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SPOUSAL EFFECTS IN SMOKING CESSATION: MATCHING, LEARNING, OR BARGAINING?

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ABSTRACT

Previous research studying the correlation in smoking behavior between spouses has discounted the role of bargaining or learning. Using the Health and Retirement Study (HRS), which contains information on smoking cessation and spouse's preferences, this paper presents an essential investigation of the importance of spousal bargaining or learning on the decision to cease smoking. We find, regardless of gender, when one member of couple ceases smoking this induces the other member to cease smoking through bargaining. Further, we find females demonstrate either altruistic behavior toward a spouse, who has suffered a health shock, or learning from their spouse's health shock.

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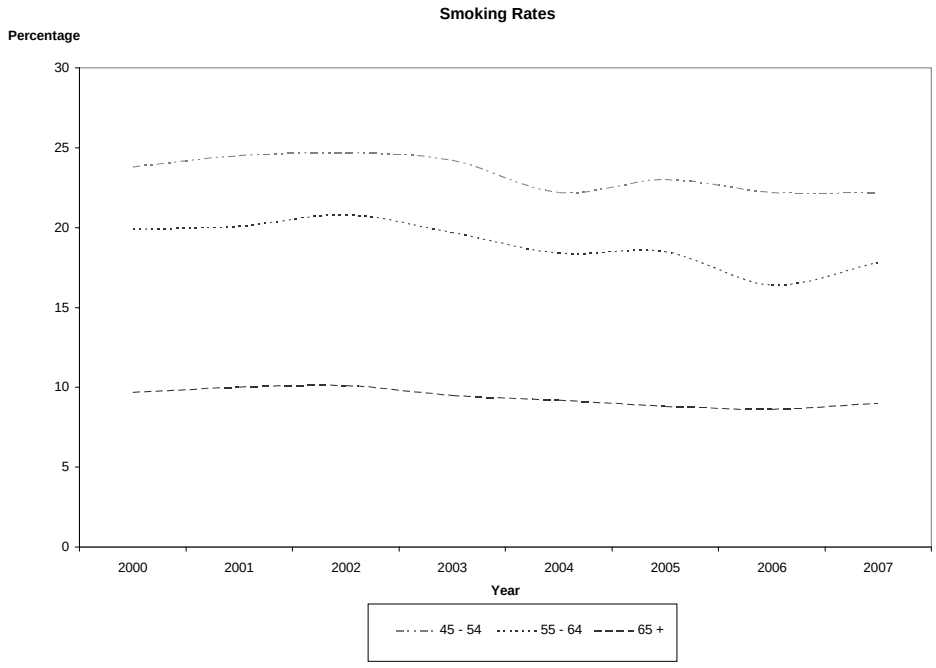
INTRODUCTION

Economists have shown interest in determining whether individual behavior is influenced by the behavior of family, friends, and other associates. Some of the earliest interest from economists describes the impact of spousal interactions on earnings and religiosity [Grossbard-Shechtman, 1986]. This interest has been augmented by research on labor supply [Chiappori, 1992; McClellan, 1998], and educational attainment [Lefgren, 2004; Hanushek, et al., 2003]. To date, much of the focus on less desirable outcomes such as, teenage pregnancy [Evans, et al., 1992], substance use [Lundborg, 2006] and tobacco use [Norton and Lindrooth, 1998; Powell et al., 2003] has focused on the impact of peers. Further work, both within and outside of economics, investigates the importance of social networks on happiness, obesity and other outcomes [Cohen-Cole and Fletcher, 2008; Fowler and Christakis, 2008a; Fowler and Christakis, 2008b; Gaviria and Raphael, 2001; Trogdon, et al. 2008]. The current paper extends these lines of research by investigating possible explanations for correlation in spousal smoking cessation. In particular, we seek to investigate the role of intra-household bargaining, learning or altruism in behavioral decisions such as smoking cessation.

The U.S. Department of Health and Human Services reports that smoking rates for those under 40 declined from 2000 to 2007, rates among those aged 50 and over remained remarkably stable [U.S. Department of Health and Human Services, 2008]. Figure 1 demonstrates a similar level of stability in smoking rates among the 65+ age group. In addition, Figure 1 shows a higher percentage of smoking and greater change over time among the younger age groups. Since the health risks from smoking wane

from the time of cessation, studying smoking behaviors could lead to large potential gains to health if our understanding of smoking quitting can lead to effective inventions and policies to promote it. Furthermore, adults 65 years old and older incur more medical care expenditures as their health declines [Deb and Trivedi, 1997]. With this in mind, the health benefits of smoking cessation among older adults are likely to have a large financial impact, particularly on the Medicare program as the ratio of taxpayers to beneficiaries continues to decrease.

Figure 1



Further, smoking-cessation related interventions – including physician advice, psychosocial therapies and pharmacotherapy – have been shown to reduce smoking rates in the general population without similar evidenced success in the elderly population [AHCPR 2000; Stead, Lancaster et al., 2003; Silagy, Lancaster et al. 2004; Stead and Lancaster 2004; Lancaster and Stead 2005; Stead and Lancaster 2005]. Hence, it is useful to identify mechanisms through which higher rates of smoking

cessation will be achieved in the elderly population. While these examples from the literature focus on the effectiveness of direct interventions targeted at the elderly, they have examined the effect of interventions on the individual without extending the analysis to include the spouse who is a major contributor to the home environment. This paper seeks to improve the current state of the literature by determining how household interactions could play a role in smoking cessation.

Intra-household Interaction

A well-developed economic literature devoted to the effect of household decision making on health has grown out of the foundation built by Grossman [1972]. To produce health, household members will interact based on their preferences. Given the wealth of literature on household interactions, we focus on the empirical contributions which investigate how household members influence each other's healthy (or unhealthy) behaviors.

The empirical investigation of these spousal interactions comes from a range of disciplines. Farrell and Shields [2002] investigate the interaction between healthy behaviors with their study on sports participation. Bolin, Jacobsen and Lindgren [2001] and Bolin, Jacobsen and Lindgren [2002] investigate strategic interactions between spouses in health production.[1]

More recently, empirical literature has sought to investigate unhealthy behaviors among spouses. Leonard and Mudar [2003] estimate spousal drinking interactions. Recent studies by Clark and Etilé [2006] and Khwaja, Sloan and Chung [2006] investigate the correlation in spousal smoking. To our knowledge, the last two studies are the only economic studies that seek to explain intra-household (spousal)

[1] See Clark and Etilé [2006] for a well-developed literature review.

interactions regarding smoking. However, they both focus on the demand for smoking not smoking cessation.

The focus of the current paper is on how spousal interactions can influence the probability of *smoking cessation.* Therefore, we turn our attention to the two previously mentioned studies because they are the most relevant to our work. Clark and Etilé [2006] outlines three reasons why partners' smoking behaviors may be *correlated*: 1) matching in the marriage market, 2) household bargaining and 3) social learning. Matching, as the name implies, describes the correlation in smoking status among spouses that results because smokers are more likely to marry other smokers. As mentioned, the main finding from Clark and Etilé [2006] is that the correlation in smoking behavior of spouses is due to matching. As described in their study, if the preference upon which a match is formed changes, the match will no longer hold.

The second study, Khwaja, Sloan and Chung [2006], offers three non-mutually exclusive explanations for the effect of spousal health on the quantity of cigarettes consumed: 1) consumption externalities (spousal smoking reflects spousal preferences and household externalities), 2) altruism (one spouse reduces smoking in response to the other's bad health) and 3) learning about the risks of and reducing the level of smoking from the health experience of one's spouse. Using data from the Health and Retirement Survey, Khwaja, Sloan and Chung [2006] finds that all the correlation in the quantity of cigarettes consumed is due to consumption externalities.

Both Khwaja, Sloan, Chung [2006] and Clark and Etilé [2006] find no evidence of bargaining or learning/altruistic behavior. It is argued here, given the assumptions made in these studies and the methodologies employed to date, that it may be

premature to discount the effect of altruism/learning in favor of matching or consumption externalities.

For instance, the economic literature documents that a one spouse contributes to not only to the human capital formation and earnings of the other spouse, but also, to the other spouse's good nutrition and good physical and mental health [Grossbard Shechtman, 1986]. It should be likely that as a spouse demonstrates the benefits of positive lifestyle choices a spouse may learn from this demonstration and adopt similar behaviors, via learning.[2]

EMPIRICAL STRATEGY

In this section we detail our empirical strategy to uncover possible influences on the smoking cessation probability for an individual who is partnered (defined as married or coupled here). It is important to note, that our goal is ***not*** to measure the impact of bargaining or learning /altruism, but rather to demonstrate their potential existence.[3]

Therefore, we employ the following steps. First, we model smoking cessation, unlike the prior literature which models the demand for cigarettes. Second, we design a model to demonstrate how household changes within a smoking couple over time could impact smoking cessation while controlling for unobserved heterogeneity and the time sensitivity of the errors. Third, we use a panel data set of older adults, the Health and Retirement Study (HRS), which allows us to follow individuals as they transition from

[2] Altruism suggests that an individual will change a behavior for altruistic (or for the benefit of others) motives. Learning suggests an individual will change a behavior after the individual learns about the behavior. If an individual quits smoking after their spouse suffers a health shock this could be due to the later or the former effect. As the former effect would be out of concern for the spouse and the latter effect would be due to the knowledge that further exposure is harming both the spouse and the individual.

[3] Recall, altruism and learning effects may not be mutually exclusive in the case of smoking cessation.

smoking to smoking cessation. The HRS offers an additional benefit because the individuals which the study demonstrate a very small probability of starting smoking [Sloan et al., 2003].

We claim that own health shocks, spousal smoking cessation, or wave to wave changes in spousal health, could lead to a positive effect on smoking cessation for an individual, all else equal. The reasons for these effects are as follows. Spousal health declines could reduce smoking due to, 1) learning, greater understanding that the smoking is causing ill health or due to, 2) altruism, concern for the health of the household. In addition, spousal smoking cessation could impact an individuals smoking cessation due to bargaining among the couple that occurs to induce both members of the couple to converge towards new similar preferences in order to improve future household health.

Empirical Model

We use the following reduced form model to describe a partnered individual's propensity towards smoking cessation:

$$C_{i,t}^{*} = \beta_1 X_i + \beta_2 X_{i,t} + \beta_3 \Delta H_{i,t} + \beta_4 C_{s,t}^{*} + \beta_5 X_s + \beta_6 X_{s,t} + \beta_7 \Delta H_{s,t} + \varepsilon_{i,t} \quad (1)$$

Let $C_{i,t}^{*}$ be the latent propensity for an individual, *i*, to quit smoking between two waves of data, *t-1* and *t*; X_i is a vector containing individual level time invariant characteristics at wave *t;* $X_{i,t}$ is a vector containing individual level time variant characteristics at wave *t*; $\Delta H_{i,t}$ is a vector of indicator variables of whether the individual has suffered a health shock or changes in overall health between *t-1* and *t.* Analogously, we describe the spousal variables as, $C_{s,t}$ be an indicator that the spouse for an individual, *i*, has quit smoking between two waves of data, *t-2* and *t*; X_s is a vector containing spouse's

characteristics time invariant characteristics at wave *t; $X_{s,t}$* is a vector containing spouse's characteristics time variant characteristics at wave *t*; $\Delta H_{s,t}$ is the analogous vector of information indicating whether the spouse has suffered a health shock or changes in overall health between *t-2* and *t* ; and finally, $\varepsilon_{s,t}$ is a random error term. Finally, we observe a dichotomous variables for, $C_{i,t}^{*}$ and $C_{s,t}^{*}$, where the value of 1 indicates smoking cessation and 0 otherwise.

Data

The data for this study are from the Health and Retirement Study (HRS). The Health and Retirement Study developed through grants from the National Institute on Aging and the Social Security Administration. The HRS dataset is a biennial national panel survey of individuals who were at least 51 years old in 1992 and their spouses. It includes detailed information on demographics, income, assets, health, cognition, family structure and connections, health care utilization and costs, housing, job-status and history, expectations and insurance for all individuals and their spouses. The collection of these data is intended to enable research in the areas of retirement, health, saving, insurance, and economic well-being. The data used in this paper are from the 1992 - 2010 waves of the HRS. The entire ten-year panel of the HRS includes observations on over 22,000 households. Given the inclusion of detailed information on both members of an adult couple over time, it is well suited to studying spousal influences within this population over time. For the purposes of this study, study a subsample that includes individuals whether they are married or cohabitating. We will be unable to control for gender in our empirical model. Therefore, to identify any gender based differences we subsample the data by respondent gender.

While the HRS is quite comprehensive, it does have some limitations. For instance, the only indication of residence is census division. This limitation prevents us from directly controlling for the effect of price on cessation because we cannot match cigarette price data, which vary primarily at the state level, to individuals. Nevertheless, this omission is unlikely to bias our results because prices changes within two waves of data are unlikely to be correlated with changes in individual and spousal health conditions between waves of data and individual smoking cessation. Another limitation is the lack of data on smoking intensity conditional on smoking. This omission prevents us from estimating how a change in prior intensity of own or spousal smoking (joint tapering) might influence the cessation. The last limitation is due to the age of respondents in the sample and lack of marriage transitions (less than 2% transition out of marriage or partnership). Therefore, our sample does not allow identification of partnership breaks that may occur because the partners no longer maintain matched preferences. This will be the focus of future research.

Our individual and spousal smoking cessation measures are dichotomous indicators based on changes between waves (two years of data) in the answer to the question "Do you smoke cigarettes now?" Therefore, we observe a 1 when the respondent or spouse changes from smoking now to not smoking now. Our additional variables of interest are the changes in or emergence of spousal health conditions since the time of last survey. Specifically, we include heart or cardiovascular disease (stroke, high blood pressure, heart disease), cancer, and lung problems other than lung cancer. In addition, we include an indicator variable that equals 1 if the respondent's self-assessed health status worsened between waves of data. Again, when investigating an

individual's smoking cessation determinants, we control for both health declines suffered by the individual and the spouse. As mentioned, the impact of spousal health declines is used to identify learning/altruism or bargaining. Our use of the HRS survey allows us to include a variety of demographic and socioeconomic variables that are time variant determinants of adult smoking cessation: total household income, age, marriage length, working for pay; and other time invariant determinants of adult smoking cessation: gender, race/ethnicity, and educational attainment.

Table 1 provides the relevant descriptive statistics for our male sample and their spouses. We must limit our sample to examine the smoking cessation decisions within couples. Therefore, our sample is limited to respondents who are married or partnered, reported yes to currently smoking in wave, *t*, and reported not smoking in wave *t+1*. If quitting leads to a situation where neither member of the household is a smoker, both are dropped from the sample for the following two year time change. Also, we further reduce the sample by including only those who are under 85 years old. For this sample, we find approximately 15% of the sample transitions to smoking cessation over the time frame, 76% remain smokers and 10% are mismatched, with only one member of the couple quitting smoking.

Table 1. Descriptive statistics for sample between individuals and within overtime.

	Overall		Variation	
Variable	**Mean**	**Stand. Dev.**	**Between**	**Within**
Probability of Quitting	0.290	0.454	0.143	0.432
Age	60.404	7.019	6.347	3.509
Marriage Length	29.800	13.158	13.083	3.519
Work for Pay	0.512	0.500	0.419	0.292
Insurance - Own Private	0.384	0.487	0.403	0.290
Insurance - Spouse Private	0.246	0.431	0.364	0.247
Insurance - Own Medicaid	0.046	0.210	0.179	0.132
Insurance - Own Medicare	0.3214	0.4671	0.371	0.306
Insurance - Own VA	0.0911	0.2878	0.246	0.126
HH Income / 1000	156.8319	386.0708	317.564	237.643
Respondent Health Variables				
Self - Assessed Health Change 3=Same	3.1945	0.7444	0.542	0.561
Lung Disease-New Diagnosis	0.0311	0.1737	0.100	0.150
Heart Disease-New Diagnosis	0.0447	0.2066	0.113	0.181
Cancer-New Diagnosis	0.0241	0.1534	0.081	0.134
ADL Difficulty Worsened	0.254	0.436	0.249	0.379
Spousal Variables				
Smoking Cessation	0.144	0.351	0.203	0.304
Age	59.689	7.820	7.103	3.503
Work for Pay	0.533	0.499	0.417	0.289
Insurance Coverage	0.264	0.441	0.372	0.254
Spousal Health Variables				
Self - Assessed Health Change 3=Same	3.180	0.720	0.518	0.551
Lung Disease-New Diagnosis	0.026	0.159	0.087	0.138
Heart Disease-New Diagnosis	0.032	0.175	0.103	0.152
Cancer-New Diagnosis	0.018	0.134	0.071	0.117
ADL Difficulty Worsened	0.241	0.428	0.229	0.380
N – overall	1702			
n - individuals			442	
T - Average time			4	

Fixed Effect Model

To estimate the model we must control for unobserved heterogeneity. To do so, we estimate a fixed effect model which is appropriate because most of the variation in our variables of interest, smoking cessation and health changes, is within an individual

over time rather than between individuals [Cameron and Trivedi, 2010]. In addition, we since using a fixed effect model are able to control for unobserved heterogeneity that could potentially bias our results. The fixed effect model we estimate is as follows:

$$C_{i,t}^{*} = \alpha_1 X_{i,t} + \alpha_2 \Delta H_{i,t} + \alpha_3 C_{s,t}^{*} + \alpha_4 X_{s,t} + \alpha_5 \Delta H_{s,t} + \eta_i + v_{i,t} \quad (2)$$

All variables remain as previously defined for equation (1). However, this reduced form model differs from equation (1) since all time invariant variables are irrelevant and not included. All time invariant characteristics will be controlled for in the fixed effect component of the error term, η_i.[4] In addition, this estimation will correct the standard errors of this model for both the panel nature of the data and the clustering that must occur.

The fixed effect model is a very stringent test. This model enables each individual to serve as their own control. Therefore, the only unobserved heterogeneity would be time varying and could only bias the results if the wave to wave unobserved heterogeneity was related to both the wave to wave probability of smoking cessation and wave to wave changes in health for the spouses and individuals. Since changes in price could change wave to wave, census divisions are included to control for this type of effect over time.

Identification of Bargaining or Learning/Altruism

Recall we would like to demonstrate the potential impact of bargaining or altruism/learning effect rather than discrediting the effect of matching or consumption externalities. Again, our empirical model is a reduced form model which controls for non-time varying unobserved heterogeneity and with individual level fixed effects. So

[4] As described previously, if matching occurred among the spouses on any time invariant characteristics, such as: race, education, gender, this will be controlled for by η_i as well. For this type of a model, the standard errors must be clustered to account for the household.

then, if a couple has matched on their preference for smoking then, matching cannot explain correlation in smoking cessation as the match was formed on the joint preference for smoking not smoking cessation. In other words, if individuals match with another person on a certain behavior, the match continues as long as the preferences for the behavior remain constant. If preferences for the behavior diverge, the match fails. In addition, by conditioning on fixed effects we are controlling for any correlation that could be due to matching on a behavior such as smoking.

We maintain that smoking cessation may be the result of factors such as bargaining, altruism/ learning. Bargaining may explain smoking cessation, if the spouses are self-interested and conflicts of interest arise in their preference for smoking. If spousal preferences for smoking do not agree, a spouse quits smoking and the individual does not, the members of the couple may have to engage in bargaining so that their preferences will now converge or to continue to allow preferences to be mismatched. Under the learning hypotheses, a smoker may learn about the dangers of smoking via their own or spouse's health shocks. Even if the health shock is unrelated to smoking the new access to health providers may induce learning as the spouse and the individual would likely both be counseled to cease smoking. Under altruism, a smoker may want to improve the environment for their spouse who has suffers a health shock and cease smoking.

To describe these effects in more detail, consider the possible responses of a smoking individual to the negative health shock experienced by their smoking spouse. The smoking individual may quit smoking if 1) they learn to or are better able to assess the health risks associated with smoking from the spouse's health shock; 2) with the

onset of a negative health condition the smoking spouse quits and to improve the household health the individual also, altruistically, quits smoking; however, 3) the individual may continue to smoke, out of self-interest, regardless of the spouse's cessation.[5] In this final scenario, the spouse may bargain with the individual to quit smoking.

RESULTS

Table 2 provides the marginal effects that result from our panel logit estimation of equation (2). The delta-method was used to calculate the standard errors which appear in parentheses. Table 2 presents three groups of estimates: full sample, male and female sub-samples. This will enable us to determine the effect gender may have on bargaining, learning or altruism since gender cannot be accounted for in the estimation.

[5] If the individual continues to smoke out of self-interest this would include the situation where the individual continues to smoke in response to the stress brought on by the spousal health shock.

Table 2: Probability of Smoking Cessation Pooled and by Gender

Variable	*Pooled*	*Males*	*Females*
Age	0.308	0.885	-0.606
	(0.352)	(0.640)	(0.692)
Age Squared	-0.002	-0.003	0.001
	(0.002)	(0.004)	(0.004)
Work for Pay	**-0.524**	**-0.620**	-0.386
	(0.267)*	**(0.372)+**	(0.443)
Marriage Length	0.051	-0.564	1.129
	(0.206)	(0.648)	(0.698)
HH Income/1000	0.000	**0.001**	0.000
	(0.000)	**(0.000)+**	(0.000)
Insurance-Own Private	-0.417	-0.097	**-1.142**
	(0.322)	(0.437)	**(0.542)***
Insurance-Spouse Private	-0.421	0.035	**-1.393**
	(0.352)	(0.505)	**(0.585)***
Insurance-Own Medicaid	-0.296	-0.056	-0.968
	(0.467)	(0.606)	(0.801)
Insurance-Own Medicare	-0.266	-0.189	-0.709
	(0.303)	(0.418)	(0.511)
Insurance-Own VA	0.348	-0.143	2.030
	(0.551)	(0.642)	(1.543)
Self-Assessed Health Better	-0.028	0.802	-0.304
	(0.591)	(0.962)	(0.833)
Self-Assessed Health Same	-0.890	0.130	**-1.237**
	(0.543)	(0.879)	**(0.746)+**
Self-Assessed Health Somewhat Worse	-0.079	0.497	0.020
	(0.568)	(0.907)	(0.804)
Self-Assessed Health Much Worse	0.848	**1.710**	0.608
	(0.647)	**(1.000)+**	(1.012)
Lung Disease - New Diagnosis	**0.689**	0.866	0.459
	(0.376)+	(0.561)	(0.569)
Heart Disease - New Diagnosis	**1.043**	**1.454**	1.026
	(0.333)**	**(0.430)****	(0.712)
Cancer- New Diagnosis	**1.187**	0.882	1.224
	(0.496)*	(0.661)	(0.801)
ADL Difficulty Worse	-0.047	-0.141	0.296
	(0.248)	(0.330)	(0.431)
Spouse's Characteristics			
Smoking Cessation	**2.931**	**3.220**	**3.025**
	(0.301)**	**(0.461)****	**(0.455)****
Age	0.046	-0.052	0.356
	(0.328)	(0.549)	(0.756)
Age Squared	0.000	0.002	-0.006
	(0.002)	(0.002)	(0.004)
Work for Pay	0.251	0.426	0.057
	(0.273)	(0.393)	(0.432)
Health Insurance Coverage	-0.080	-0.243	0.091
	(0.329)	(0.455)	(0.542)
Self-Assessed Health Better	-0.021	-0.650	**3.214***
	(0.692)	(0.843)	**(1.529)**
Self-Assessed Health Same	0.311	-0.297	**3.424***
	(0.622)	(0.725)	**(1.451)**
Self-Assessed Health Somewhat Worse	0.182	-0.448	**3.219***
	(0.651)	(0.782)	**(1.469)**
Self-Assessed Health Much Worse	-0.204	-0.237	2.460
	(0.773)	(1.000)	(1.584)
Lung Disease - New Diagnosis	0.469	0.045	1.075
	(0.473)	(0.777)	(0.679)
Heart Disease - New Diagnosis	-0.432	-0.994	-0.111
	(0.463)	(0.844)	(0.601)
Cancer - New Diagnosis	**0.991**	-0.754	**2.049***
	(0.556)+	(1.313)	**(0.851)**
ADL Difficulty Worse	-0.224	-0.400	0.024
	(0.250)	(0.355)	(0.391)
N	1702	905	797

+ p<0.10 * p<0.05 ** p<0.01" Marginal effects are reported. dx/dy for factor variables is the discrete change from base level. Delta method standard errors generated from the bootstrapped standard errors are in the parenthesis. All models include controls for census divisions

We turn our attention to column 1. Our full sample estimates reveal that, regardless of gender, an individual's probability of quitting smoking is improved by three percentage points if their spouse also quits smoking. This suggests, while holding all other sources of potential variation constant, spouses may bargain to keep their preferences the same. Hence, bargaining may be present as the spouses bargain to maintain like joint preferences, all else equal. Further, we find that the probability of quitting increases after the individual suffers a health shock. This suggests the individual may learn of the harms of smoking from this health shock and quit smoking. Finally, we find a positive and significant effect of a spousal health shock, cancer – new diagnosis. This effect could be generated from learning, as the individual learns about the harms of smoking from the spouse's health shock. In addition, this effect could be generated from altruism as the individual quits smoking in an effort to improve the welfare of the spouse.

Columns 2 and 3 of Table 2, report the results for the probability of smoking cessation for an individual conditional on the gender their gender. These results demonstrate the importance of gender on bargaining and learning. From column 2, the male sub-sample, we see that the effect of a spouse's smoking cessation, 3.22 percentage point increase in the individual's probability of smoking cessation, is similar to the effect size for the full sample, 2.9 percentage points, and female sample, 3.02 percentage points. However, for the male sample, the individual probability of smoking cessation is not responsive to any health shocks suffered by their spouse. Meanwhile

males respond to few own health shocks, heart disease – new diagnosis, by increasing the probability of quitting smoking.

As we turn our attention to column 3, the female sub-sample estimates, we see that there are many differences based on gender. Compared to males, females are more likely to increase the probability of quitting smoking after their spouse quits smoking and after their spouse experiences a health shock, cancer – new diagnosis, or the spouse feels that their self-assessed health has changed. However, the female probability of quitting smoking seems to be non-responsive to own health shocks.

CONCLUSION

Recent studies have argued that the correlation in smoking status between spouses could be due to matching in the marriage market, bargaining between spouses, learning or altruism. It is important to distinguish between these explanations because they each have different implications for policies that aim to reduce smoking. The results from these prior studies indicate that all of the correlation in smoking status is due to matching in the marriage market. In this paper, we argue that other household dynamics should and, evidently, do play a role. Using a model of the probability of smoking cessation, we show that intra-household interactions could play an important role in influencing an individual's smoking cessation behavior. Hence, any policy that actually affects the smoking status of one member of a smoking couple could lead to a renegotiation and increase the probability by approximately 3 percentage points that the other spouse would also quit smoking. Further, we find that males learn from their own and health shocks while females are more likely to learn from a spouse who, or behave altruistically after a spouse, suffers a health shock. The message for anti-smoking

policy is an optimistic one: policies that succeed in reaching one member of a couple may have positive spillovers to spouses.

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