THE UNIVERSITY of York

Discussion Papers in Economics

No. 2008/16

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I Can't Smile Without You: Spousal Correlation in Life Satisfaction

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May, 2008

Abstract

This paper studies *how* spouses' life satisfaction levels are correlated. Using the British Household Panel Survey, it tests whether the observed positive correlation in life satisfaction is due to assortative mating, shared social environment, or spillover effect of well-being between partners. There is evidence of a positive and statistically important correlation between partners' well-being, even after controlling for omitted individual fixed effects and allowing cross-equation residuals to be correlated. This is consistent with the idea of well-being spillovers within marriage. Moreover, consistent with the spillover effect model, marital dissolution at t+1 is negatively correlated with partners' life satisfaction at t.

Key words: Life Satisfaction, Assortative Mating, Spillover, Marriage, Longitudinal
JEL: D1, D62, D64, I0

"You see, I feel sad when you're sad, I feel glad when you're glad. If you only knew what I'm going through, I just can't smile without you." - *Barry Manilow*

1. Introduction

The idea that married people care a great deal about the well-being of their partner is not new to economists (Becker, 1973, 1974; Friedman, 1986). The past three decades have seen a significant increase in the number of studies showing that people in marriage tend to behave altruistically towards their partner (see, for example, Foster and Rosenzweig, 2001; Ermisch, 2003). However, while it may be possible to make some inferences about the degree of caring between partners from their behaviour, the idea that there may be a direct spillover of well-being from one partner to the other has rarely been tested empirically.

This paper aims to do just that. It examines the extent and the underlying mechanisms of spousal correlation in subjective well-being data, particularly self-rated life satisfaction (LS). In a long-run panel of nationally representative randomly sampled married and cohabiting individuals, I found, as anticipated, a positive and statistically significant correlation between partners' self-rated LS scores. However, the observed spousal correlation in LS may reflect three distinct processes. First, individuals who are born happy or are born with innate predispositions that make them happy may tend to marry those who are similar to them. This matching of fixed personal characteristics on the marriage market is analogous to the concept of assortative mating (Becker, 1974). Manski (1995) refers to such phenomena as correlated effects of social interactions.

Second, given that marriage allows individuals to share with their partner the kind of physical and emotional resources that may not be available for each person to obtain outside marriage (Waite and Gallagher, 2000), correlated effects may also arise from the shared social

environment (which can either be time-invariant or time-variant) that is simultaneously affecting LS for both spouses.

Lastly, the observed correlation may be the result of a direct spillover of LS within the couple. The idea is that, if a husband cares about his wife, then her LS becomes one of the main determinants of his own LS, and vice versa. This generates a possibility that a husband will be *ceteris paribus* happier when his wife is happier for whatever reasons that make her happy but not him directly. Hence, we would expect an increase in one partner's LS to be positively correlated with the other partner's LS even after allowing for all the factors that can affect both partners' LS at the same time. This phenomenon is likened to the endogenous effects in Manski's terminology, whereby the individual outcome is a function of group achievement.

This paper uses nine waves of the British Household Panel Survey (BHPS) data to examine the extent of spousal correlation in LS. In particular, it investigates whether the observed spousal correlation in LS is due largely to assortative mating, common environmental factors, or a spillover effect of LS from one partner to the other. The longitudinal research strategy that involves following each couple annually seems to be the most appropriate way to study rigorously the underlying mechanisms in the observed correlation between spouses' LS. This is the approach that is taken here. In order to test whether the observed spousal correlation in LS is merely a reflection of positive assortative mating by personality traits and/or partners sharing similar environments, I estimate a model of seemingly unrelated regression (SUR) of LS with controls on the individual fixed effects and the respondent's partner's LS as the explanatory variable of interest. Under endogenous effects of LS, I expect each partner's LS to be correlated, even after controlling for omitted individual fixed effects and allowing for non-zero correlations between partners' time-varying

random shocks. This will be the key test of correlated versus endogenous effects. I will also analyse whether couples with higher LS at period *t* tend to stay married at *t*+1.

The results show that there is evidence of a spillover effect of LS, which suggests that well-being is transferable from one partner to the other. Consistent with the spillover effect model, partners' LS today are also associated with lower probabilities of partners separating or divorcing one period into the future.

There are similarities in terms of research questions and analytic strategy between this paper and previous studies that examined similarities in a husband's and wife's behaviour such as smoking (Clark and Etile, 2006), their political preferences (Kan and Heath, 2006), and their sporting activities (Farrell and Shields, 2002).

This article is organised as follows: Section 2 reviews relevant past research on marriage and well-being. Section 3 addresses theoretical issues revolving around the various interpretations of the correlation between partners' LS – assortative mating, shared environmental factors, and spillover effects – and discusses empirical implications and predictions. Section 4 describes the data. Statistical models are then formulated, and estimation methods are considered in Section 5. Section 6 discusses the results of the current paper, and Section 7 concludes.

2. Marriage, subjective well-being, and spillovers

Previous research on marital status and emotional well-being is clear on one point: married persons are significantly happier and more satisfied with life than those who are divorced, separated, widowed, or single, across various countries and time periods (Gove et al., 1983; Mastekaasa, 1994; Marks and Lambert, 1998). The large psychological benefits of marriage persist even when the selection of happy people into marriage is controlled for in the analysis

(Frey and Stutzer, 2006; Mastekaasa, 1992), and such advantages are sometimes shown to be stronger for men than for women (see, for example, Gove et al., 1983). Both cross-sectional and longitudinal studies confirm the overall psychological benefits of marriage (for a review, see Oswald and Wilson, 2005).

There are several explanations for the protective effects of marriage. First, on the grounds that two can live almost cheaply as one, marriage may work simply because it provides higher real income per partner (Korenman and Neumark, 1991; Loh, 1996; Smock et al., 1999). Second, marriage provides the couple with a source of constant emotional and instrumental support, which may act as an important buffer against stress and depression for the person who experiences negative shocks in life events (Berkman, 1988; Marks and Lambert, 1998). In other words, the negative impacts of shocks in life events appear to be significantly lower for married individuals than for those of other marital groups. Third, marriage provides the couple with a sense of belonging and social reality, in which they are the only two people living and operating in their own world. This shared sense of meaning can be an important foundation for emotional well-being (Berger and Kellner, 1964; House et al., 1982). Marriage also encourages people to engage less in risky activities and more in healthy ones – perhaps for the sake of their partner. For example, married people smoke and drink less, and such healthy behaviour may provide an important source of both physical and emotional well-being for the couple. The results hold even when one allows for selection effects into marriage (see Power et al., 1999).

What has received much less attention is whether one partner's well-being is a function of the other partner's well-being (Becker, 1974). Previous studies on emotional spillover have often focused on daily transmissions of only negative effects, such as measures of stress and strain. One of the common findings in the literature is that stress experienced by one partner in the workplace has the tendency to heighten the level of stress being

experienced by the other partner at home (see Bolger et al., 1989; Jones and Fletcher, 1993; Westman and Vinokur, 1998). Yet this is not a persuasive reason to believe that well-being is transferable within couples. One reason for this is that there is evidence in the psychology literature that one measure is not just a mirror of the other. For instance, whilst several studies have found a moderate correlation between ill-being and well-being (Chamberlain, 1988; Michalos, 1991), others have shown that these components appear to behave differently over time and to have differing relationships with other variables (Liang, 1985; Stock et al., 1986; Huppert and Whittington, 2003). Research into the validity of the two constructs has also shown that there is a clear distinction in terms of determinants between measures of well-being and ill-being (see Bradburn, 1969; Diener et al., 1999, Headey et al., 1993; Pavot and Diener, 1993). Because measures of cognitive well-being such as LS frequently form a separate factor and correlate with predictor variables in a unique way, it seems worthwhile to separately assess this construct in the research.

Of the very few studies on the topic, Rose's (1955) was one of the first to report cross-sectional correlation between LS within marriage. The author showed that spouses may feel something is wrong with their marriage when one or both feel unhappy with life. In that case, even if there was nothing wrong with their marriage, low levels of happiness detected between couples may have shattered their confidence and lead to separation and divorce. Argyle (1999) made a conjecture in his study on the effect of marriage on subjective well-being that one spouse's happiness may encourage the happiness of the other in a marriage. More recently, Anderson et al. (2003) found that people in early dating relationships, i.e. the first six months of dating, tend to report similar levels of positive emotional experiences over time, such as happiness, amusement, and pride. In a similar study, Plug and Van Praag (1998) found similarities in the reported income satisfaction by members of the same household.

To the best of my knowledge, the only paper that has conducted a longitudinal analysis on whether there is a substantial long-term interdependent relationship between spouses' LS within marriage is the innovative work by Schimmack and Lucas (2006). Their methods and dataset differ from those set out in this paper, and the respective projects were begun independently. Using the German panel data and time-lagged cross-spouse correlation method, they found that spousal correlation in LS is due mainly to the shared stable component of LS within the couple, i.e. partners sharing similar traits and social environments. Little was discussed in their paper, however, on the possibility that there may be a spillover effect of LS from one partner to the other. This is the main difference between this paper's analysis and that adopted by Schimmack and Lucas (2006).

3. Theory

In this section, I will briefly discuss the three underlying mechanisms that may account for the raw correlation between a husband's and wife's LS levels: assortative mating, shared social environment, and spillover effect. I will also outline the empirical tests to which I will appeal in the estimations to distinguish between these three distinct interpretations.

3.1 Assortative mating

The first explanation is that the observed spousal correlation in LS may have been the outcome of a matching of personal traits on the marriage market (Becker, 1974). Individuals may prefer partners who are phenotypically similar to them. Hence, people who are born happy or are born with innate predispositions that make them happy may tend to marry each other. One reason for this is that the decision to marry somebody who is like us could make

living with them easier, as the latter may enjoy the same kind of lifestyle, such as leisure and sporting activities, whilst someone else with a completely different set of personalities may not. Such positive assortative mating or homogenous matching by personality traits is supported by the evidence that a number of lifestyles are highly correlated within a couple (Contoyannis and Jones, 2004). It is also consistent with the evidence of positive assortative mating by education (Mare, 1991), professional backgrounds (Qian, 1998), productivity traits and desires for public goods (Lam, 1998).

An assortative mating market may induce correlated effects in LS via correlation between respondent individual fixed effects and partner lagged LS. I control for this by including the mean value of the outcome variable, i.e. the respondent's LS, in the random effects estimation.

Alternatively, correlated effects may result from partners sharing the same social environment, as discussed below.

3.2 Shared social environment

The second explanation also views the observed correlation as a correlated effect; what appears to be a direct spillover of LS from one partner to the other may be no more than the result of partners sharing the same social environment that simultaneously influences the well-being of them both. For example, a positive shock in one partner's income (i.e. one partner receiving a pay rise at work) can result in an increase in both spouses' LS through an increase in the family income. Moreover, under assortative mating, a couple with common lifestyles characteristics may also experience common life cycle events. Two people in the same occupation may be attracted to each other and as a result, they may experience the same cyclic shocks to income. Likewise, couples may share the same health habits and given their

similarity in age and habits, they may also experience health shocks that are close in timing. As a result, the observed spousal similarity in LS could thus be a spurious relationship stemming from the fact that some life events either occur to both spouses simultaneously or occur to one partner but due to the nature of partnership affect both spouses simultaneously.

In order to control for the correlated effects from spouses sharing the same social environment and common cyclic shocks, both male and female LS equations will be written with a structure that allows for contemporaneous cross-equation error correlation, i.e. a SUR system.

3.3 Spillover

The final interpretation of the raw spousal correlation in LS views the association as a result of a spillover effect of LS from one partner to the other (Becker, 1974; Friedman, 1985). Transmission of LS is assumed to occur between closely related partners who identify with and care for each other and share a great part of their lives together. In the spillover effect model, the LS of one partner acts as an externality for the other partner, which in turn increases the current level and influences future growth in LS for the latter (Larson and Almeida, 1999; Westman and Vinokur, 1998). Note, however, that there may be other kinds of interactions between partners' LS if there is no caring between partners. For instance, if something affects one spouse's LS positively and it enhances the desirability for the person to re-enter the marriage market (e.g. he or she wins at the lottery), this may affect the other negatively. In those cases, an external positive shock to one partner's LS may have a negative impact on the other's LS.

The idea of a spillover effect of LS within marriage is consistent with many studies that have found a positive relationship between self-rated well-being and altruistic or caring

behaviour. For instance, Benson et al. (1980) found a positive correlation between LS and time spent in a variety of helping activities. Using panel data, Thoits and Hewitt (2001) found volunteer work leads to greater happiness, LS, self-esteem, and even physical health for the individual. Konow and Earley (2008) showed through various laboratory experiments that giving and helping others and many other selfless acts can raise and sustain happiness at a higher than average level compared with other goals such as the pursuit of material wealth. Frey et al. (2004) show how LS may often depend more on the processes (i.e. from helping others) than on the returns or outcomes of the actions. Following the collapse of the infrastructure of volunteering work in the German Democratic Republic in the late 1980s, Meier and Stutzer (2008) studied the causal impact of loss of volunteer work on happiness. They found that a drop from volunteering monthly to less than monthly reduced LS by more than 0.2 point in an 11-point-scale (one-half of the effect of separation from partner). More closely related to this paper, in the German Panel data Schwarze and Winkelmann (2003) and Bruhin and Winkelmann (2007) found some evidence of altruism. As well as showing that predicted altruists are more likely to make transfer payments, they were able to demonstrate that an exogenous increase in children's LS can lead to an increase in LS for the parents.

One possible empirical implication for a spillover effect in marriage is that, in holding their own LS at *t*-1 constant, respondents' LS at *t* will depend on partners' LS at the period *t*-1, even after controlling for the correlated effects in partners' individual fixed effects and time-varying random shocks. I use lagged partner LS at *t*-1 rather than partner LS at the current period *t* in the estimation so that we can avoid correlated shocks between partners at *t*. Furthermore, the decision to include respondent lagged LS in the estimation allows us to try to obtain as close an exogenous movement in partner LS as possible.

4. Data

The present investigation uses data from the BHPS. This is a nationally representative sample of persons aged 16 and over in 1991, who have been interviewed every subsequent year. The study interviewed separately all adult members of the household with respect to their income, employment status, marital status, health, and attitudes. There is both entry into and exit from the panel, leading to unbalanced data with an increasing number of individual interviews over time. This is due to the inclusion of children from the original household sample who turn 16, of refresher samples, and of new members of households formed by original panel members.

As well as questions on socio-economic status, individuals were also asked from Wave 6 onwards to indicate how satisfied they are with their life, from 1 (*very dissatisfied with life*) to 7 (*very satisfied with life*). The LS question is located in a self-completed section of the survey, which is strategically placed at the end of the questionnaire after individuals had been asked about their household and individual characteristics.

I consider all married and cohabiting individuals observed consecutively over two periods with information on own and partner lagged LS for the years 1996–2006. Couples who remained with the same partner are treated the same way in the analysis as those who changed partners during the observed panel. Note that wave 11 is omitted from the analysis because of the omission of LS questions in that survey year. The unbalanced panel with non-missing information on LS includes 22,840 couple-level observations (or 5,988 couple-year-level observations). Of those couple-level observations, 3,117 are observations on cohabiting couples. The average age for men is 48 and 46 for women. Around 58% of men and 55% of women are in full-time employment. Approximately 70% of households have at least one child under the age of 16 in the household. The average number of years married for the married couples are 28 years whilst the average number of years spent cohabiting for the cohabiting partners are 16 years.

5. Analytic strategy

To test for the spillover effect of LS between partners, I follow the prospective change model outlined by Larson and Almeida (1999) and consider the following empirical specifications:

$$LS_{i,t} = \alpha_1 LS_{i,t-1} + \beta_1 LS_{-i,t-1} + \theta_1 X_{i,t} + u_i + \varepsilon_{i,t}, \qquad (1)$$

where $LS_{i,t}$ is the self-reported LS score of a respondent *i* at period *t* (1 = very dissatisfied, …, 7 = very satisfied). $LS_{-i,t}$ is the respondent's partner's LS. The parameter $LS_{-i,t-1}$ refers to the lagged LS score of *i*'s partner, whilst $LS_{i,t-1}$ represents the lagged LS score of an individual *i*. *X* is a vector of demographic and socio-economic controls that are known to be strong predictors of LS in other studies (i.e. Blanchflower and Oswald, 2004; Powdthavee, 2007), which include age, age-squared, education, employment status, and a dummy representing whether the respondent is cohabiting or married, as well as other household variables known to be important in the LS literature such as household income, the number of children in the household, the number of years the respondent has been married/cohabiting with the current partner. See Table 1 for descriptive statistics of these variables. The parameters *u* and ε represent individual and time-varying random variations and are assumed to be normally distributed: for an individual *i*, $u_i \sim N(0, \sigma_i^2)$ and $\varepsilon_{i,t} \sim N(0, \sigma_{i,t}^2)$.

The hierarchical structure of the above random effects model has an advantage over the time-lagged cross-spouse correlation method used by Schimmack and Lucas (2006) to assess spousal correlation in LS in that it allows for individual effects to vary randomly across families (Raudenbush and Bryk, 2002). Equation (1) is then estimated separately for men and

women. Here, the parameters α and β represent the coefficients of LS spillover for the individual's own and the spouse's LS recorded in the previous year.

However, the association between respondent LS and partner lagged LS obtained in equation (1) may be spurious; what appears to be a direct spillover of LS from one partner to the other may be no more than the result of matching by personality traits and/or partners sharing the same social environment. To distinguish these correlated effects from endogenous effects, equation (1) can be re-written in a system of SUR equations as followed:

$$\begin{aligned} LS_{i,t} &= \alpha_1 LS_{i,t-1} + \beta_1 LS_{-i,t-1} + \theta_1 X_{i,t} + \lambda_1 \overline{LS}_i + \varepsilon_{i,t}, \\ LS_{-i,t} &= \alpha_2 LS_{-i,t-1} + \beta_2 LS_{i,t-1} + \theta_2 X_{-i,t} + \lambda_2 \overline{LS}_{-i} + \varepsilon_{-i.t}. \end{aligned} \qquad (2)$$

Here, the inclusion of the mean value of the outcome variable, $\overline{LS}$, controls for all of the temporally stable variables, including personality traits, that affect between-person variation in the data, which effectively converts the analysis into a study of pooled within-person associations (Bolger et al, 1989). Moreover, evidence of partners experiencing changes in life events that simultaneously affect the well-being of both partners will be picked up by a nonzero correlation between the time-varying random shocks, $\varepsilon_{i,t}$ and $\varepsilon_{-i,t}$ (i.e. $Cov(\varepsilon_{i,t}, \varepsilon_{-i,t}) > 0$). I assume cardinality in LS scores, whereby the difference between a LS score of 1 and 2 is assumed to be the same as the difference between 3 and 4. This is a justifiable assumption, as studies have shown that it makes virtually no difference whether one assumes cardinality or ordinality of the well-being scale (see Ferrer-i-Carbonell and Frijters, 2004).

As mentioned earlier, the decision to include respondent lagged LS allows us to try to obtain as close an exogenous movement in partner LS as possible. By allowing for the

correlated effects in partners' individual traits and time-varying random shocks whilst holding $LS_{i,t-1}$ constant, a positive and statistically significant β would imply that there is a spillover effect from one partner's LS in the previous year on the respondent LS today (Bolger and Zuckerman, 1995).

6. Results

6.1 Assortative mating, shared social environment, or spillover?

Table 2 reports results from three distinct specifications. The first two columns report estimates from running separately a simple random effects model on LS, i.e. equation (1), on the male and female sample. The next two columns estimate a random effects model that controls for the mean value of the respondent LS. The last two columns estimate a SUR regression that allows nonzero correlations between the time-varying random shocks of the equations for each dependent variable.

We can see from the first two columns of Table 2 that partner lagged LS enters respondent LS equation in a positive and statistically well-determined manner (both being significant at the 1% level). The estimated coefficients on partner lagged LS are 0.071 and 0.089 for men and women, respectively. These correlation coefficients represent around 19% for men and 25% for women of their own spillover of LS from period *t*-1 to *t*. The results are consistent with previous studies that have found a positive spousal correlation in LS (Schimmack and Lucas, 2006).

To what extent can these correlations be explained by matching of personality traits on the marriage market, shared social environment, and spillover effect? In an attempt to distinguish between the three arguments, I first estimate equation (2) separately for men and

women and report the results in Columns 3 and 4 of Table 2. I then estimate equation (2) in a system of SUR equation and report the results in the last two columns of Table 2.

There are three striking results. First, as expected, the coefficient on partner lagged LS drops sharply for both men and women in Columns 3 and 4 compared to those obtained in the first two columns of Table 2, although they remain statistically well-determined at the 1% level. The coefficients on partner lagged LS are now 0.016 for men and 0.022 for women, which suggests that there is positive assortative mating by personality traits on the marriage market.

Second, the inclusion of $\overline{LS}$ reverses the sign of the coefficient on respondent lagged LS. Considering that we are essentially estimating a pooled within-person regression, one possible explanation may be that the negative coefficient on respondent lagged LS is merely reflecting a mean reversal in own LS from period *t*-1 to *t*. In other words, the higher the level of own lagged LS the less likely that the respondent will experience a large change in LS from *t*-1 to *t*. But more broadly, the omitted individual fixed effect in equation (1) biases upwards the coefficient on respondent lagged LS in the usual way.

Third, SUR yields estimated coefficients on partner lagged LS that are almost identical to those obtained from running equation (2) separately for men and women. Hence, the evidence suggests that it makes virtually no difference to the estimated coefficients on partner lagged LS whether one allows for nonzero correlations in the time-varying residuals or not: there is no important association between partner lagged LS and the extent to which shared social environment affects LS of both partners today. The correlation between the residuals is, as expected, positive and statistically significant (correlation coefficient = 0.104, Breusch-Pagan test of independence = 245.37 [$p<0.000$]).

The positive and statistically significant coefficient on partner lagged LS obtained in the last two columns of Table 2 provides one of the paper's main findings: there is a

statistically well-determined spillover effect of LS from one partner to the other. Although the estimated coefficient on partner lagged LS is larger for women than for men, we cannot reject the null hypothesis that the two coefficients are not the same size.

How large are these spillover effects compared to other socio-economic influences of LS? The means (standard deviations) of partner lagged LS are 5.39 (1.24) and 5.34 (1.18) for men and women, respectively. A move from one standard deviation below the mean of partner lagged LS to one standard deviation above is therefore a change from 4.15 to 6.63 for men and from 4.16 to 6.52 for women. Taking the estimates of partner lagged LS from Columns 5 and 6 of Table 2 to be 0.016 for men and 0.022 for women, the implied changes in LS for respondents are approximately 0.04 and 0.05 for men and women, respectively. Given the distributions of LS, these are fairly large effects. It can compensate up to one-third of the negative effect of unemployment on LS for men. It can also offset almost completely the impact of having chronic health problems for both men and women in the sample.

The multiplier effect of LS, on the other hand, is much smaller. For instance, if the female partner's LS goes up by 1, then the male partner's LS will go up by 0.016. This will then lead to a further increase in the female partner's LS of $0.016 \times 0.022 = 0.0004$, which then results in a further increase in the male partner's LS of $0.0004 \times 0.016 = 0.000006$, and so on. What the above figures imply is that the final values of LS for both men and women after taking into account the social multiplier will be very small (i.e. not significantly different from the initial welfare impact of an increase in the partner's LS).

Other results of Table 2 appear to be consistent with previous studies on subjective well-being in the literature (see, for example, Blanchflower and Oswald, 2004; Oswald and Powdthavee, 2008). Looking at the first two columns, we can see that there is a non-linear relationship between LS and age, minimising at around the mid-30s for men and the early 40s for women. Both men and women seem to prefer to be married than merely cohabiting with a

partner. Unemployment appears to have a negative and statistically important impact – with roughly equal size – on LS for both men and women. Disability and having chronic ill health in general are detrimental to self-reported well-being. There is a negative association between LS and number of dependent children. LS is U-shaped in the number of years cohabiting with the current partner but not among those who are married. Finally, there is a positive time trend in the reported LS averaged over the years spent in the panel for men but not for women. Almost all of the above associations disappear, however, once individual fixed effects (or the mean value of LS) are controlled for in the estimation.

To be sure that such results are not being driven by couples who are in the married/cohabiting panel only briefly, I re-do the estimations in Table 3 on a smaller balanced panel for all couples who were either married or cohabiting since 1991 and remained so all the way through to 2006. The estimated size of the spillover effect rises, albeit very slightly, for both men and women. In the final specification, an increase of one-unit in partner lagged LS is associated with a 0.02-point increase in respondent LS for men and 0.03-point increase for women. Moreover, I also test whether there are statistically important interaction effects between partner lagged LS and couple-level characteristics, including household income, number of dependent children, and number of years married/cohabiting with the current partner, but found no statistically significant variations in the spillover impacts by these characteristics.

6.2 Termination of partnership

Up to this point, this paper has concentrated on the association between respondent LS and partner lagged LS. Such an approach seems to be of some worth in its own right. However,

in order to make further justification on the importance of the previous spillover effect model presented in the last section, I now estimate a marital dissolution equation.

Of the married and cohabiting individuals, there were approximately 279 couples (roughly 1% of the sample) who moved from being married or cohabiting with a partner at period *t* to separation or divorce at *t*+1. The key hypothesis to be tested here is that there is a short-run association between partners' LS and their decision to stay together. More specifically, couples with higher LS levels at *t* are less likely to be separated or divorced at *t*+1.

Table 4 presents marginal effects (reported in percentages) obtained from a probit model on whether the couple terminates their relationship at period *t*+1. Controlling for both spouses' socio-economic variables and mean value of partner's LS, we can see that husband's and wife's LS at *t* are associated negatively and statistically significantly with separation and divorce at *t*+1. A unit increase in either husband or wife LS at *t* is associated with approximately 0.2 percentage-point decrease in the probability of separation or divorce at *t*+1. This is a large effect, considering that only 1% of the sample made a transition from being married/cohabiting at *t* to being separated or divorced at *t*+1. On the other hand, the mean values of husband's and wife's LS are not significantly correlated with the probability of separation or divorce at *t*+1; the coefficients on husband's and wife's $\overline{LS}$ are negative though not statistically well-determined. In other words, couples with high averaged LS are statistically-speaking no less likely to remain together in the next period than couples with low averaged LS. Thus, it is not the long-term association of well-being between partners – i.e. through positive assortative mating – but rather the contemporaneous association between partners' LS that feeds off to the well-being in the next period, which in turn determines whether or not the couple stays together at *t*+1. The link between partners' decision to end

partnership at t+1 and their LS at t rather than the average LS over time is consistent with the spillover effect model.

7. Conclusion

This paper has used nine waves of BHPS data to study intra-spousal correlations in self-reported life satisfaction data. Its primary objective was to determine whether the observed correlation is due largely to partners' fixed traits are similar through assortative mating by personality traits on the marriage market, partners sharing the same social environment that simultaneously affects their well-being, or a spillover effect of life satisfaction from one partner to the other.

A simple random effects model, without controls for the correlated effects in partners' residuals, reveals that there is indeed a positive and statistically significant correlation between respondent life satisfaction and partner lagged life satisfaction. The size of estimated correlation coefficients dropped significantly but continued to be statistically robust in a SUR with individual fixed effects setting: the estimated correlation between partners' life satisfaction continues to be sizeable and statistically well-determined even when we control for the fact that partners' fixed traits are similar and that they share the same social environment. The results are supported by the evidence that partners' well-being can also be used to predict observable behaviours: there is a negative and statistically significant association between partners' life satisfaction today and the likelihood of marital dissolution in the next period. These results are consistent with models of spillover effects within couples. The findings thus provide strong statistical support in terms of validity for many economic models that were built around the assumption that utility is interdependently related between members of the same household (Becker, 1974). It is also consistent with studies

that found evidence of caring preferences between partners within marriage (Foster and Rosenzweig, 2001; Ermisch, 2003).

More generally, the empirical approach of this paper can be extended and applied to distinguish between various explanations of other types of similarity in couples' behaviours and characteristics that are not specific to a partner's subjective well-being.

Acknowledgement

I am grateful to Andrew Oswald, Paul Dolan, Ian Walker, Robin Naylor, Geeta Kingdon, Rainer Winkelmann, Ulrich Schimmack, Nateecha Ratanadilok Na Bhuket, Anthony Fielding, and participants at the Royal Economic Society at Nottingham and the Economics of Happiness Symposium at the University of Southern California in March, 2006, for their valuable comments. The British Household Panel Survey data were made available through the UK Data Archive. The data were originally collected by the ESRC Research Centre on Micro-social Change at the University of Essex, now incorporated within the Institute for Social and Economic Research. Neither the original collectors of the data nor the Archive bears responsibility for the analyses or interpretations presented here.

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Table 1: Descriptive Statistics, BHPS 1996-2006

Variables	Men	Women
Life satisfaction at t	5.297	5.346
	(1.183)	(1.245)
Partner's life satisfaction at t-1	5.394	5.338
	(1.238)	(1.180)
Life satisfaction at t-1	5.338	5.394
	(1.180)	(1.238)
Mean(life satisfaction)	5.301	5.345
	(0.924)	(0.961)
Age	48.682	45.937
	(15.451)	(14.806)
Unemployed	0.027	0.016
	(0.162)	(0.126)
Disabled	0.043	0.036
	(0.203)	(0.185)
Self-employed	0.126	0.044
	(0.332)	(0.206)
Retired	0.205	0.167
	(0.404)	(0.373)
Not in the labor force	0.014	0.184
	(0.117)	(0.388)
Education: completed first degree	0.107	0.100
	(0.310)	(0.300)
Education: completed higher degree	0.035	0.022
	(0.183)	(0.148)
Have known chronic health problems	0.584	0.634
	(0.493)	(0.482)
Common variables		
Cohabit	0.161	
	(0.368)	
Ln(real household income)	9.047	
	(0.749)	
Number of years married	28.153	
	(15.403)	
Number of years cohabiting	15.770	
	(8.593)	
Number of children	0.697	
	(1.029)	
N = 22,840 couples on nine periods		

Table 2: Random Effects Life Satisfaction Regressions for All Married and Cohabiting Couples with Respondent and Partner Lagged LS Variables (Unbalanced Panel), BHPS 1996-2006

	Single equation		Single equation		SUR	
	Men	Women	Men	Women	Men	Women
Dependent variable: Life satisfaction at t	(1)	(2)	(3)	(4)	(5)	(6)
Partner's life satisfaction at t-1	0.0710	0.0893	0.0160	0.0217	0.0160	0.0216
	[0.0058]**	[0.0065]**	[0.0048]**	[0.0053]**	[0.0048]**	[0.0053]**
Life satisfaction at t-1	0.3620	0.3497	-0.0728	-0.1006	-0.0737	-0.1013
	[0.0062]**	[0.0063]**	[0.0066]**	[0.0066]**	[0.0066]**	[0.0066]**
Age	-0.0101	-0.0118	0.0036	0.0006	0.0032	0.0012
	[0.0046]*	[0.0048]*	[0.0038]	[0.0039]	[0.0038]	[0.0039]
Age-squared/100	0.0155	0.0142	-0.0045	-0.0018	-0.0040	-0.0024
	[0.0048]**	[0.0052]**	[0.0039]	[0.0042]	[0.0039]	[0.0042]
Cohabit	-0.0453	-0.0840	0.0078	0.0006	0.0077	0.0015
	[0.0247]+	[0.0265]**	[0.0203]	[0.0215]	[0.0203]	[0.0215]
Ln(real household income)	0.0193	0.0142	-0.0116	-0.0230	-0.0113	-0.0235
	[0.0114]+	[0.0119]	[0.0094]	[0.0097]*	[0.0094]	[0.0097]*
Unemployed	-0.2525	-0.2182	-0.1297	-0.0995	-0.1267	-0.0998
	[0.0423]**	[0.0554]**	[0.0348]**	[0.0450]*	[0.0346]**	[0.0448]*
Disabled	-0.6919	-0.4804	-0.2397	-0.1686	-0.2366	-0.1685
	[0.0382]**	[0.0424]**	[0.0317]**	[0.0346]**	[0.0315]**	[0.0344]**
Self-employed	0.0320	0.0429	-0.0032	0.0185	-0.0025	0.0188
	[0.0232]	[0.0375]	[0.0191]	[0.0304]	[0.0190]	[0.0303]
Retired	-0.0308	0.0456	0.0401	0.0272	0.0349	0.0267
	[0.0309]	[0.0306]	[0.0254]	[0.0249]	[0.0253]	[0.0248]
Not in the labor force	-0.2399	-0.0179	-0.1327	0.0075	-0.1232	0.0060
	[0.0592]**	[0.0214]	[0.0487]**	[0.0174]	[0.0484]*	[0.0173]
Education: completed first degree	-0.0075	0.0125	-0.0198	0.0116	-0.0209	0.0134
	[0.0276]	[0.0294]	[0.0227]	[0.0239]	[0.0225]	[0.0238]
Education: completed higher degree	0.0279	-0.0252	0.0206	-0.0068	0.0195	-0.0064
	[0.0458]	[0.0584]	[0.0377]	[0.0475]	[0.0375]	[0.0472]
Number of children	-0.0333	-0.0274	-0.0129	-0.0138	-0.0127	-0.0137
	[0.0094]**	[0.0102]**	[0.0078]+	[0.0083]+	[0.0078]	[0.0083]+
Time trend	0.0016	0.0015	0.0001	0.0001	0.0001	0.0001
	[0.0001]**	[0.0001]**	[0.0001]+	[0.0001]	[0.0001]+	[0.0001]
Number of years married	-0.0003	0.0031	0.0013	0.0021	0.0013	0.0019
	[0.0043]	[0.0045]	[0.0035]	[0.0037]	[0.0035]	[0.0037]
Number of years married-squared/100	-0.0021	0.0008	-0.0041	-0.0035	-0.0043	-0.0030
	[0.0070]	[0.0075]	[0.0057]	[0.0061]	[0.0057]	[0.0061]
Number of years cohabiting	-0.0305	-0.0238	-0.0172	-0.0090	-0.0172	-0.0090
	[0.0103]**	[0.0110]*	[0.0085]*	[0.0090]	[0.0085]*	[0.0089]
Number of years cohabiting-squared/100	0.0567	0.0385	0.0372	0.0174	0.0372	0.0174
	[0.0245]*	[0.0261]	[0.0202]+	[0.0212]	[0.0201]+	[0.0212]
Have known chronic health problems	-0.1840	-0.2078	-0.0637	-0.0686	-0.0613	-0.0695
	[0.0175]**	[0.0162]**	[0.0144]**	[0.0133]**	[0.0143]**	[0.0132]**
Mean(life satisfaction)			1.0519	1.0952	1.0544	1.0968
			[0.0101]**	[0.0101]**	[0.0100]**	[0.0101]**
Constant	0.1232	0.2162	0.0128	0.0813	0.0139	0.0806
	[0.0501]*	[0.0530]**	[0.0412]	[0.0431]+	[0.0412]	[0.0431]+
Correlation matrix of the residual					0.104	

Breusch-Pagan test of independence: chi2(1)					245.37 [0.000]	
Observations	22840	22840	22840	22840	22840	22840
R-squared	0.3203	0.2961	0.5404	0.5350	0.5404	0.5350

Note: + < 10%; * < 5%; ** < 1%. Standard errors are in parentheses. Life satisfaction is recorded on a 7-point-scale, with 1 = very dissatisfied and 7 = very satisfied. SUR = seemingly unrelated regression. The reference categories include married, employed full-time, and education: lower than completed first degree.

Table 3: Random Effects Life Satisfaction Regressions for All Married and Cohabiting Couples with Respondent and Partner Lagged LS Variables (Balanced Panel from 1991-2006)

	Single equation		Single equation		SUR	
	Men	Women	Men	Women	Men	Women
Dependent variable: Life satisfaction at t	(1)	(2)	(3)	(4)	(5)	(6)
Partner's life satisfaction at t-1	0.0688	0.1012	0.0222	0.0333	0.0222	0.0332
	[0.0082]**	[0.0100]**	[0.0072]**	[0.0087]**	[0.0072]**	[0.0087]**
Life satisfaction at t-1	0.3642	0.3324	0.0547	0.0013	0.0539	0.0009
	[0.0091]**	[0.0091]**	[0.0097]**	[0.0096]	[0.0097]**	[0.0096]
Age	-0.0173	-0.0191	-0.0002	-0.0002	-0.0010	0.0007
	[0.0081]*	[0.0086]*	[0.0072]	[0.0074]	[0.0071]	[0.0074]
Age-squared/100	0.0239	0.0218	-0.0009	-0.0006	0.0000	-0.0014
	[0.0082]**	[0.0091]*	[0.0072]	[0.0078]	[0.0072]	[0.0078]
Cohabit	-0.0311	0.0031	0.0031	0.0218	0.0028	0.0230
	[0.0395]	[0.0443]	[0.0347]	[0.0383]	[0.0347]	[0.0383]
Ln(real household income)	0.0260	0.0008	0.0129	-0.0131	0.0131	-0.0133
	[0.0151]+	[0.0165]	[0.0133]	[0.0143]	[0.0132]	[0.0143]
Unemployed	-0.1614	-0.2507	-0.0821	-0.1324	-0.0739	-0.1217
	[0.0669]*	[0.0864]**	[0.0589]	[0.0747]+	[0.0585]	[0.0743]
Disabled	-0.6036	-0.3909	-0.2617	-0.1769	-0.2604	-0.1694
	[0.0588]**	[0.0673]**	[0.0521]**	[0.0583]**	[0.0517]**	[0.0579]**
Self-employed	0.0784	0.0135	0.0402	0.0500	0.0421	0.0486
	[0.0312]*	[0.0550]	[0.0274]	[0.0475]	[0.0273]	[0.0472]
Retired	0.0266	0.0177	0.0771	0.0088	0.0708	0.0078
	[0.0388]	[0.0413]	[0.0341]*	[0.0357]	[0.0339]*	[0.0355]
Not in the labor force	-0.1308	0.0311	-0.0287	0.0184	-0.0218	0.0184
	[0.0846]	[0.0309]	[0.0744]	[0.0267]	[0.0739]	[0.0266]
Education: completed first degree	-0.0482	0.0600	-0.0278	0.0440	-0.0307	0.0461
	[0.0387]	[0.0440]	[0.0341]	[0.0381]	[0.0338]	[0.0378]
Education: completed higher degree	-0.0010	-0.0252	-0.0129	-0.0039	-0.0116	-0.0053
	[0.0657]	[0.0879]	[0.0578]	[0.0760]	[0.0574]	[0.0755]
Number of children	-0.0116	-0.0181	0.0019	-0.0176	0.0022	-0.0173
	[0.0140]	[0.0157]	[0.0123]	[0.0136]	[0.0123]	[0.0136]
Time trend	0.0017	0.0013	0.0003	0.0001	0.0003	0.0000
	[0.0001]**	[0.0002]**	[0.0001]*	[0.0001]	[0.0001]*	[0.0001]
Number of years married	0.0065	0.0090	0.0005	0.0020	0.0007	0.0015
	[0.0066]	[0.0074]	[0.0059]	[0.0064]	[0.0058]	[0.0064]
Number of years married-squared/100	-0.0140	-0.0086	-0.0036	-0.0036	-0.0041	-0.0029
	[0.0108]	[0.0121]	[0.0095]	[0.0104]	[0.0095]	[0.0104]
Number of years cohabiting	-0.0549	-0.0255	-0.0436	-0.0199	-0.0437	-0.0199
	[0.0156]**	[0.0174]	[0.0137]**	[0.0151]	[0.0137]**	[0.0151]
Number of years cohabiting-squared/100	0.1016	0.0361	0.0981	0.0374	0.0983	0.0374
	[0.0347]**	[0.0388]	[0.0306]**	[0.0335]	[0.0305]**	[0.0335]
Have known chronic health problems	-0.1260	-0.1675	-0.0437	-0.0608	-0.0411	-0.0618
	[0.0236]**	[0.0230]**	[0.0208]*	[0.0200]**	[0.0207]*	[0.0199]**
Mean(life satisfaction)			0.9192	0.9930	0.9220	0.9947
			[0.0163]**	[0.0164]**	[0.0162]**	[0.0163]**
Constant	0.1346	0.6342	-0.1463	0.0772	-0.1453	0.0741
	[0.1024]	[0.1150]**	[0.0902]	[0.0999]	[0.0901]	[0.0998]
Correlation matrix of the residual					0.105	

Breusch-Pagan test of independence: chi2(1)					120.445 [0.000]	
Observations	10931	10931	10931	10931	10931	10931
R-squared	0.2508	0.1974	0.4202	0.4000	0.4202	0.4000

Note: + < 10%; * < 5%; ** < 1%. Standard errors are in parentheses. See Table 2.

Table 4: Marginal Effects Probit Model of Termination of Partnership at Period t+1

Dependent variable: separation or divorce at t+1	β
Husband's life satisfaction at t	-0.1603
	[0.0420]**
Wife's life satisfaction at t	-0.1672
	[0.0366]**
Husband's characteristics	
Age	0.0524
	[0.0382]
Age-squared/100	-0.0452
	[0.0452]
Unemployed	0.1029
	[0.1605]
Disabled	-0.1096
	[0.1205]
Self-employed	0.2616
	[0.1214]*
Retired	0.0259
	[0.1798]
Not in the labor force	-0.3512
	[0.0902]**
Education: first degree	-0.0905
	[0.0953]
Education: higher degree	-0.1927
	[0.1309]
Have known chronic health problem	0.0420
	[0.0672]
Mean(life satisfaction)	-0.0387
	[0.0516]
Wife's characteristics	
Age	-0.0718
	[0.0358]*
Age-squared/100	0.0582
	[0.0443]
Unemployed	-0.0714
	[0.1585]
Disabled	-0.1334
	[0.1278]
Self-employed	-0.1032
	[0.1192]
Retired	-0.3328
	[0.1164]**
Not in the labor force	-0.1758
	[0.0705]*
Education: first degree	-0.0995
	[0.0986]
Education: higher degree	0.0819
	[0.2421]
Have known chronic health problem	-0.1156
	[0.0697]+
Mean(life satisfaction)	-0.0212

	[0.0489]
Common variables	
Cohabit	0.0593
	[0.1220]
Ln(real household income)	-0.0777
	[0.0508]
Number of children	0.0725
	[0.0368]*
Time trend	-0.0107
	[0.0120]
Number of years married	0.0251
	[0.0218]
Number of years married-squared/100	-0.0716
	[0.0446]
Number of years cohabiting	-0.0293
	[0.0368]
Number of years cohabiting-squared/100	0.0578
	[0.0880]
Observations	28987
R-squared	0.1196
log likelihood	-1573.1591

Note: + < 10%; * < 5%; ** < 1%. Standard errors are in parentheses. The marginal effects are reported in percentage points.