Assortative Mating for Body Weight: New Evidence from Multilevel Models

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A major challenge to analyzing dyadic data (e.g., data collected from both husbands and wives in married couples) is nonindependence. That is, the scores from husbands and wives in the same dyad are not independent observations and tend to be more similar to (or different from) one another than are the scores of husbands and wives from different dyads. One source of nonindependence is a *compositional effect*: the two spouses were similar to each other before they paired up (Kenny, Kashy, & Cook, 2006). This compositional effect is evident in studies of assortative mating that show married spouses tend to resemble one another on a variety of characteristics including age, race, religion, socioeconomic status, height, and weight (Kalmijn, 1998; Silventoinen et al., 2003).

Positive assortative mating for body weight is well-established. Previous research documents significant and positive interspousal correlations for weight (e.g., Speakman et al., 2007; Schafer & Keith, 1990; Allison et al., 1996). However, while interspousal correlations provide evidence of the interdependence of spouse BMI, they provide little information about actual partnering patterns such as the share of obese persons who marry healthy weight persons, or whether spousal correlations vary in magnitude across the distribution of body mass index (BMI).

A positive correlation between spousal BMI may arise from three sources: (1) active assortative mating (selection of a partner based on phenotypic preferences), (2) social homogamy (selection of a partner from within one's own social setting or geographical area), and (3) convergence (the tendency to become similar in weight due to sharing a common environment). Failing to control for passive matching processes (social homogamy, convergence) could lead to spurious associations between spouses' BMI. For example, obesity is associated with socioeconomic status (Sobal, 1991; Sobal & Stunkard, 1989) and individuals tend to mate with partners of similar education (Qian, 1998), occupation (Hout, 1982), and parental occupation (Kalmijn, 1991). Thus, spousal correlations in weight may reflect social homogamy and not weight homogamy and therefore may be upwardly biased. Alternatively, if spousal correlations reflect convergence in weight due to shared lifestyle and eating habits (Bove, Sobal, & Rauschenbach, 2003) rather than initial assortment (i.e., the "cohabitation effect"), then interspousal correlations for weight will be similarly biased upward. Most of the previous research on matching for weight fails to address these issues.

This study will extend the literature on assortative mating for weight by using hierarchical linear modeling (HLM) to (1) identify patterns of mate selection (i.e., matching and social exchange) beyond simple linear associations; (2) control for social homogamy and convergence; and (3) address the issue of nonindependent data points. Hierarchical models address nonindependence by decomposing variance in BMI into between-couple variation (i.e., intercepts) and within-couple variation (i.e., slopes) (Bryk & Raudenbush, 1992).

Theoretical focus

Social exchange models emphasize the tradeoffs rational individuals make in the marriage market in order to get the best mate possible. Social structural perspectives (e.g., Eagly & Wood, 1999) and bioevolutionary perspectives (e.g., Shackelford, Schmitt, & Buss, 2005) emphasize gender differences in mate selection preferences and the importance of women's attractiveness in mate selection. Drawing from these perspectives and the literature on attractiveness and the stigmatization of obesity, I examine several research questions related to how spouses match on BMI or exchange other characteristics, such as education or youthfulness, for a spouse with an attractive BMI. (Several of these research questions are listed below).

Data

Data for this study come from the Marriage and Relationship Survey (MARS) – a nationally representative Internet survey of 433 low-income married couples. MARS contains key socio-economic and demographic variables on *both* spouses relevant to the study of assortative mating for weight, including gender, age, race, education, and self-reported height and weight. The survey was administered via the Internet in 2006 by Knowledge Networks (hereafter KN). Respondents were selected from telephone surveys of listed and unlisted telephone numbers. Unlike other Internet or web-based surveys that recruit current web-users who are willing to participate in on-line surveys, KN provides on-going household panelists with an Internet appliance, Internet access, Web TV and a cash payment in return for completing the survey. Panelists then receive unique log-in information for accessing surveys online, and are sent emails three-to-four times a month inviting them to participate in research. Because Internet accessibility was provided for the respondents, the use of an Internet survey did not exclude members of disadvantaged backgrounds who are the most likely to not own a computer or have access to the Internet. The MARS response rate was 80.3%.

I exclude 76 couples in which at least one spouse was missing information about height and/or weight used to calculate BMI; 2 couples in which a spouse has an extreme value on BMI; and 38 couples who report the wife is currently expecting a child due to the weight gain associated with pregnancy. Our analytic sample consists of 374 couples (748 individuals). Descriptive statistics are available in Table 1 (additional theoretically relevant variables will be added).

Table 1. Individual-level Descriptive Characteristics (N = 374 couples)

	Husbands	Wives	Couples
Body mass index	28.75 (6.21)	29.00 (7.97)	28.88 (5.73)
Obese	0.32	0.36	
Overweight	0.40	0.29	
Healthy weight	0.28	0.34	
Underweight	0.01	0.02	
Age	38.05 (7.23)	35.08 (5.98)	36.57 (6.26)
Non-Hispanic white	0.85	0.87	
All other race-ethnicity	0.15	0.13	
Homogamous race-ethnicity[1]			0.88
Highest education degree[2]	4.00 (1.42)	4.06 (1.42)	4.03 (1.23)
Less than HS	0.09	0.09	
HS diploma	0.34	0.33	
Some college	0.38	0.38	
Completed college	0.20	0.20	
Number of biological children	2.36 (1.40)	2.40 (1.28)	
Cohabited before marriage[3]	0.56	0.55	0.57
Duration of marriage in months	129.54 (70.28)	127.85 (69.87)	128.70 (69.51)

Note: Means (and standard deviations for non-dichotomous variables).

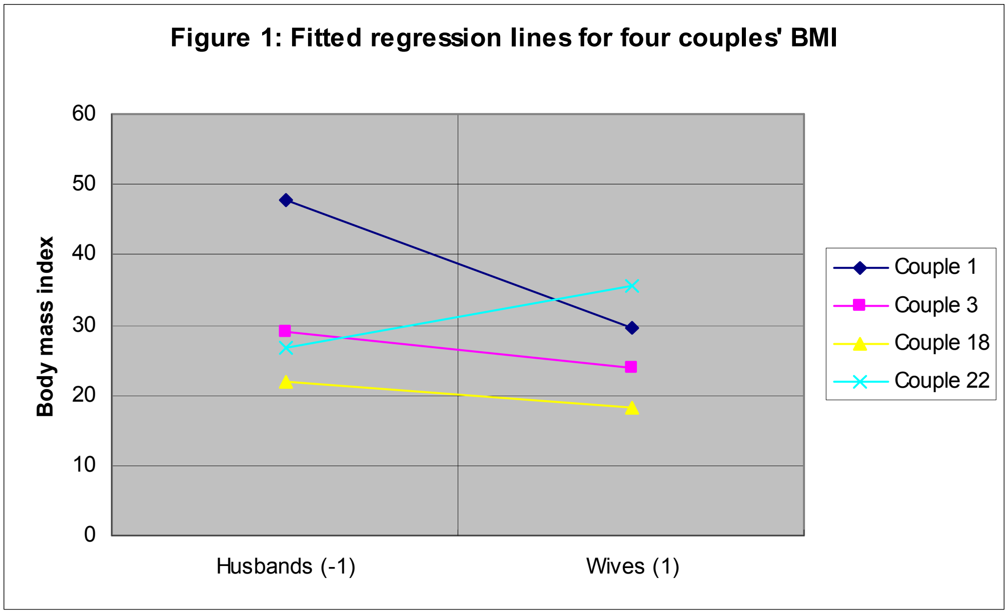
[1]Using race-ethnicity in 5 categories.

[2]A value of 4 = "some college, no degree."

[3]Couple value scored 1 if either spouse in a couple reported cohabiting before marriage.

Methodology

Married couples are a unique case of hierarchical data with spouses (level 1) nested in couples (level 2). At level 1, the relationship between spouses on BMI is modeled by regressing BMI on a dichotomous spousal indicator (coded -1 for husbands and +1 for wives). When conducted separately for each couple, the result is a fitted regression line for each couple that can be summarized by two parameters, a slope and an intercept, that describe the relationship between the spouses in each couple. The intercept represents the mean BMI of the couple. The slope represents the difference in BMI between the spouses in the couple. These parameters can be seen in Figure 1 which shows fitted regression lines for four couples using the MARS data. Descriptive questions about BMI can be answered using level 1 models: How heavy, on average, are the couples in the data? How much variability is there in between-couple BMI? On average, how different are husbands and wives on BMI? Are husbands, on average, heavier than wives or vice versa? How much variability is there in within-couple BMI?



Data source: Marital and Relationship Survey, 2006 (adapted from Maguire, 1999).

At level 2, sociodemographic variables (i.e., age, education, and race-ethnicity) and relationship-specific variables (i.e., marriage duration, whether the couple cohabited before marriage) are used to try to predict the variance in slope and intercept from level 1 (Bryk & Raudenbush, 1992; Maquire, 1999). Level 2 questions include: Are less educated couples heavier on average? Is variation in education associated with variation in BMI? Are couples who have been living together longer heavier? Is variation in relationship duration associated with variation in BMI? These are but a few questions that will be explored in this study.

Selected preliminary results and next steps

Results from an unconditional means model shows that 15% of the variation in BMI occurs between couples whereas 36% of the variation in BMI occurs within couples. This means that couples differ in average BMI (intercepts) and there is even more variation among spouses within couples. This pattern is evident in Figure 1 above. Indeed, the intracouple correlation (ICC) which measures the proportion of total variance in BMI occurring between couples is .29 (15/(36+15)). This means that .71 percent of the variance (1-.29) occurs within couples. These findings are interesting given the focus on within spouse similarity in the assortative literature. Adding couple (level 2) variables to explain these variance components will be very informative. These variables will be mean centered to ease interpretation. Within spouse differences will be examined by interacting sociodemographic and relationship characteristics with the dichotomous spousal indicator.

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