zero loadings on all of the other factors and that the factors will be correlated ($\phi 2$, 1 to $\phi 6$, 5). Lastly, it is hypothesized that the error terms for each of the measures will be uncorrelated ($\Theta_\delta 1$ to $\Theta_\delta 33$). The first variable in the phi matrix ($\phi 2$, 1 to $\phi 6$, 5) was allowed to correlate.

The coefficient of determination for the six-factor model was excellent (.999) indicating that the combination of the 33 items served to adequately measure the factors. Although the combination of the factors was excellent, the reliability of each item (R^2) with respect to its underlying latent construct (R^2) ranged from good to

Table IV. Sensitivity Analysis for the Confirmatory Factor Analysis of the Relationship Belief Inventory

Models	χ^2	df	$\Delta\chi^2$	Δdf	χ^2/df	GFI	AGFI	CFI	RMR
Null five-factor ($N = 205$)	2045	740			2.76	.67	.63	.58	.15
five-factor ($N = 205$)	1870	730	175	10	2.56	.69	.64	.61	.10
Null six-factor ($N = 205$)	1309	495			2.76	.72	.68	.67	.15
six-factor ($N = 205$)	1122	480	187	15	2.34	.75	.71	.71	.09
six-factor male ($n = 99$)	978	480	331	15	2.04	.62	.56	.45	.12
six-factor female ($n = 106$)	982	480	327	15	2.05	.64	.58	.57	.11

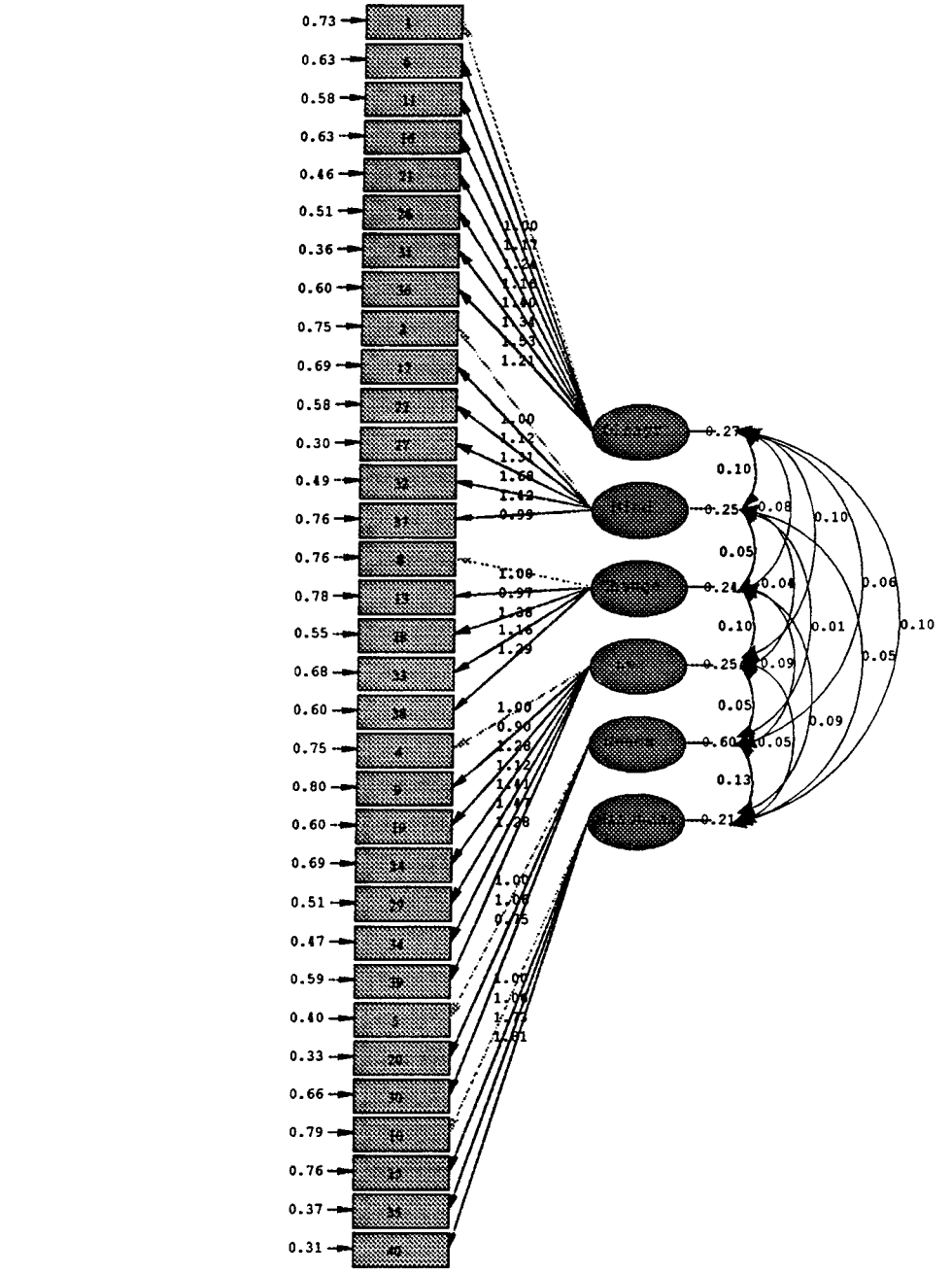


Fig. 1. Confirmatory factor analysis of the six-factor model.

poor. The most reliable item was Item 40 ($R^2 = .747$) and Item 13 was the least reliable ($R^2 = .098$).

The goodness-of-fit indices are presented in Table IV. As can be seen from the fit indices the model of fit was not an extremely close fit. Chi-square was significant ($\chi^2 = 1122$, $df = 480$), $\chi^2/2 = 2.34$ (close to the recommended value of 2), GFI = .75, AGFI = .71, CFI = .71, and RMR = .092. Lower fit statistics are to be expected when a model of this size (6 latent variables and 33 measurement variables) is developed parsimoniously. However, these findings also suggest that the model could be further refined.

In order to compare the fit of the six-factor model to the fit of the original five-factor model proposed by Eidelson and Epstein (1982), a CFA of the original five-factor model was conducted (see Fig. 2). For this analysis the subscales were maintained in their original form. This format was chosen as this is the structure that is presently used for the questionnaire. Once the CFA was conducted, a chi-squared difference test was employed to compare the fit indices of both models. This value can be tested statistically because the differential ($\Delta\chi^2$) is chi-square distributed, with the degrees of freedom equal to the difference between the degrees of freedom (Δdf) between the two models. Using the chi-squared difference test, we determined that the six-factor model was a significant improvement ($p < .001$) over the five-factor solution, with $\Delta\chi^2 = 58, \Delta df = 5$.

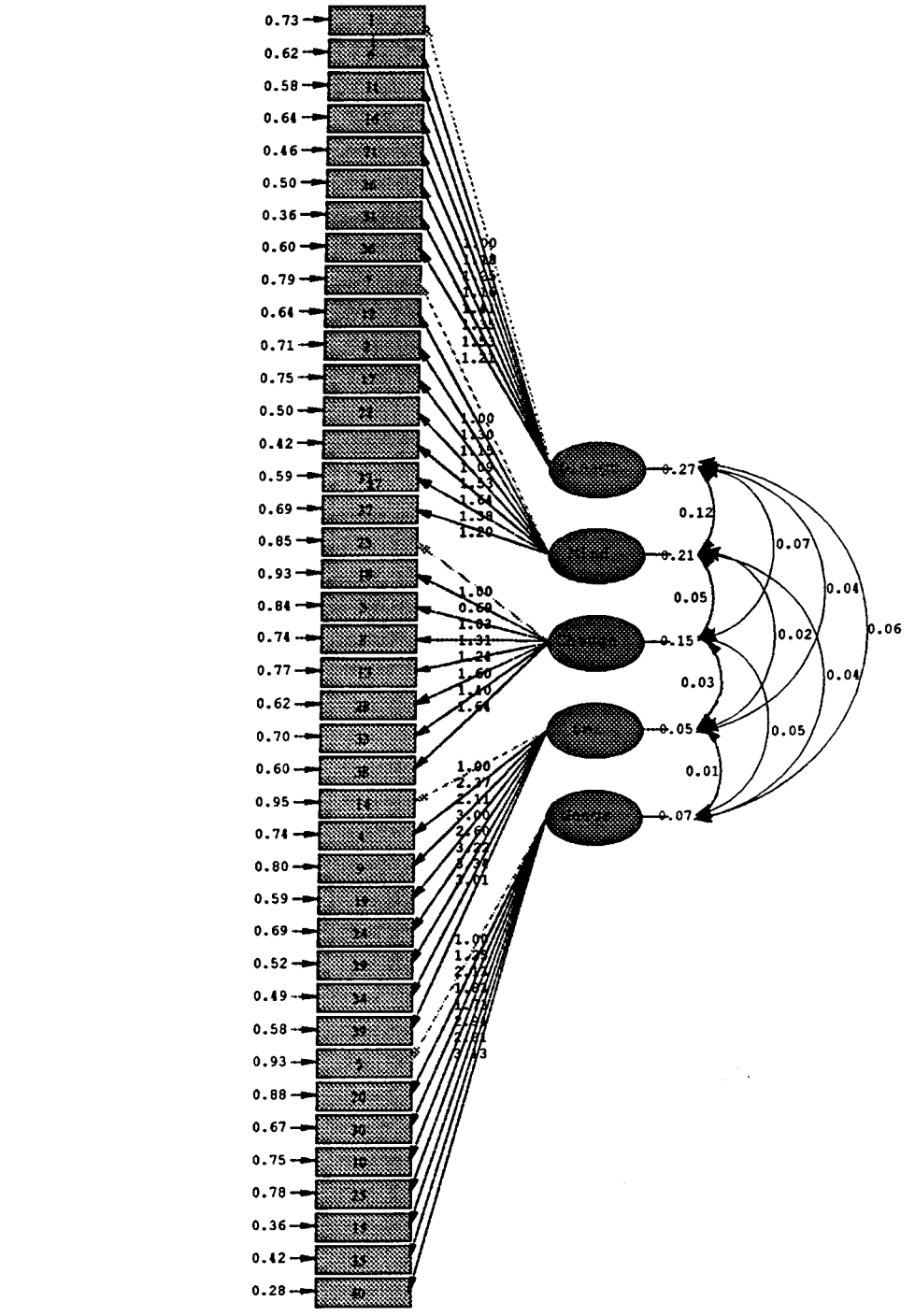
A post hoc examination was undertaken to explore whether there was a difference in the fit of this model for the sample of men and the sample of women. Because of the relatively small sample sizes involved, it is important to interpret this analysis with caution. The results (presented in Table IV) show that the models fit the two populations almost identically, with the chi-squared statistics differing by only .4% ($\Delta\chi^2 = 4$). The remaining fit statistic (see Table IV) showed a similar pattern. An examination of the loadings of the measurement variables indicated a similar pattern with all 33 items being significant on the models for both genders (same as the combined model). This indicates that the same measurement variables consistently and significantly contributed to all three models. Thus, we can conclude that the model fit for men and women is quite similar.

Internal Consistency of the Factors

The internal consistency of the factors of the six-factor model (six-factors with the seven problematic items removed) was examined. The Cronbach's alpha for the C factor was low (.58) whereas the alpha coefficients for the other factors were much better (D, = .83; M, = .77; S, = .75; SN, = .74; and DU, = .83).

DISCUSSION

The intent of this study was to test the factorial structure of the RBI using EFA and CFA procedures. The results of the EFA procedures revealed an unexpected-break six-factor structure, rather than the original five-factor model proposed by



Chi-Square=1870.42, df=730, P-value=0.00000, RMSEA=0.088

Fig. 2. Confirmatory factor analysis of the original five-factor model proposed by Eidelson and Epstein (1982).

Eidelson and Epstein (1982). The items from the *Sexes are Different* (MF) subscale loaded on two new factors: Sexes *are Different in Needs* (SN) and *Difficulties Understanding the Opposite Sex* (DU). In addition, there were several items that failed to load on any factor or had significant loadings on a nontarget factor. These results may shed light on the reasons for questionable psychometric properties demonstrated by the RBI in prior research (e.g., Bradbury & Fincham, 1993).

The most robust subscale was *Disagreement is Destructive*—all of its items loaded significantly on that factor and not significantly on any other factors. Also, the internal consistency of that subscale was good (.83). Similarly, the *Mindreading is Expected* and *Sexual Perfectionism* subscales provided well-defined factors once the problematic items were removed (one from *Mindreading is Expected* and two from *Sexual Perfectionism*) and the internal consistencies were adequate (.77 and .75, respectively). The *Sexes are Different* and *Partners Cannot Change* subscales, consistent with Bradbury and Fincham's findings (Bradbury & Fincham, 1993), were not psychometrically robust. The *Sexes are Different* subscale loaded on two factors (*Sexes are Different in Needs* and *Difficulty Understanding the Opposite Sex*), rather than one and the Cronbach's alpha coefficients of the new subscales were acceptable (.83 and .73 for SN and DU, respectively). The *Partners Cannot Change* subscale required the deletion of four items to be a well-defined factor; however, the Cronbach's alpha coefficient still remained unacceptably low (.58). Thus, this subscale requires substantial alteration before it can be expected to yield reliable and valid information.

The six-factor model we obtained was then tested in an exploratory fashion using CFA procedures. This model proved to be a significant improvement over the original five-factor model proposed by Eidelson and Epstein (1982). Thus, there is preliminary support for the position that the RBI is enhanced with a six-factor structure and that the problematic items should be reconstructed or deleted. However, the fit indices of the six-factor model were still not indicative of a good fitting model and the variance accounted for by the six factors was relatively limited. Thus, further research of the six-factor model is needed to confirm these results and to refine the instrument.

Although the RBI is used frequently by clinicians and researchers, our findings suggest that more attention to the psychometric properties of the measure is warranted. Future research could attempt to replicate and refine the present findings on both clinical and community samples using exploratory and confirmatory factor analytic techniques. Additionally, although gender differences were not evident in the exploratory analysis that we did, it would be important for future research to test for measurement and structural invariance across gender with a large sample size. Until such analyses are conducted and the factorial validity of the RBI is clarified, we would recommend against the further use of the current version of the RBI.

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