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The Taxometrics of Marriage: Is Marital Discord Categorical?

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Abstract

This study used taxometric methods to investigate the latent structure of the construct of marital adjustment as indexed by the Marital Adjustment Test (MAT; H. J. Locke & K. M. Wallace, 1959). That is, the authors examined whether marital adjustment is best thought of as a "dimension" of adjustment only or whether there also are categorical differences between "discordant" and "nondiscordant" couples. Analyses of data provided by 447 couples married for approximately 2 years provided converging evidence for a latent category of marital discord, suggesting that marital discord can be viewed as a qualitatively distinct state experienced by approximately 20% of the couples in the current sample. Implications for marital assessment are outlined.

Marital researchers variously characterize couples as maritally "dissatisfied," "distressed," or "discordant," often using these terms interchangeably. However, categorizing couples as "discordant" versus "nondiscordant" implies that a qualitative distinction can be drawn between distressed and nondistressed couples. Further, categorization itself, regardless of the label used, implies a belief that researchers are able to correctly assign couples to the appropriate category using currently available measures. In the absence of a true criterion measure, this belief may appear either tautological or perhaps merely untestable (Heyman, Feldbau-Kohn, Ehrensaft, Langhinrichsen-Rohling, & O'Leary, 2001). That is, even though it is conventional to designate a couple as discordant if the mean couple score is below 97 on the Dyadic Adjustment Scale (Spanier, 1976) or if the summed couple score is 200 or below on the Marital Adjustment Test (MAT; Locke & Wallace, 1959), these cutpoints cannot be shown to be better than any number of other possible alternative cutpoints in the absence of a true criterion. At the same time, one cannot determine the convergent validity of a

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proposed criterion measure in the absence of nonarbitrary cutpoints on commonly used marital scales. Accordingly, the marital area would seem to be in a “Catch 22” situation: We cannot easily proceed with the development of a criterion measure of marital discord without identifying nonarbitrary cutpoints for commonly used marital inventories, but we cannot readily validate particular cutpoints for these measures without a true criterion measure of marital discord.

Of course, the use of any cutpoint begs the question of whether there really is a qualitatively different state of “marital discord” and, if so, whether commonly used marital adjustment scales provide useful indicators of this qualitatively different state. The answer to this question has profound implications for research and theory in the marital area. If evidence of a categorical difference between maritally discordant and nondiscordant couples is found, this would provide powerful support for the argument that it is both necessary and desirable to develop a criterion measure of marital discord (Heyman et al., 2001). At the same time, if information about the approximate frequency of marital discord could be found, this would provide guidance for efforts to develop such a criterion measure. Conversely, because dichotomizing a variable that should be treated as continuous is equivalent to discarding more than a third of one's sample (Cohen, 1983), if marital discord has no latent categorical properties, this would suggest that one should not dichotomize couples into discordant and nondiscordant categories. This would also be an argument against the development of a categorical criterion measure of marital discord.

Why Might One Expect Marital Satisfaction to Be Well Represented as a Single, Continuous Dimension?

Reports of marital distress appear to be linked to a dimension of individual negative affectivity (e.g., Fincham, Beach, & Kemp-Fincham, 1997; Karney & Bradbury, 1997). Likewise, the intraindividual changes produced by interaction patterns are well modeled as a linear effect over time (Karney & Bradbury, 1997). In addition, external life events influence level of satisfaction (Story & Bradbury, 2004). Accordingly, to the extent that variations in environmental events reflect a continuum of severity, they might be expected to stretch the range of marital satisfaction scores in a relatively continuous manner. As a result of these influences, one might expect a fine gradation of different levels of satisfaction with no point of discontinuity or categorical differences.

Why Might One Expect Marital Discord to Be Categorical?

Marital interaction research indicates that “distressed” couples are characterized by an increased likelihood of responding to negative partner behavior with negative behavior of their own (e.g., Margolin & Wampold, 1981; for reviews of the supporting literature, see Fincham & Beach, 1999; Gottman, 1999; Weiss & Heyman, 1990). This creates the potential for a behavioral feedback loop resulting in long chains of negative behavior for some couples and relatively quick exits from negative interactions for others. If these chains of negative behavior set the stage for further negative interactions in the future, there is the potential for “causal loops” of the sort that are characteristic of close relationships (Kelley et al., 1983, pp. 58–62). Indeed, such causal loops may set the stage for the emergence of differential perceptual and attributional biases that lead to further divergence in behavior and satisfaction over time (e.g., Fincham & Bradbury, 1993; Murray, 1999). Accordingly, some partners may become increasingly negative in their feelings toward each other as a function of their own internal couple dynamics without further influence from individual characteristics or external events. This could occur either because one partner experiences substantial decline despite little change in behavior or satisfaction in the partner or because both partners experience declines in tandem.

Consistent with the hypothesis of two distinct populations, Gottman (1994) discussed the possibility that continuous changes in the nature of a couple's interaction (p-space) could be related to an underlying discrete change in the perception of the partner (q-space). Such a discontinuity in perception of the partner and the associated felt well-being about the relationship would seem to require latent bimodality in marital discord, even if it does not require obvious and manifest bimodality in the distribution of satisfaction scores. This perspective was further elaborated in the nonlinear dynamical perspective espoused by Gottman, Murray, Swanson, Tyson, and Swanson (2002) and leads to the expectation that there will be evidence of two distinct populations of marital satisfaction scores: discordant and nondiscordant.

What Are Taxometric Procedures, and How Do They Identify Latent Categories?

Taxometric procedures (Waller & Meehl, 1998) have been developed to address the question of whether psychological constructs are best characterized as being dimensional only or whether there is evidence of a latent categorical structure superimposed on the dimension of interest. If there is evidence of a latent categorical structure, members of the group of interest are identified as members of the "taxon" and nonmembers are identified as members of the "complement." Meehl's taxometric approach incorporates multiple tests to avoid the false/incorrect identification of a taxon, and this approach has been tested in Monte Carlo studies (e.g., Meehl & Yonce, 1996; Waller & Meehl, 1998). Taxometric procedures are superior to clustering analyses for the identification of low base rate taxa (Beauchaine & Beauchaine, 2002) and produce estimates of the base rate of "types" (taxon and complement) when the solution is taxonic (Waller & Meehl, 1998). Accordingly, this approach provides a method for identifying whether a construct is categorical even in the absence of a true criterion measure and also provides an indication of the ideal cutpoint for correctly identifying members of the taxon and the complement (Schmidt, Kotov, & Joiner, 2004; Waller & Meehl, 1998).

Taxometric procedures provide a set of tools that can be usefully applied in the marital area to examine the underlying structure of marital satisfaction. If marital satisfaction were found to be "taxonic," this would suggest an underlying (or latent) categorical difference between couples who are "nondiscordant" and couples who are "discordant." Importantly, if couple scores are examined through taxometric procedures, it will be the couple that is found to be in a different category than other couples, not just the individual spouses. Accordingly, the current study differs from previous applications of taxometric procedures that have focused only on the individual level of analysis. Specifically, if category differences are found when

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couple-level indicators are used, this will suggest that “marital discord” exists at a systemic (dyadic) level and not just at an individual level.

Why Not Just Examine the Distribution of Couple Satisfaction Scores for Bimodality?

Given the complexities of taxometric analyses, one might wonder about the utility of simply plotting summed couple scores to look for evidence of bimodality. Following this strategy, we examined the plot of summed couple MAT scores in the current data set and found a slight indication of bimodality in the distribution in approximately the right region to suggest the presence of a distinct population of “discordant” couples. Unfortunately, there are no criteria for how much “bimodality” at the manifest level is required to conclude that the data represent a mixture of two latent distributions. Indeed, bimodality at the manifest level is neither sufficient nor necessary to demonstrate a latent categorical (i.e., taxonic) structure. Bimodality is not sufficient because certain scaling or other item characteristics may produce bimodality in the absence of an underlying categorical structure, as may certain sampling strategies (Grayson, 1987; Waller & Meehl, 1998). Likewise, bimodality is not necessary because it is common for mixtures of two latent distributions to produce a manifest, unimodal distribution if the means of the latent distributions are not widely separated (see Waller & Meehl, 1998). For example, even though the average height of men and women differs by nearly two standard deviations, and so height is an excellent indicator of gender, the distribution of height is not bimodal in a mixed sample of men and women. Thus, examination of the overall distribution of summed couple scores must be viewed as preliminary only and does not constitute an adequate approach to examining the latent structure of marital satisfaction.

Description of Taxometric Procedures Used

To test for the presence of a latent categorical structure in the MAT indicators, we used three taxometric procedures: MAXCOV (Maximum Covariance and Hit Max), MAMBAC (Means Above Minus Below a Cut), and L-MODE (Latent Mode Factor Analysis). Each of these procedures is available in a recently developed analytic package (NATAX; Amir, 2002). In MAXCOV, two indicators of a construct are used to estimate the covariance between indicators at various levels of a third indicator. In NATAX, the third indicator is the total score for the item set minus the two items whose covariance is being estimated. If the assumption of taxonicity is correct, the covariation between the first two indicators will tend toward zero for individuals very high and very low in the distribution of total scores but will increase as the third indicator approaches the point at which there is an even number of taxon and nontaxon members (see Waller & Meehl, 1998, for a complete description). By repeating the analysis for all possible sets of item indicators and averaging the standardized results, it is possible to generate an average curve that represents the covariance among items at increasing levels of symptomatology. If the curve representing the covariance among item indicators is relatively flat, if there are minor elevations in the curve, or if there are several elevations and they are inconsistently placed, this fails to support a taxonic interpretation. Conversely, if the average curve resulting from the MAXCOV analysis displays a single prominent peak, this supports a taxonic interpretation of the data.

It is possible to supplement traditional taxometric procedures by generating simulated dimensional data that have similar item-level characteristics (e.g., intercorrelation and skew) but are known to be dimensional. In cases in which one is concerned that the shape of the curves resulting from taxometric analyses might be influenced by distributional properties such as skew, this allows one to compare the curves produced by the observed data with those produced by simulated dimensional data with similar characteristics. If the same analytic procedures applied to the simulated dimensional data produce different curves and a pattern of results unsupportive of taxonicity but the observed data support the taxonic hypothesis, one would be more confident in asserting that the observed data are taxonic and that the results are not spurious. If the data are found to be taxonic, the point of greatest covariation in the sample is identified (i.e., the “hit-max” interval in MAXCOV) so that the general covariance mixture theorem (Waller & Meehl, 1998) can be used to estimate the base rate of the taxon and the complement.

Are There Procedures Available to Confirm the Results?

It is customary to confirm apparently taxonic results in MAXCOV using some of the additional analytic strategies, referred to in the aggregate as “coherent cut kinetic procedures,” that have been developed to distinguish between latent taxa and latent dimensions. Because each approach is based on different statistical considerations, each has different statistical vulnerabilities. Therefore, using several of the “coherent cut kinetic procedures” allows one to check the consistency of the results among procedures. That way, if a particular distributional abnormality is responsible for the appearance of taxonicity in MAXCOV, it will probably become apparent in subsequent analyses involving other taxometric procedures. As noted by Waller and Meehl (1998), it would be a “strange coincidence” if one found consistency across several of the coherent cut kinetic procedures in the absence of a latent taxonic structure, and so the application of multiple consistency tests provides a strong test of the taxonic hypothesis. Because full descriptions of these approaches are available (e.g., Amir & Seals; Meehl & Yonce, 1996; Waller & Meehl, 1998), we provide only an abbreviated description of each.

The MAMBAC procedure differs from MAXCOV in requiring only two quantitative indicators. When more than two indicators are available, as in the current case, one of the variables is treated as the input variable, and each of the remaining variables may be used as the output variable. Successive cuts are used to examine changes in the mean difference of individuals above versus those below the cutpoint. If the latent structure of the construct is dimensional, the resulting graph will be dish shaped, with extreme cutpoints producing greater mean difference scores than points closer to the mean of the overall distribution (Meehl & Yonce, 1994). Conversely, if the latent structure is taxonic, the resulting graph will be humped, and the peak will indicate the point that best separates the taxon and complement groups.

The L-MODE procedure involves the use of a modified factor-analytic approach under the assumption that a categorical structure should produce two modes in the factor score density plot, reflecting the presence of two categories. In contrast, a dimensional structure should produce only one mode or multiple modes. In addition, if there are two modes, the placement of the modes conveys information about the frequency of two latent distributions that make up the composite distribution (Waller & Meehl, 1998). Accordingly, distance from each of the modes represents an index of the likelihood of belonging to that distribution and so provides a method of classifying individuals.

Method

Participants and Measures

Couples (*N* = 447) were drawn from the Adult Development Study, a longitudinal study of marriage. The couples had been recruited through a brief (5–10-min), paid interview conducted at the Buffalo city hall after they had applied for a marriage license. Fewer than 8% of the first-time marriage applicants who were approached declined to participate. Couples were eligible for the study only if the marriage was the first for both husband and wife and the individuals were 18 years of age or older, spoke English, and were literate. The majority of the couples were Caucasian (husbands: 60%; wives: 63%) with a fairly large percentage of African Americans (husbands: 32%; wives: 30%) and very small percentages of Hispanic, Asian, and Native American couples. Overall, 62% and 68% of the husbands and wives, respectively, had completed some college education or more. Approximately 8% of the husbands and 6% of the wives had less than a high school education. At the time of the marriage, 38% of the husbands and 42% of the wives were parents; 10% of the wives were pregnant. Sixty-nine percent of the couples were living together before marriage. The cohabiters had been together an average of 30.9 (*SD* = 36.8) months; the median was 18.0 months. The data reported here were obtained from a questionnaire that was included in a larger assessment package mailed to couples when they had been married 24 months.

Indicators for Taxometric Analyses

MAT—The MAT (Locke & Wallace, 1959) is one of the most frequently used measures of marital quality. It consists of 15 questions with variable response formats that can be answered in 5–10 min. Locke and Wallace reported that the instrument's split-half reliability was .90 and that it discriminated between couples “judged to be exceptionally well-adjusted in marriage by friends who knew them well” and those who “were known to be maladjusted in marriage” (Locke & Wallace, 1959, p. 254), suggesting its utility in identifying marital discord at the couple level. It also correlates with clinicians’ judgments of marital discord (Crowther, 1985).

Creation of dyadic indicators—To create a set of indicators that would represent couple-level marital satisfaction without artificially inflating indicator skew, we recoded responses to the MAT so that higher scores were always more negative; however, responses were not weighted (e.g., the overall satisfaction item had a maximum of “7” and was not recoded to have a maximum of “35”). All indicators for husbands were multiplied by the corresponding indicators for wives. The resulting product indicators were examined for skew, and all product indicators with skews greater than 2.5 were eliminated to reduce the potential for distribution-related problems in the taxometric analyses. The resulting item set was examined for indicator characteristics of mean, standard deviation, skew, kurtosis, and indicator validity (see Table 1).[1]

Validation Measures

The Multidimensional Satisfaction Scale (MDS) is an 11-item measure (Kearns & Leonard, 2004) that assesses satisfaction with 11 functional aspects of marriage: social pleasure, division of labor, problem solving, sexual intimacy, emotional security, companionship, balance of power, feelings of love, emotional closeness, personal growth, and expressions of affection. Alpha coefficients were .96 for husbands and .96 for wives.

The Leisure Activities Scale (LAS) was developed to assess the frequency with which spouses spend time together in various leisure activities. Response options range from *we never do this* (1) to *more than once a week* (6). Ten areas of activity are assessed: outdoor, shopping, sports, home, driving, nightclubs, intellectual activities, bowling, movies or dinner, and cultural events. Total scores reflect both range and amount of joint activities. Alpha coefficients were .71 for husbands and .74 for wives.

The Test of Negative Social Exchange (TENSE) is composed of 18 items assessing the extent to which negativity characterizes one's social interactions (Ruehlman & Karoly, 1991). The TENSE was modified for the current investigation to refer specifically to negative behaviors by one's partner. Behaviors assessed include those reflecting hostility/impatience, insensitivity, interference, and ridicule. Alpha coefficients were .93 for husbands and .95 for wives.

Results

Ideally, correlations within pure taxon and pure complement groups (i.e., “nuisance correlations”) should be small relative to the overall sample correlation. Accordingly, as a first step we computed the correlations for likely members of the taxon and complement groups. Correlations for the 13 product indicators averaged .143 for the putative “taxon” group (i.e., top 15%) and .092 for the putative “complement” group (i.e., bottom 50%). These correlations were within tolerable limits for taxometric analyses (see Waller & Meehl, 1998, p. 17). In the total sample, the average item–total correlation for the 13 product indicators was .396. Indicator validities were estimated by dividing the difference between the means of the high taxon and complement groups by the overall standard deviation for the sample. Estimated validities ranged from 0.87 to 2.16, with an average of 1.75,[2] again well within tolerable limits for taxometric analyses. Accordingly, the product indicators seemed appropriate for taxometric analysis.

MAXCOV

To examine the taxonicity of the MAT items using MAXCOV, we calculated the covariances of the 78 possible pairwise combinations of the 13 indicator variables. The covariances of these 78 possible combinations were averaged and plotted as a function of

[1]For each analysis, we conducted a parallel analysis using the sum of two of the current indicators. We dropped the item with the lowest validity. The indicators were summed as follows: (a) “agreement finance” with “agreement recreation,” (b) “agreement affection” with “agreement friends,” (c) “agreement sex” with “agreement conventionality,” (d) “agreement philosophy of life” with “agreement in-laws,” (e) “engaging in outside interests together” with “marrying same person,” and (f) “overall marital satisfaction” with “usual way of resolving disagreements.”

[2]Tabled validities are based on taxon assignment rather than initial estimates.

the sum of the remaining items to produce the average curve presented in Figure 1. As can be seen in Figure 1, the taxometric analysis using the 13 “product indicators” is consistent with the presence of a marital taxon. That is, there is evidence of a peak in the plot of the covariances in this sample, and it assumes the shape one would anticipate for a taxon with a moderately low base rate. The curve is relatively flat until just before the “hit-max interval” (i.e., the interval in which the covariance peaks) and then declines after that interval. Adjacent to the graph for the observed data are the data obtained for a simulated data set of equal size that was designed to have similar skew and item intercorrelation but to be dimensional only and not taxonic. This provides a dimensional alternative against which the taxonic hypothesis can be compared (cf. Beauchaine, 2003). As can be seen, using precisely the same analytic methods, the dimensional data produce a less pronounced elevation and no clear peak. That is, there is no reduction in covariance following the hit-max interval. Using the observed data, we estimated that taxon membership characterized 20.5% of the sample.[3]

We also examined each of the 78 individual MAXCOV plots for evidence of taxonicity. Plots were counted as “taxonic” if and only if they met strict quantitative guidelines indicating the presence of one and only one clear peak in the plot.[4] We found that 60% of the individual MAXCOV plots for the observed data showed a taxonic structure, but only 37% of the individual plots for the simulated dimensional data did so. According to Schmidt et al. (2004), when more than half of the individual plots are taxonic, this should be taken as evidence of taxonicity. The standard deviation in the base rate estimates based on the individual MAXCOV plots was .16 for the observed data, suggesting that one should place a relatively large confidence interval around the average base rate estimate of 17%. However the standard deviation for the simulated dimensional data was greater still (.22), demonstrating less convergence around a base rate estimate.

Consistency Tests

Consistency checks are a key part of the taxometric approach (Waller & Meehl, 1998). Accordingly, we next examined the marital taxon indicators using the MAMBAC procedure. We used one indicator as the input indicator (“If you had your life to live over would you marry the same person?”) and allowed each of the other product indicators to serve as output indicators. The MAMBAC procedure produced 12 curves corresponding to the 12 output indicators. The resulting average curve is shown in Figure 2. Again, supporting a taxonic interpretation, the distribution of difference scores reached a peak and then declined (see Meehl & Yonce, 1994, p. 1080). Conversely, the dimensional comparison data produced a greater elevation on the left side of the graph and no clear peak on the right, providing little support for a taxonic interpretation. In addition, consistent with the MAXCOV analysis, the base rate estimate from the MAMBAC procedure using the observed data was .186.[5]

[3]The base rate estimate for the pair indicator set using MAXCOV was .253.

[4]The decision rules were as follows. First, changes in covariance between slabs had to be no more than .1 before the hit max. Second, the covariance in the hit-max interval had to show a change greater than .1 from the adjacent or preceding slab and had to be more than .1 greater than all slab covariances other than those of adjacent slabs.

[5]The base rate estimate from the averaged curve for the paired indicator set using MAMBAC was .235, with base rate estimates ranging from .208 to .256 for the individual curves. Conversely, for the simulated dimensional data set, the average estimate was .28, with base rate estimates ranging from .14 to .43.

As a final consistency test, we used the L-MODE procedure. To examine the taxonicity of the 13 marital distress indicators using L-MODE, we estimated the base rate using the latent modes of the factor-score density plot. Because we knew that the expected base rate of the taxon from MAXCOV and MAMBAC was approximately 20%, we could identify the ranges of the factor-score density plot within which the mode should occur and determine whether elevations consistent with the presence of modes could be identified in this range. As can be seen in Figure 3, the smoothed curve resulting from the L-MODE analysis was consistent with the presence of a taxon (*p-taxon*) with a lower mode in the factor density function at –.50 (p-taxon = .2000). There was also evidence of bimodality, with a modest elevation at 2.3 (p-taxon = .159) that was consistent with an upper mode in the factor density function at approximately the correct location. Accordingly, examination with L-MODE was consistent with the presence of a low base rate taxon (average base rate estimate = 17.9%, with 23.7% of the total sample classified as taxon members).[6] Again, we created a comparison graph for a dimensional data set, and it can be seen that it involves multiple modes superimposed on a single skewed distribution and thus would not have supported a taxonic hypothesis. L-MODE applied to the simulated dimensional data also yielded an average base rate estimate of .426, an estimate that diverged widely from previous base rate estimates and so would not have supported the taxonic hypothesis. Accordingly, the results for L-MODE suggest that the dimensional data were different than the observed data and that taxometric analysis of a dimensional data set with item characteristics such as those of the observed data would not have lead to a spurious conclusion that the data were taxonic.

Case Assignment and Validity of Case Assignment

Couples were assigned to taxon or complement according to the results of L-MODE. After determination of the midpoint between the two factor density modes, those below the midpoint were assigned to the complement, whereas those above the midpoint were assigned to the taxon. To verify taxon membership, we used the L-MODE results for the six-indicator approach reported in the footnotes. We compared case assignment between the two approaches and found a 93.2% agreement rate, with the six-indicator approach being more conservative. Those assigned to the taxon by both approaches (n = 105; 23.5%) were contrasted with all other couples (n = 342; 76.5%).

To examine the hypothesis that positive and negative interaction patterns should be different for those in the taxon (i.e., discordant couples) and those in the complement (i.e., nondiscordant couples) and that they should show a different pattern of association with variability in satisfaction within each distribution, we examined shared leisure activities (LAS), negative partner behavior (TENSE), and an alternative measure of marital satisfaction not used in case assignment (MDS). Consistent with the hypothesis that the groups were capturing different couples, the two groups differed significantly on all three, $t(146) = –9.45$, $p < .01$; $t(133) = 11.33$, $p < .01$; and $t(135) = 15.45$, $p < .01$, respectively.

To test the role of taxon membership as a moderator of the relative weighting of positive and negative interactions, we examined the contribution of leisure activities (LAS) and negative

[6]The average base rate estimate from the paired indicator set using L-MODE was .200.

partner behavior (TENSE) to satisfaction scores (MDS) as a function of taxon membership. In Step 1 of the multiple regression, we entered the three main effects. We then entered the interaction of LAS with taxon membership and the interaction of TENSE with taxon membership in Step 2. The beta weights for LAS, TENSE, and group in Step 1 were .271, –.422, and .309, respectively. We also found that the interaction terms significantly incremented the R^2 value (ΔR^2 = .02.1, $p < .01$). This significant increase reflected the fact that the simple association for TENSE was greater among the complement members than among members of the taxon (–.547 vs. –.445), and, conversely, the simple association for LAS was smaller for members of the complement than for members of the taxon (.251 vs. .595). Thus, not only were the two groups different on a range of marital variables, but they also appeared to show a different pattern of connections among marital variables.

Finally, to address the issue of optimal cutpoints on the MAT, we examined the number of taxon members who would be identified by different MAT cutpoints. We found that a sample created with the traditional couple cutpoint of 200 would be composed of 32.6% nontaxon members and 67.14% taxon members, but 90% of all taxon members would be included. That is, the traditional cutoff would produce a high false positive rate but a low false negative rate. Conversely, using a more stringent cutpoint of 160 on the couple MAT would have created a group in which 99% of couples were members of the taxon, but only 71.4% of the taxon members would have been included. That is, a more stringent cutpoint would produce a very low false positive rate but a moderate false negative rate. The average couple MAT score of those identified as members of the taxon by L-MODE was 136.09 (range = 21 to 234), as compared with a mean of 239.15 (range = 159 to 312) for those in the complement.

Discussion

The current results converge to provide strong evidence that marital satisfaction is taxonic. That is, there is evidence of a discontinuity in marital satisfaction scores such that approximately 20% or fewer of the members of a community sample who have been married for 2 years experience marriage in a way that is qualitatively and not merely quantitatively different from their peers. The results are consistent with theoretical developments in the marital area emphasizing both threshold models (e.g., Gottman, 1994; Johnson, 1996) and the presence of causal loops in marital interaction (e.g., Kelley et al., 1983). The results do not depend on a particular taxometric method, and base rate estimates across taxometric methods converge. Accordingly, the results imply that it is a sensible analytic decision to dichotomize community couples into those who are “nondiscordant” and those who are “discordant.” Likewise, it may be sensible to create a criterion categorical measure of marital discord. In addition, it appears that previous suggestions that about 20% of a community sample may be “discordant” are consistent with the taxometric results for the members of a relatively homogeneous, young, first-marriage community sample with an extensive premarital history of cohabitation and childbearing.

It may seem puzzling that 31.3% of the sample fell below the traditional couple cutoff of less than 200 on the MAT after only 2 years of marriage. This raises two related issues. First, why were so many couples scoring below 200 on the MAT? Second, are all of these couples maritally discordant? With regard to the first question, it is likely that the relatively high rate of marital dissatisfaction in the current sample is the result of a large number of couples living together before marriage, inflating the number of years together relative to the number of years married. Indeed, the sample had been living together an average of 2.5 years at the time of this assessment. With regard to the second question, it seems likely that not all of the couples scoring below 200 in the current sample should be considered maritally discordant. Indeed, if one's goal is to select a sample of pure taxon members, a lower cutpoint on the MAT may be desirable. For example, when we used a cutpoint of 160, we obtained a nearly pure sample of taxon members. However, if one's goal is to identify as many taxon members as possible, it is noteworthy that a cutpoint of 200 on the MAT was successful in capturing more than 90% of the taxon members. Accordingly, as with all classification research, the ideal cutpoint will vary depending on the researcher's relative tolerance for false positives versus false negatives.

Of greatest importance, the present study suggests that there are optimal cutpoints on the MAT for various purposes and that it is reasonable to divide couples into discordant and nondiscordant dyads. We hope that the identification of the marital taxon will spur efforts to define more clearly the characteristics that are pathognomonic of marital discord and so should be included in a criterion measure of marital discord (cf. Heyman et al., 2001). By identifying the approximate point at which discontinuity occurs, the current results provide some guidance in the search for the most sensitive and specific indicators of the transition from nondiscordant (or “good-enough”) marriage to marital discord. At a minimum, it should be possible to identify a subset of items that function more efficiently to identify the base rate of marital discord in the general population and to identify particular individuals as discordant. Identification of indicators that are more efficient than the full set of MAT items should make it easier to establish specific etiologies for the development of marital discord in community samples and to identify predictors of risk for taxonic status in the future.

The current findings suggest that discordant and nondiscordant couples may differ qualitatively and not just quantitatively. If so, the current study strongly supports future efforts to validate the difference between discordant and nondiscordant couples. Groups identified by taxometric analyses need to be examined for differences in marital interaction, marital goals, and types of problems with which they are coping. Likewise, differences between members of the marital discord taxon and other married couples need to be examined in terms of marital developmental history and links to mental and physical health problems. If, for example, taxon membership were found to account for the emergence of excess health risks, this would suggest that public health campaigns could achieve their goals most efficiently by focusing on ways couples can avoid falling into the marital taxon rather than on ways to maximize marital satisfaction across the full range. Similar considerations suggest that the point of discontinuity might be examined as a nonarbitrary criterion of symptomatic recovery in marital therapy.[7]

[7]It should be noted that the property of hysteresis in nonlinear systems suggests caution regarding the assumption that the point of discontinuity in recovery will be the same as the point of discontinuity in the initial process of relationship satisfaction decline. That is, the point at which the couple becomes stably satisfied after having been distressed may be higher than the point at which the couple becomes stably distressed after having been satisfied.

It may also be important to examine taxonic couples in the community across time to determine whether some improve spontaneously (Waite & Luo, 2002). If so, comparison of taxon members who improve relative to taxon members who do not improve is likely to be a powerful research tool for generating preventive and community-based interventions and may prove more informative than an examination of change in marital satisfaction within the full range of community couples.

The results of the current study are limited by our reliance on a single self-report inventory. This limitation reflects common practice in marital research and should have worked against the taxonic hypothesis by increasing the amount of nuisance covariance in the data. Viewed in this light, finding evidence of a marital taxon under the current circumstances is all the more impressive. However, it will be important to determine whether similar base rates are obtained when different types of measures (e.g., observational measures or physiological measures) are used either separately or in combination with additional measures of marital satisfaction. Replication across samples and sets of indicators would provide assurance that marital discord involves a taxonic structure that extends beyond the particular characteristics of the MAT. Similarly, it will be important to replicate the current results in other large samples of married couples to identify any regional or subcultural differences in the cutpoint for marital discord. At the same time, the simple validities of the MAT items and the variability in base rate estimates within the subanalyses composing MAXCOV suggest that not all of the items of the MAT are equally useful in identifying taxon members. If so, we should view the current results as the beginning of a search for optimal indicators of the marital taxon rather than as merely confirming the utility of a particular widely used marital satisfaction inventory.

Finally, it is possible that the categorical nature of marital discord was more clearly observable in the current data because the sample was relatively homogeneous with regard to age, marital experiences, and demographics. This is not necessarily a limitation of the study, but it will be useful to keep this in mind in future replication attempts. It will be especially important to examine the extent to which the validity and utility of particular indicators of marital discord change as a function of marital history, length of the relationship, or ethnic and religious factors. At a minimum, it is important to keep an open mind about whether the indicators of taxonicity will be the same or different across different types of married populations.

In summary, the current study is the first, to our knowledge, to examine a homogeneous sample of young married couples for evidence of taxonicity in their experience of marital satisfaction. The finding that marital discord is taxonic—that is, it has a categorical structure—should encourage attempts to find predictors of taxonic status in longitudinal samples. The results lend strong support to recent theoretical trends in the marital area and suggest the potential for a shift in the goals of prevention work with newlywed and unmarried populations. Accordingly, continued exploration of the latent structure of marital satisfaction appears likely to be fruitful and has the potential to influence both research practices and public policy.

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References

Amir, N. [July 17, 2002] Taxometrics. 2002. from http://nas.psy.uga.edu/TAX.html

Amir N, Seals K. NATAX: A user friendly program for taxometric analyses. 2002 Manuscript submitted for publication.

Beauchaine TP. Taxometrics and developmental psycho-pathology. Developmental Psychopathology. 2003; 15:501–527.

Beauchaine TP, Beauchaine RJ III. A comparison of maximum covariance and k-means cluster analysis in classifying cases into known taxon groups. Psychological Methods. 2002; 7:245–261. [PubMed: 12090413]

Cohen J. The cost of dichotomization. Applied Psychological Measurement. 1983; 7:249–253.

Crowther JH. The relationship between depression and marital adjustment: A descriptive study. Journal of Nervous and Mental Disease. 1985; 173:227–231. [PubMed: 3981157]

Fincham FD, Beach SRH. Conflict in marriage. Annual Review of Psychology. 1999; 50:47–77.

Fincham, FD.; Beach, SRH.; Kemp-Fincham, SI. Marital quality: A new theoretical perspective.. In: Sternberg, RJ.; Hojjat, M., editors. Satisfaction in close relationships. Guilford Press; New York: 1997. p. 275-304.

Fincham FD, Bradbury TN. Marital satisfaction, depression, and attributions: A longitudinal analysis. Journal of Personality and Social Psychology. 1993; 64:442–452. [PubMed: 8468671]

Gottman, JM. What predicts divorce?. Hillsdale; NJ: Erlbaum: 1994.

Gottman, JM. The marriage clinic. Norton; New York: 1999.

Gottman, JM.; Murray, JD.; Swanson, CC.; Tyson, R.; Swanson, KR. The mathematics of marriage: Dynamic nonlinear models. MIT Press; Cambridge, MA: 2002.

Grayson DA. Can categorical and dimensional views of psychiatric diagnosis be distinguished? British Journal of Psychiatry. 1987; 151:355–361. [PubMed: 3427289]

Heyman RE, Feldbau-Kohn SR, Ehrensaft MK, Langhinrichsen-Rohling J, O'Leary KD. Can questionnaire reports correctly classify relationship distress and partner physical abuse? Journal of Family Psychology. 2001; 15:334–346. [PubMed: 11458637]

Johnson, S. Creating connection: The practice of emotionally focused marital therapy. Brunner/Mazel; New York: 1996.

Karney BR, Bradbury TN. Neuroticism, marital interaction, and the trajectory of marital satisfaction. Journal of Personality and Social Psychology. 1997; 72:1075–1092. [PubMed: 9150586]

Kearns JN, Leonard KE. Social networks, structural interdependence, and marital quality over the transition to marriage: A prospective analysis. Journal of Family Psychology. 2004; 18:383–395. [PubMed: 15222845]

Kelley, HH.; Berscheid, E.; Christensen, A.; Harvey, JH.; Huston, TL.; Levinger, G., et al. Analyzing close relationships.. In: Kelley, HH.; Berscheid, E.; Christensen, A.; Harvey, JH.; Huston, TL.; Levinger, G., et al., editors. Close relationships. Freeman Press; New York: 1983. p. 20-67.

Locke HJ, Wallace KM. Short marital adjustment and prediction tests: Their reliability and validity. Marriage and Family Living. 1959; 21:251–255.

Margolin G, Wampold BE. Sequential analysis of conflict and accord in distressed and nondistressed marital partners. Journal of Consulting and Clinical Psychology. 1981; 49:554–567. [PubMed: 7264037]

Meehl PE, Yonce LJ. Taxometric analysis: I. Detecting taxonicity with two quantitative indicators using means above and below a sliding cut (MAMBAC). Psychological Reports. 1994; 74:1059–1274.

Meehl PE, Yonce LJ. Taxometric analysis: II. Detecting taxonicity using covariance of two quantitative indicators in successive intervals of a third indicator (MAXCOV procedure). Psychological Reports. 1996; 78:1091–1227.

Murray SL. The quest for conviction: Motivated cognition in romantic relationships. Psychological Inquiry. 1999; 10:23–34.

Ruehlman LS, Karoly P. With a little flak from my friends: Development and preliminary validation of the Test of Negative Social Exchange (TENSE). Psychological Assessment. 1991; 3:97–104.

Schmidt, NB.; Kotov, R.; Joiner, TE. Taxometrics: Toward a new diagnostic scheme for psychopathology. American Psychological Association; Washington, DC: 2004.

Spanier GB. Measuring dyadic adjustment. Journal of Marriage and the Family. 1976; 38:15–28.

Story LB, Bradbury TN. Understanding marriage and stress: Essential questions and challenges. Clinical Psychology Review. 2004; 23:1139–1162. [PubMed: 14729426]

Waite, L.; Luo, Y. Marital happiness and marital stability: Consequences for psychological well-being.. Paper presented at the annual meeting of the American Sociological Association; Chicago. Aug. 2002

Waller, NG.; Meehl, PE. Multivariate taxometric procedures. Sage; Thousand Oaks, CA: 1998.

Weiss, RL.; Heyman, RE. Observation of marital interaction.. In: Fincham, FD.; Bradbury, TN., editors. The psychology of marriage. Guilford Press; New York: 1990. p. 87-117.

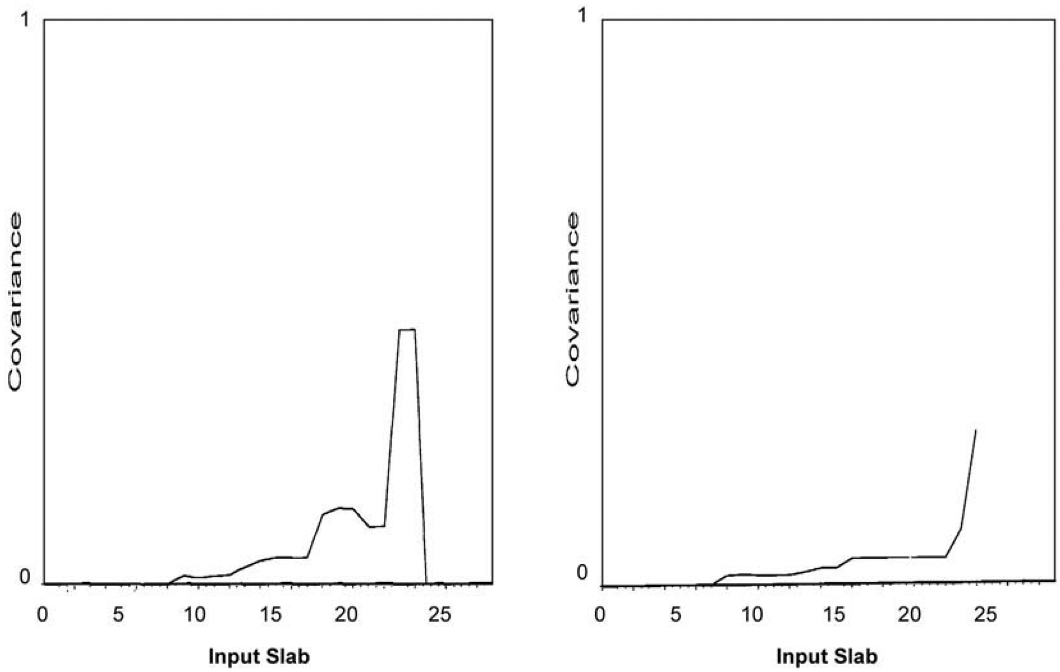

Figure 1.

MAXCOV (Maximum Covariance and Hit Max) with 13 marital satisfaction product indicators for the observed data (left) and for the simulated dimensional comparison sample (N = 447) with equivalent skew (right).

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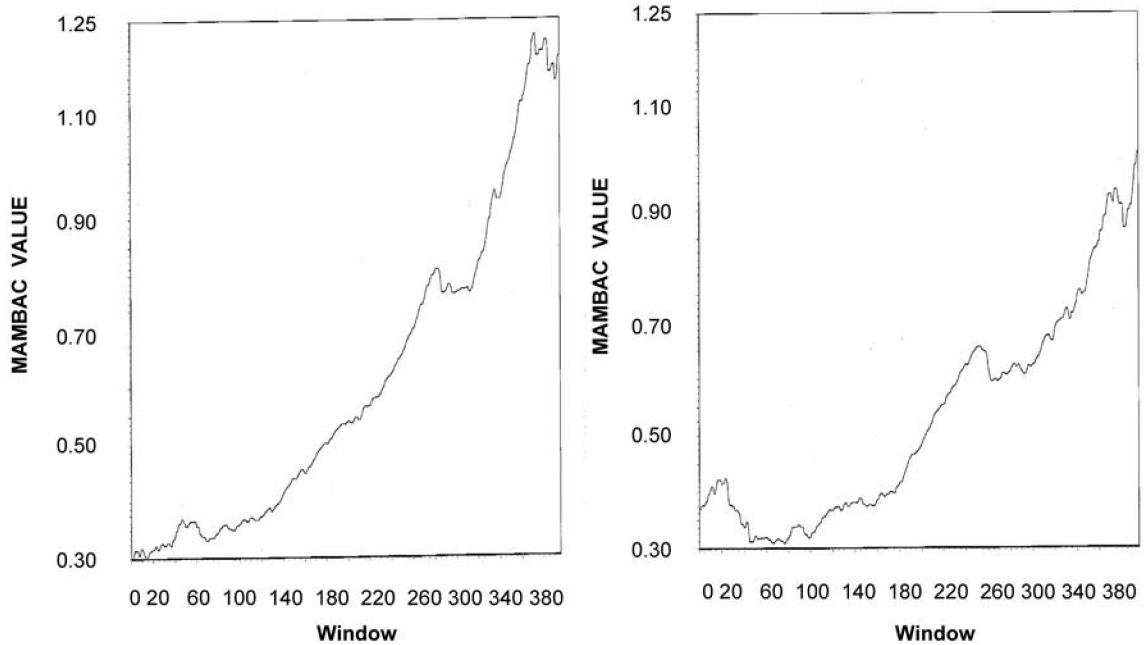

Figure 2.

MAMBAC (Means Above Minus Below a Cut) with 13 marital satisfaction product indicators for the observed data (left) and for the simulated dimensional comparison sample (N = 447) with equivalent skew (right).

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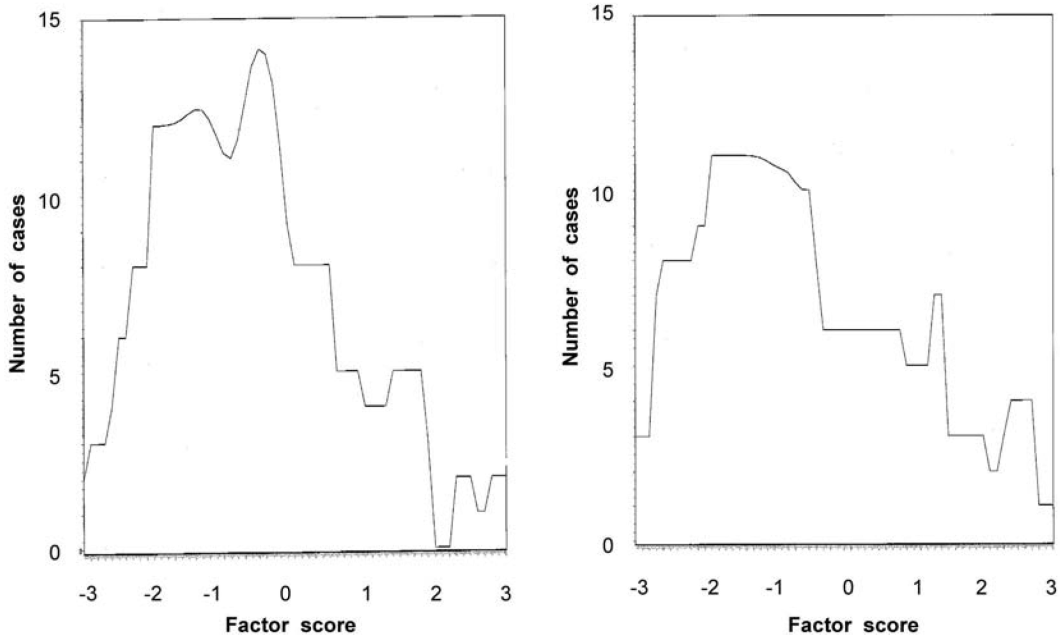

Figure 3.
L-MODE (Latent Mode Factor Analysis) with 13 marital satisfaction product indicators for the observed data (left) and for the simulated dimensional comparison sample (N = 447) with equivalent skew (right).

Table 1

Means, Standard Deviations, Skew, and Kurtosis for Product Indicators of Marital Satisfaction (Higher Scores Are More Negative)

Marital Adjustments Test item	Mean product	*SD*	Skew	Kurtosis	Validity
Degree of happiness	5.04	6.98	2.35	6.07	2.14
Agree finances	7.29	5.82	2.13	5.91	1.22
Agree recreation	6.93	4.74	2.43	8.63	1.61
Agree affection	6.83	5.69	2.26	7.16	1.78
Agree friends	7.12	6.30	2.39	6.75	1.76
Agree sex	6.85	6.38	2.24	6.13	1.39
Agree conventionality	6.76	5.62	2.33	6.75	1.77
Agree life philosophy	6.81	5.82	2.30	6.36	1.67
Agree in-laws	7.32	6.21	1.98	4.70	1.37
Handle disagreements	0.51	1.19	2.27	3.67	0.81
Engage in interests	4.61	2.70	1.91	5.11	1.61
Stay at home	4.39	2.88	0.50	–1.10	0.54
Life over	1.91	1.82	2.50	6.07	1.77

Note. Validity estimates were computed as the mean difference between putative taxon members (n = 105) and putative complement members (n = 342), divided by their pooled standard deviation.