

***Partnered for health: how health interacts with partnership, and
how policy manages health inequality***

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Dissertation Abstract

Marriage may benefit individuals as much as smoking harms their health. Men, in particular benefit from a gain of as much as 10 years in life expectancy; for women the gain is 4 years. While we know that these inequalities exist between those who are single and those who live in partnerships (marital or cohabitating), we do not know why they exist. Here are four hypotheses that suggest why there may be a relationship: Partnership Benefits, Positive Selection, Cleaning Up, and Negative Selection. However, the impact of each is related to policy context and gender over the life course. This dissertation uses longitudinal data from panel studies in Canada and the U.S. in order to consider the variable impact of gender and policy in changing the incentives involved in partnering and partnership type. We focus on the transition into partnership as a highly selective event that is followed, in theory, by a period of health and social benefits. We use smoothed non-linear adjusted health curves surrounding the transition into partnership in order to determine who partners, along with when and how much benefits accrue. All analyses are separated by gender to understand the role that gender has in finding partners and benefiting from partnerships. Findings suggest first partnership benefits dominate in Canada, and positive selection dominates in the U.S., that differences in social benefits and healthcare policy determine the importance of health selection. We also show that partnership type plays a role that depends on policy regime and that gender modifies the role that benefits and selection play. This dissertation therefore highlights the unintended impact that social policies have in determining who partners and when. Put simply, 'marriage matters' only when being 'not married' (i.e. single or cohabiting) is risky.

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Résumé de la Thèse

Le mariage peut être avantageux pour les gens, tout autant que le tabagisme nuit à leur santé. Les hommes, en particulier, bénéficient d'une augmentation de dix ans de leur espérance de vie; pour les femmes, cette augmentation est de quatre ans. Bien que nous soyons conscients que ces inégalités existent entre les personnes célibataires et celles qui vivent en partenariat (mariage ou concubinage), il existe quatre hypothèses qui semblent indiquer en partie ce qui se passe et pourquoi il en est ainsi : les avantages du partenariat, la sélection positive, la responsabilisation et la sélection négative. Cependant, l'incidence de chacune est liée au sexe des personnes et au contexte politique au cours de leur vie. La présente dissertation s'appuie sur des données longitudinales provenant d'études par panel réalisées au Canada et aux États-Unis, afin d'examiner l'incidence variable du sexe et des politiques dans la modification des incitations en cause dans les partenariats et les types de partenariats. Nous nous concentrons sur la transition vers le partenariat comme un événement hautement sélectif qui est suivi, en théorie, par une période d'avantages sur les plans social et de la santé. Nous utilisons des courbes de santé non linéaires ajustées lissées pour illustrer la transition vers un partenariat en vue de déterminer les personnes qui entrent en partenariat, le moment qu'elles choisissent pour le faire, ainsi que les avantages que ce partenariat leur procure. Toutes les analyses sont séparées par sexe pour comprendre le rôle variable que le sexe exerce sur la découverte d'un partenaire et les avantages que procure le partenariat. Les résultats semblent indiquer que les politiques publiques, surtout celles touchant les soins de santé, déterminent l'importance de la sélection relative à la santé, et que le sexe modifie le rôle que jouent les avantages et la sélection. La présente

dissertation met donc en évidence les effets non intentionnels que les politiques sociales produisent dans la détermination des personnes qui entrent en partenariat et du moment qu'elles choisissent pour le faire. En d'autres termes, le « mariage est important » seulement lorsque le fait de n'être « pas marié » (c.-à-d., célibataire ou en concubinage) est risqué.

Statement of Originality

The gain to marriage has been recently claimed to benefit individuals' health as much as increased income, potentially even offsetting the well-known negative impact of smoking. However, a large portion of the American literature has begun suggesting that selection into marriage can account for the entire relationship. Just as significantly, little evidence of positive selection exists in Canada, or anywhere outside the U.S., implying that those who get married or begin cohabiting are not any healthier than others who do not. The work contained herein represents an original and important contribution to this debate. First, it draws from and extends prior findings by using new methods that consider the impact of selection and causation explicitly, finding that individuals in the U.S. positively select partners based on health. This thesis then replicates the findings generally suggested in Canada – that individuals benefit a great deal from partnerships, further noting that individuals are likely to find a partner more quickly if their health is getting worse than the average single population. Until recently, cohabiting and marital partnerships were largely agglomerated together. Here, we analyze the importance of partnership type, supporting emerging research that suggests that cohabiting relationships and marital ones are similar in terms of health, especially if they are stable and are in more socially democratic nations. Finally, this study questions this difference in suggesting that policy context is the fundamental factor that determines whether partnerships are risky or rewarding. Specifically, it finds that substantial differences in policies relating to maternity leave, sickness and disability, and healthcare differentially affect how people select partnership. This thesis is the first to use time-centered marginal curves to understand the range of factors relating to the transition from singlehood to partnered life. It is also the first to use comparable longitudinal data from nationally-

representative samples in both the U.S. and Canada to contrast and highlight these differences. The research findings, objectives, methods, overarching theory and hypotheses represent original work. Under the guidance of my research committee, I conceived of this study, carried out a systematic literature review, conducted all statistical analyses and wrote each chapter in its entirety.

Author Contributions

SC is responsible for the conception and design of the study, data analysis, and drafting of the thesis. AQV advised on the design, analysis and interpretation of the data, and critically revised the article for important intellectual content.

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I would like to express my deepest gratitude to my supervisor, Amélie Quesnel-Vallée, for her mentorship, advice, patience, and drive. She provided me with the wherewithal to proceed through this dissertation, the underlying structure to ask an interesting set of questions, and the flexibility to make my own way. Without her unwavering guidance, direction and support throughout, I would no doubt be less.

My dissertation is ultimately a combination of the voices of my committee members, each of whom has influenced me in a great number of ways. An abundance of thanks go to Michael Smith for incredibly helpful thoughts and comments throughout, for helping me to define the insightful reflexivity to undertake this complicated topic, and for the drive to open my eyes to more than what I saw at first. My thanks go particularly to Steven Rytina for the ability to become more creative ‘within bounds’, for helping to define the how in this research, and for the support to make my project (really my sociological life) my own. My sincerest thanks go to Céline Le Bourdais for everything: consistent and helpful advice, interesting questions, moral support, conceptual clarity,

detailed knowledge of the field, and ultimately for determining what question to ask in this research. Finally, thanks go to Bruce Link for believing in me, for his unwavering support and confidence in my ideas, for clarity of argument and depth of thought, humility and modesty, and for support in defining the end topic, making it more interesting than it was – thanks for the guidance when I was lost.

I am also indebted to a number of other academics and friends who have made my research and my life more interesting. Some academics who have affected my work in their own ways in no particular order: Olena Hankivsky, Lisa Bates, Jody Heymann, Mélanie Bourque, Bruce Dohrenwend, Sharon Schwartz, Greg Duncan, Zheng Wu, Shelley Clark, John Hall, Jack Sandberg, David Gartrell, Frank Trovato, and others. I would especially like to thank Axel van den Berg, Kristen Springer, Paul Bernard, and Naa Oyo Kwate for their excellent comments. In particular, I would like to thank Jo Phelan for giving me time and putting up with my particularities: thanks for giving me the tools and the internal voice necessary to figure out how to best explain and think through the issues evident in the many drafts that preceded this one.

I dedicate this dissertation first to those who have trusted me to work with them on various projects that enlivened my academic life. Secondly, to my friends who have done everything necessary to make this project possible without requiring anything, and for that I owe them everything. Finally, to my family, who gave me the strength to stick with it and the unconditional support to walkabout when necessary.

I would like to finally thank Rachel Kidman – for everything.

Executive Summary

Married and cohabiting individuals live longer, healthier lives than those who were never-married, divorced, separated, or widowed. In this dissertation, I examine the causes of this association using new methods and longitudinal data that focus the inquiry on the transition into partnership as an important health-selective and socially causal event in a person's life course.

BACKGROUND AND RATIONALE: Four hypotheses have arisen to explain why those who have partners live longer: *partnership benefits*, *positive selection*, *cleaning up for marriage*, and *negative selection*. Although these compelling explanations provide different understandings of why partnership might be related to health, they have not yet been tested against one another. Moreover, research has indicated that the health advantage to partnerships is not evenly distributed among heterosexual couples' members, as married men live an average of 10 years longer than single men, while for women the gain is only 4 years. There has been much speculation, but little consensus around the reasons for these gender differences. Furthermore, while we can claim that married persons live 4-10 years longer, little is known about the importance of formalizing a partnership to gaining any health benefits; benefits may be as feasible for those who are formally married as those who simply cohabit. Finally, the current body of research has focused on specific national contexts. The present effort will explore the impact of social policies on gender differences in the health returns to partnership in an international comparative perspective.

OBJECTIVES: In this dissertation, I model the timing of changes in health before and after the transition into a cohabiting partnership to achieve the following objectives:

Differentiate between the following hypotheses: *partnership benefits*, *cleaning up for marriage*, *positive selection*, and *negative selection*

Assess the presence and extent of gender differences in health returns to both marital and cohabiting partnerships.

Examine the impact of policy context on intersectional differences in health returns to partnership.

HYPOTHESES: The following specific hypotheses were derived from the general objectives above.

Objective 1.

If partnership benefits accrue, then health prior to cohabitation should be similar to that of singles, and should rise in the period after cohabiting to parallel that of the partnered respondents.

If people clean up for partnership, then health 5 years prior to cohabitation should be similar to that of singles, should increase in the 2 years prior to cohabitation, and finally should approach that of partnered individuals shortly after the start of the partnership.

If positive health selection occurs, health prior to partnership for those undergoing a transition will not be different from those who were partnered throughout the period.

If negative selection occurs, then health prior to cohabitation should be significantly lower than the health of the singles, and should rise significantly to reach that of the partnered individuals.

Objective 2.

Assessment of these trajectories by gender allows us to examine whether and to what extent selective or causal effects differ by gender. Generally, we expect the overall effect sizes to be smaller for women and men, more negative selection among women, and more benefits to men.

Assessment of the impact of partnership type on selective and causal processes will allow us to examine to what extent the legal formalization affects people's partnership patterns. We expect that this formalization will increase positive health selection whilst also increasing potential benefits, though we expect the importance of partnership type to reduce as more people use cohabiting rather than marital partnerships.

Objective 3.

Gender is more likely to be salient to health in an environment like the U.S. where there is greater inequality and fewer supporting social policies than Canada where healthcare, maternity leave, and disability insurance are more likely to be available from sources outside the family unit.

SAMPLE: The U.S. case will use data from the biennial Panel Study of Income Dynamics (PSID) from 1984-2005 and the Canadian case will draw from the annual Survey of Labour and Income Dynamics (SLID) between 1999 and 2005.

METHODS: With the data reshaped to center on entry into partnerships events, I model sex-specific, non-linear health curves for the period preceding and following this event. Some factors change along with partnership, including household income and often number of children. I adjust the scores using a process of standardization for social and economic correlates including education, age, individual and household income, employment status, etc. I further present descriptive evidence regarding indirect selection into the group that becomes partnered.

CASE 1 – U.S.: In the first analytic chapter, I examine these patterns in the U.S. Here, I show that both direct (health-related) and indirect (related to non-health factors that are themselves related to health) forms of selection play a role, while direct health benefits arising due to partnership are negligible. Instead, I show that those who enter partnerships are different than those who do not and have different patterns of health due to those differences. I also show that while partnership was not immediately beneficial to health for anyone, men who entered and stayed in a partnership were protected over time, while women who entered partnerships experienced a temporary health loss for an average of 7 years following. Finally, I showed that negative selection was the more evident pattern though women also experienced a period of ‘cleaning up’ prior to partnership.

CASE 2 – CANADA: In this second chapter, I examine these trajectories in the Canadian context. Here, we see a very different pattern, showing significant immediate health benefits to partnership for both men and women. Men who were partnered throughout the period showed slower deterioration in health than men who were single, while women who were partnered throughout deteriorated in health faster than women

who were single. Moreover, the Canadian data distinguish partnerships that result from marriage and cohabitation, and shows significant differences in the types of selection observed and the potential for health benefits between these two types of partnerships. Indeed, those who cohabited were more positively selected than those who married, but those who married gained more in health after marriage.

CROSS-NATIONAL COMPARISON: In the last chapter I consider the impact of policy on the gender-specific health returns to partnership. Many comparative policy analyses, including the Esping-Anderson welfare state categorization, Canada and the U.S. are often grouped together. Nevertheless, social and health policy differs substantially between Canada and the US, and these differences change the incentives and potential benefits inherent to partnership. Here, I show that for both men and women benefits are more evident in Canada; in contrast, negative health shocks followed partnership in the U.S.

CONCLUSIONS: Transitions in the life course present an important opportunity to understand the selective and beneficial effects of partnership to health. In this dissertation, I argue that these transitions matter, and they matter in non-linear ways depending both on time leading up to, and following, the entrance into partnership. This supports the non-linear specification that allows for both the selective and beneficial claims used here. There is varying support for each of the four original hypotheses. Specifically, partnership seems largely positively selective of health in the U.S. However, partnership is beneficial to both men and women in Canada and Québec. We argue that this difference is due to differences in how a partner's health is defined as risky to the financial well-being of individuals and partnerships. Future research should consider the

intersectional nature of our current social structure in determining not only the benefits of partnership, but the structure of marriage markets as well as the role of health selection. Further research on family transitions must interrogate the socioeconomic inequalities explicitly in the transitions into partnership and should also focus on understanding health selective and causal elements with respect to partnership dissolution. Finally, more consideration needs to be given to the role that family formation plays in reifying class boundaries and class structures within a society.

Organization of the Dissertation

This dissertation is organized into five chapters, the theoretical chapter, followed by three core analytic chapters, and finally a concluding chapter. In the first chapter we have described an ambitious research program that takes the current focus of the research from Health Selection versus Social Causation towards a more nuanced social approach to determining when ‘health selection’ matters and when ‘social causation’ plays a role. The first chapter focuses on delving into this issue in the United States (U.S.), considering the role of partnership type (marriage versus cohabiting) and carefully analyzing gender differences. It supports research suggesting that partnership in the U.S. positively selects on health. The second chapter delves into this question further in Canada and Québec, two economic and family policy regimes within a single overarching healthcare system in one federation. Here, we show that partnerships are often beneficial, and that these benefits are different by gender, policy context, and partnership type. The third chapter explores a direct Canada/U.S. comparison, focusing directly on the effective differences between these countries using only ‘comparable’ data. Here, we see similar effects such that those who partner in Canada see significant benefits and some negative selection and those who partner in the U.S. see significant positive selection. Chapter five discusses the implications and limitations involved in this study. Finally, due to the nature of a ‘paper based’ dissertation, there is significant repetition in portions of the papers. Repetition is most obvious in the theoretical development of each paper, and the reader may want to skip these sections: the introduction and theory from chapters 2, 3 and 4.

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1. What We Know about Conjugal Partnerships and Health

Authors: Sean Clouston, Amélie Quesnel-Vallée.

Author Contributions: SC is responsible for the conception and design of the study, data analysis, and drafting of the paper. AQV advised on the design, analysis and interpretation of the data, and critically revised the article for important intellectual content.

ABSTRACT: *Married individuals live longer, healthier lives. Four theories have arisen to help understand why partnership matters to health. Partnership Benefits theory suggests that a variety of healthful benefits exist for partnered people that do not exist for others. Positive Selection theory suggests that the process of finding a partner is highly selective on health, and any exhibited health differences reflect this alone. Cleaning Up theory posits that benefits actually begin to accrue up to two years prior to partnership as individuals behave healthier in anticipation of a partnership, thus approximating positive selection if using limited time spans. Finally, Negative Selection suggests that potential health benefits related to partnership draw those who are less healthy or in deteriorating conditions, motivating people to find a partner. Much of the literature focuses on the first two – arguing between positive selective and partnership benefits processes. However, we argue here that patterns of selection are likely to differ based on incentives involved when selecting partners, and that benefits will differ based on what the family provides that the state does not. Thus, differences exist depending on gender, partnership type, and policy context in predictable ways. We refocus the literature instead on asking when, why and for whom different selective and beneficial processes have greater impacts during transitions to partnerships.*

There is a long history of relating socio-structural inequalities to health. Social Causation suggests that social experiences, structures, and inequalities lead to differences in health for populations. Friedrich Engels (1886) showed that class defined the different ways that workers were treated, noting that those in the working class had abysmal working conditions which led to poor health outcomes including elevated mortality, stunted growth, hunching, etc. – indeed, this led him to argue finally that this lack of care would lead to a people’s revolt against those who were in effect killing them. John Snow (1849) historically noted that Cholera in London was spread through contaminated water, and was thus concentrated in poorer neighbourhoods where water was brought directly from the polluted Thames river.

From the inception of this field, the reverse has also been claimed. Reverse Causation or Health Selection suggests that healthier people tend to jump ahead in the social hierarchy. William Ogle (1885) first discussed this selection in his work on the *healthy worker effect*, claiming that those who were healthy were best able to work and thus disproportionately represented in the working population. While there is now convincing evidence that social inequalities are fundamental causal determinants of population health (see e.g. Kuh and Ben-Shlomo 2004; Link and Phelan 1995; Link, Phelan, Miech, and Westin 2008; Marmot 2004), there remains a strong element that argues consistently that both direct and indirect selection are also important to understanding social inequalities and health (see e.g. Becker 1991; Goldman 1993; Goldman 2001; Haas 2007; Mare 1991; Mare 2008; Michaud and van Soest 2008; Smith 1999; Smith 2003; Smith 2004).

The impact of family dynamics on health, and specifically that of co-residential partnerships (married and cohabiting partnerships), is not immune to this competition between selective and causal proponents. The benefits related to marriage, including greater financial stability, more social inclusion and interaction, along with more healthcare access, are thought by some to be directly related to the 4-10 year gain in life expectancy that those who are married have been shown to have over those who are single or divorced (see e.g. Gove 1973; Rogers 1995; Waite 1995; Waite and Gallagher 2000). This has prompted some to claim that the health benefit(s) to partnership (the focus is on marriage) may be greater than that of income, and may even work to offset the negative impact of smoking (Gardner and Oswald 2004; Wilson and Oswald 2005). Yet, the opposite argument is as strong, with many suggesting that assortative mating may account for the entirety of this relationship (Tucker, Friedman, Wingard, and Schwartz 1996). Indeed, the most recent trend in this research has been to suggest that there are no benefits to partnership, but rather that positive health selection is the primary explanatory process, in parallel with ill health due to divorce (Williams and Umberson 2004).

Many have argued for and against Health Selection and Social Causation as reasons for social inequalities in order to suggest why marriage matters to health; however the question of when and why some benefit from marriage and others do not remains relatively untouched. In order to understand this literature, it is helpful to examine the different types of explanations that exist; the following section will consider the range of Social Causation and Health Selection arguments referring to partnership and health. As we will show, this literature is largely concerned with establishing a single

explanation for health advantages observed with partnership. However, we note that there is some regional distribution to these explanations that suggest that they may not be mutually exclusive. Instead, we argue in the coming paragraphs that there is reason to believe that the degree of ‘selection’ versus ‘causation’ may be related to contextual factors that determine the level of risk that people face when choosing a partner.

The following section considers the four hypotheses advanced by the literature. Table 1.1 supplements this discussion by summarizing the literature in OECD countries (excluding the U.S.), while table 1.2 summarizes the literature with regards to the U.S. alone. These use a set of ‘codes’ that signify varying support for each theory: Y is used when a theory was supported, N when it was not, and I when the findings implicitly supported or assumed a theoretical background. Finally, table 1.3 summarizes the support for each of these theses on the four hypotheses explicated below. The following sections summarize the results of a systematically literature review, using a combinations of various search terms (marriage, partnership, cohabitation, health, mortality, selection, reverse causation, benefits) on a number of scholarly and meta-search sites (including google scholar, ScienceDirect, JSTOR, and the Web of Science) and finally seeking out suitable articles in the branches and roots of the citation network.

FOUR ARGUMENTS ABOUT PARTNERSHIP AND HEALTH

Partnership Benefits (PB): Partnership as beneficial to health

Gove (1973) published the classic work on the health benefits of marriage,¹ which showed that those who were married were at reduced risk of mortality when compared to

¹ This builds substantively on earlier works, including seminal work in France: Farr, W and GW Hastings. 1858. "Influence of marriage on the mortality of the French people." *National Association for the Promotion of Social Science Orientation: Association, Economic, Legal, Social Reform, Utilitarian Date*

those who were not, noting as well that while men gained more than women, both were protected by marriage. These findings have more recently been replicated using a greater variety of causes of death (Rogers 1995). Many have addressed this issue by explicating the types of mechanisms that operate to make ‘marriage matter’ to health and well being (Stolzenberg and Waite 2005; Waite 1995; Waite and Gallagher 2000).² The results of this research suggest: first, that health is one benefit of many coming from partnership (especially stable marriages (see e.g. Hughes and Waite 2009; Lillard and Waite 1995; Waldron, Hughes, and Brooks 1996)); and second, that partnership acts as a form of (health and income) insurance policy for those who enter into it. Partnered people gain a confidante (Callaghan and Morrissey 2008), expect and generally receive more personal care, incumbents have more sex, are happier in general and with their sex life, and have more money than do singles (Smith, Frazee, and Davidson 2000), and even than other cohabiters (Waite 1995). Indeed, if we are to believe recent literature reviews (Wilson and Oswald 2005), and empirical research, we might well be convinced that “marriage has a more important effect on longevity than income does... [and] approximately offsets the large negative consequences of smoking” (Gardner and Oswald 2004: pp 1204).³ Perhaps most compellingly, table 1.1 shows the impact of this hypothesis in explaining marriage and partnership throughout OECD countries excluding the U.S. All but one of

Run: 1858-1885 indexed Publication Place: London Publication Frequency: Annual Periodical Location: British Library 2:504-513.

² Note that cohabitating partnerships are not always measured on death certificates, and when they are usually are called marriages, compounding the lack of inclusion of cohabitation on censuses & surveys both in Canada and the U.S., it should be understood that until recently it was very difficult to dissociate marriage from ‘partnership’ though it was termed ‘marriage’ for convenience rather than as fact.

³ For an excellent review of the literature with regards to mental health, please see Simon, Robin. 2002. "Revisiting the Relationships among Gender, Marital Status, and Mental Health." *American Journal of Sociology* 107:1065 - 1096.

TABLE 1.1: Literature Regarding Health Selection and Partnership Benefits outside the U.S. showing support for Partnership Benefits (PB), Positive Selection (PS), Cleaning Up (CU) & Negative Selection (NS)

Author	Year	Country	Outcome	Time	Age	P type	Results	Selectivity	Theory**				Gender
									PB	PS	CU	NS	
Ai et al.	2007	Japan	All-cause and cause specific mortality (CVD, Resp. Disease, External Causes)	10 years	40-79	M	Two to three fold increase in risk of mortality for never-married than for married men. Marital dissolution was bad, but only in the period immediately following the dissolution event.	Assumed none	Y	N	N	N	Women show less gain from marriage. Women showed less loss at divorce.
Cheung & Sloggett	1998	UK	Risk of Marriage	3 obs., 22 years	16-33 born in 1958	M	Negative selection is more prevalent in the very young. Negative selection factors reduce and positive selection may take over between 23 and 33.	Explicitly modeled. Benefits not considered.	N	Y	N	Y	Where comparable, men and women's outcomes matched.
Cheung.	2000	UK	All-cause, CVD, Cancer & Other mortality	3 obs., 13 years	35+	M	Only those who were single were at a greater risk of mortality after controlling for SRH, and only from 'other' causes of death.	Controlled for	Y	I	N	N	Only females. consider
Gahler	2006	Sweden	Psychological distress	10 years, 2 obs.	18-75	M/C	Those who experienced any partnership dissolution were more likely to have psychological distress, even when controlling for positive selection.	Controlled and examined	Y	Y	N	N	Women showed significant selection into divorce on the dependent.
Gardner & Oswald	2004	UK	Mortality	10 years	40+	M	"marriage has a more important effect on longevity than income does... (and) approximately offsets the large negative consequences of smoking" (pp. 1204)	Controlled for.	Y	N	N	N	Findings were smaller for women.
Ikeda et al.	2007	Japan	All-cause and cause specific mortality (Stroke, CHD, CVD, Cancer, Resp. Disease, External Cause)	10 years	40-79	M	Two to three fold increase in risk of mortality for never-married than for married men. Marital dissolution was bad, but only in the period immediately following the dissolution event.	Assumed none	Y	N	N	N	Women show less gain from marriage. Women showed less loss at divorce.
Joung et al.	1998	NL	Health complaints, chronic conditions, SRH [†]	4.5 years	20-64	M	At first marriage, health was irrelevant. At divorce, chronic conditions played a role.	Explicit	N	N	N	N	Not explicitly discussed
Joutsenniemi et al.	2006	Finland	SRH, Smoking, chronic illness	2 obs., 20 year gap	50+	M/C	Health has improved over those 20 years, but inequalities between the partnered and non-partnered remain. Cohabiting partnerships were no different from marital ones.	Indirect selection - explains more of the male marital effect than the female (which is smaller)	Y	I	N	N	Single women were as likely to show differences in health as single men, as were widowed women.
Lund et al.	2002	Denmark	All-cause mortality	8 year period	50+	M/C	Living with a partner (regardless of partnership type) mattered to mortality.	Assumed none	Y	I	N	N	No difference between men and

							but only when people were over 70.						women
Murphy, Glaser & Grundy	1997	UK	Long-term Illness	1991 Census	40+	M/C	Marriage correlates with less long-term illness. Cohabitation was also related and in the expected direction, but this relationship was smaller.	None	Y	N	N	N	Findings were similar for men and women
Murphy, Grundy & Kalogirou	2007	EU	Mortality	10 years	60+	M	Those who were in marriages were very much less likely to die in all countries. This was particularly evident in the younger age groups and for males. All countries were similarly beneficial.	Not modeled.	Y	N	N	N	Males showed more advantage from marriage
Stack & Eshleman	1998	17 OECD	Happiness	X-section	18+	M/C	Marriage matter to happiness. Cohabitation was also beneficial, but slightly less. Separation was bad for both Men and women, but divorce was only bad for men.	Not modeled.	Y	N	N	N	Males gained less than females.
Strohschein et al.	2005	Canada	Psychological distress	4 years	12+	M/C	Those who became married were better off, even when controlling for within-individual fixed effects. Remarriage support showed more gains than first marriage. Separation and widowhood were similarly bad.	Controlled for: results can be interpreted to positive selection as well.	Y	I	N	N	Men and women experienced 'the same' effects.
Stutzer & Frey	2003	Germany	Life Satisfaction	17 years	18+	M/C	Marriage offered a benefit to life satisfaction, slightly more than that for cohabitators. This benefit seems to be short-lived surrounding the wedding. About half of the overall effect looks to be selection.	Explicit	Y	Y	N	N	Controlled for gender
Trovato	1987	Canada	Suicide	32 years	35+	Div.	Correlates rising divorce rates with increases in female labour force participation, higher unemployment rates, and a rapidly escalating suicide rate.	Assumed none	Y	N	N	N	Suicide rates have increased rapidly for women starting in the mid-1960's.
Trovato	1998	Canada	Cause-specific mortality		All	M	Married people die less than singles. Health selection may be important.	Considered	Y	I	N	N	No difference between men and women
Trovato	1991	Canada	Suicide	40 years	35+	M	Married persons commit suicide less than singles (divorced, single or widowed). Women do not suicide any differently if they are widowed.	Assumed none	Y	N	N	N	Males gained more from marriage than females.

Trovato & Lauris	1989	Canada	All-cause & cause-specific mortality (Lung Cancer, Cirrhosis, Suicide, Accidental Falls, Pedestrian, Motor Accidents, Homicide, Diabetes, Lymphoid Leukemia, Heart Disease, Stomach Cancer)	41 years	15+	M	Married persons die less than do singles. Mostly from behaviour-related causes.	Indirect testing	Y	I	N	N	Males gained more on average.
Wu & Hart	2002	Canada	Functional Health, SRH, 2 years CES-D	pooled	20-64	M/C	Transitions out of cohabitation and remaining married were both protective of physical health. Leaving marriage, staying in cohabitation, and staying married were associated with higher depressive symptoms.	None	Y	N	N	N	Controlled for gender
Wu et al.	2003	Canada	HUI, SRH, MDEs, CIDI, Psychological Distress	X-sectional	18+	M/C	Marriage matters to health, however selection also plays a small role. Cohabitation was not that different from marriage, though it did matter in the expected directions.	Explicitly modeled.	Y	Y	N	N	Findings for men were much stronger than those for women.
Zimmermann & Easterlin	2006	Germany	Happiness	20 years	18+	M/C	Find a honeymoon period (aka halo effect), though any gain is lost in about 2 years.	Explicitly modeled.	Y	N	N	N	Controlled for gender

*M/C Refers to Partnership Types included in the Analysis Described Above: M = Married, C = Cohabiting.

**Y was marked when an hypothesis was supported, N when it was not, and I when such a hypothesis could be inferred from the results.

†SRH refers to 'Self Rated Health'.

these 21 studies show that partnership is associated with health benefits, which might then lead us to believe that the empirical evidence as it holds is almost entirely supportive of a causal (society as determining health) hypothesis. As we will see in the next subsections, however, there is at least suggestive evidence that other processes are at play as well.

Positive Selection (PS): Individuals as selecting on partners' health

The process of finding a partner is inherently selective, and people must therefore appear to be superior matches in order to compete in the “marriage market” (Chiappori, Iyigun, and Weiss 2009; Iyigun and Walsh 2007; Lichter, LeClere, and McLaughlin 1991), and that health may play a role in being considered better candidates (Fu and Goldman 1996; Hall and Zhao 1995; Stutzer and Frey 2003). Goldman (1993) makes the distinction between two types of positive selection: *indirect* and *direct* selection. Indirect selection proposes that a spurious relationship between Health Selection and Social Causation exists because a number of known marital selectors, such as education, occupation, and employment, also predict health. Indeed, selection into marriage is known to vary by socioeconomic status, as occupation, education, and financial stability play a determinant role in assortative mating (see e.g. Henderson, Hennessy, Barrett, Curtis, McCoy-Roth, Trentacoste, and Fishbein 2005; Mare 1991; Mare 2008; Townsend and Levy 1990; Weeden and Sabini 2005). Direct selection refers to the direct selection of healthier people based on their health, which could ostensibly occur instead of or *in addition to* indirect selection, which refers to the selection on health-related variables (such as income, employment, race but not health or disease and may result in a spurious relationship showing Health Selection). Findings for positive selection can be found for a

variety of populations and times (Waldron, Hughes, and Brooks 1996). Recently, some researchers have even shifted the discussion from viewing partnership as beneficial to seeing partnership as a selective process with any causal disparities arising due only to the stress of partnership dissolution (Williams and Umberson 2004).

Cleaning-Up for Partnership (CU): Partners as reducing health riskiness

When considering the above arguments, Duncan et al. (2006) suggest that what we might believe to be positive selection could just as easily be a pre-transition beneficial change, as those who are nearing commitment in their partnerships adopt healthier behaviours. Specifically, they find a significant change in health behaviours in the year preceding partnership as (mostly) men reduce risky behaviors *in anticipation of partnership* due to their elevated commitment and involvement with their potential mates, effectively creating causal benefits *prior to* partnership. This finding can also be inferred from other studies, though researchers often ignore or do not interrogate these differences (see e.g. Fu and Goldman 1996). This may explain why we sometimes see apparent positive selection results when looking at a two-point model of time, which may confuse pre-partnership elevated health with ‘positive selection’ discussed above (see e.g. Williams and Umberson 2004). This implies two important lessons regarding the study of selection: that timing matters when investigating the transition into partnership, and that causal change can appear similar to selection if observation is limited.

Negative Selection (NS): Individuals select into partnership for benefits

While we believe that many individuals seek to choose the healthiest mate possible, it is also evident that there is an imbalance in information between individuals and their potential partners with regards to the often unobservable health characteristics.

TABLE 1.2: Literature Regarding Health Selection and Partnership Benefits in the U.S. showing support for Partnership Benefits (PB), Positive Selection (PS), Cleaning Up (CU) & Negative Selection (NS)

Author	Year	Outcome	Time	Age	P type	Results	Selectivity	Theory	Gender			
							PB	PS	CU	NS		
Averett, Sikora & Argys	2008	BMI	Every (other) year since 1979	18+ cohort	M/C	BMI was lower for people who were cohabiting & married, but gained quicker over time than those who remained or stayed single (fastest for those who were married). Those who divorced lost BMI quickly, though they gained during the divorce period.	Controlled for earlier BMI and health limitation	Y	Y	I	N	Analyzed separately.
Duncan, Wilkerson & England	2006	Behaviors	Every (other) year since 1979	18+ cohort	M/C	Marriage produces reduction in risky behaviors prior to entrance into the partnership, how we view cohabitation also does but less.	Changes prior may affect selection.	Y	N	Y	N	Males had more to gain because their behaviors were riskier.
Dupre & Meadows	2007	SR: diabetes, cancer, heart attack, or stroke	40 years, retrospective	51-61 in 1992	M	Married years protect against transitions out of marriage. Timing, duration, and numbers of divorces work independently to determine health. Health benefits from marriage increase over time.	Assumed none	Y	N	N	N	Men and women separate
Dupre, Beck & Meadows	2009	All-cause mortality	50 years retrospective	51-61 in 1992	M	Longer periods of time spent in partnership lowers mortality for both Men and Women.	Assumed none	Y	N	N	N	Separated by gender. Findings were fairly standard between them.
Fu & Goldman	1996	BMI, Health Conditions, Substance Use, Delinquency	12 years	18+ cohort	M/C	They do not explicitly claim cleaning up, however respondents who had smoked MJ but hadn't recently were more likely to get married. Most health-related selection was related directly to BMI.	Explicit	N	Y	I	N	Women and men differed as to their important selectors. BMI triggers were different for men and women.
Gove	1973	All-cause and cause specific mortality (Lung Cancer, Cirrhosis, Accidents, Homicide, Suicide, TB, Diabetes, Leukemia)	1 year	All	M	Married were less likely to die. Men showed larger gains than women. Largely behavior-related mortality outcomes (Lung Cancer, Cirrhosis, etc.)	Assumed none	Y	N	N	N	Women show less gain from marriage
Hughes & Waite	2009	SRH, mobility limit, chronic conditions, depressive symptoms	X-section, retrospective	51-61 in 1992	M	Currently married: stable married are best, marital loss is worse. Longer period of assumed away, marriage is better, but worse if married earlier. Being married protects or may improve health, could work getting divorced & being divorced is bad.	but specify that together	Y	I	N	N	Significant differences for chronic conditions
Lamb, Lee & DeMaris	2003	CES-D	~5 years, 2 obs.	18-35 Cohort	M/C	No selection into cohabitation or marriage. Marriage provided strong benefits, though cohabitation did not, nor did cohabiting that turned into marriage.	Explicit	Y	N	N	N	Controlled for gender

Lillard & Panis	1996	All-Cause Mortality, SRH	6 years	10+	M	Divorce does not cause mortality, but being never married does. Significant positive selection exists, as does negative selection for unhealthy men over 50 years of age.	Models and positive indirect selection	Y	Y	N	Y	Only consider males.
Lillard & Waite	1995	All-Cause Mortality	7 years	10+	M	There are positive and negative patterns of selection present, and no gain to health at first marriage, marital duration is important, some gain at remarriage. Risk of death drops immediately, with accumulated gains among men. No immediate gains for women, gains over time.	Assumed none	Y	I	N	N	Women did not gain from marriage, but did gain from stable marriages.
Masocco et al.	2008	Suicide & mortality from 'natural causes'	2 years pooled	25+	M	Those who were single were almost 1.5-3 times as likely to commit suicide. Those who were never married were worst off. Men who were widowed early (25-44 years old) were much more likely to kill themselves. Marriage also offered some protection against 'natural causes'. However, divorce showed the strongest protection.	Not modeled.	Y	N	N	N	Males and females both benefited. Males benefited more.
Meadows	2009	SRH & Mental health	5 years	14-50	M/C	Exiting marriage is bad for health though entering does not determine any findings, exiting cohabitation is not as bad as exiting marriage. Tested, but no results for SRH or mental health, though single were different from married : cohabiting weren't different from married	Considered.	Y	I	N	N	Men only
Meadows, McLanahan & Brooks-Gunn	2008	SRH & Mental health	6 years	14-50	M/C	Cohabitors were worse than married, singles were worse as well, exiting marriage was bad, couples, exiting cohabitation was not so bad, those entering marriage/cohabitation were no different than those who were in marriage	Strong positive selection for marriage less effects of divorce	Y	Y	N	N	Mothers only
Murray	2000	Height & Weight, age at death	Full life of respondents	18+	M	Those who married were more likely to be not obese. They were also less likely to die (16% from all causes) even when controlling for health at 20.	Explicit	Y	Y	N	N	Only males.
Musick & Bumpass	2006	SRH, mental health, social ties, relationship quality	5 years	19+	M/C	Few differences relating to partnership type exist, and are small and often favour the cohabitators.	Assumed away in the fixed effects	Y	N	N	N	Not explicitly discussed
Ren	1997	SRH (Dichotomized)	X-sectional	19+	M	Health perception varies by types of singlehood (never-married, divorced...), the quality of a questions	Assumed none, questions	Y	N	N	I	Controlled for gender

						marriage, and partnership type. This negative relationship is modified by extra-family social selection networks. Note that divorcing from a bad relationship was better than staying in it.								
Rogers	1995	Mortality	X-section	25+	M	Singles were all worse off than those who married. Types of singles mattered little to difference in mortality, with widows (not significantly) doing slightly better than others. Not modeled.	Y	N	N	N			Males gained much more than women	
Simon	2002	CES-D, Abuse	Alcohol 2 obs., 5 year gap	19+	M	Marriage benefits on CES-D for men whether looking at remarriage or first marriage. No less likely to stop alcohol abuse unless previously divorced. Women were more likely to enter a indirect remarriage if they were also abusing alcohol. Tested, finds selection		Y	N	N	I		Marriage was better for women than men with regards to CES-D.	
Tucker et al.	1996	All-cause mortality	70 years	11+	M	No differences between consistently married and consistently single. Divorce causes ill effects for men, and remaining divorced is bad for men and women. Those who stayed divorced were consistently least healthy. Findings may show positive selection out of this group		Y	Y	N	N		Men gained more from marriage than did women.	
Umberson et al.	2006	SRH	15 years, 4 obs.	24+ cohort		Age modifies the impact that marital strain has on health. Marriage matters, but bad marriages are worse. Corrected for using Heckman		Y	Y	N	N		Controlled for gender	
Umberson, Liu & Powers	2009	BMI	15 years, 4 measures	24+ cohort	M	Weight gain not due to 'marriage', but socio-demographic factors that go along with marriage. Assumed none		N	N	N	N		No difference between men and women	
Waite	1995	Satisfaction, wealth, financial situation, X-sexual satisfaction	X-sectional	18-60	M/C	Marriage makes a difference in a positive way. Cohabitation is also helpful, sometimes more, sometimes less than marriage. Assumed none		Y	N	N	N		Men gain more	
Waldron, Hughes & Brooks	1996	Health problems over scale	4 obs. over 20 years	25-34 cohort	M	Stable marriages are protective of women who were both married and unemployed. Selection Those who got was also obvious in this group. "many of the married were women who were neither married nor different than employed suffered from multiple interacting those who socioeconomic and health disadvantages." (pp didn't over the time. 122)		Y	Y	N	N		Focused on women only.	
Waldron, Weiss & Hughes	1997	Physical impairments, psychosomatic symptoms, health problems	20 years, 4 obs.	14+	M	Women who stayed single had more physical impairments than those who stayed married, but were same as women who married. However, singles that remained single were more likely to have health problems. There were some benefits: physical impairments went away for all married persons. Long divorces were problematic. Explicit		Y	N	N	Y		Only females.	
Williams & Umberson	2004	SRH: dichotomized	15 years, 4 obs.	24+ cohort	M	Marital status differences reflect bad dissolution events rather than benefits to Assumed none		N	Y	N	N		Women see no benefit to marriage, men see a lot.	

					marriage for men, not women.							More benefits if they are remarrying.
Zhang	2006	SR: cardiovascular disease risk (smoking status, alcohol consumption, exercise, and body mass index (BMI))	X-sectional	51-61 in 1992	M	Divorce is detrimental to health. Single may not be so bad as those who remained single those who were the same over time as those who remained married.	Good health of those who were always single	Y	Y	N	N	No gender differences (except that widows were more likely to have a heart attack if female)'
Zhang & Hayward	2006	CVD onset	8 years	10+	M	Marital loss is bad for CVD over the life course for women but not for men. Mechanisms for this are SES and Emotional Distress.	Controlled for	Y	I	N	N	Men are hurt less.

Indeed, individuals are arguably in the best position to know whether they themselves need help, and in that knowledge may seek someone to help them. This principle upholds the theory of adverse selection in economics, and we can assume that if it is thought to apply to formal health insurance seeking behaviours, then it might apply as well in partnership, which has been argued can act as an informal type of financial and health insurance (Bambra 2004; Bernard and Boucher 2007).

This type of adverse selection envisions individuals as rational actors who choose when to commit to a partnership. Negative selection was originally posited to explain what is happening for older men who seek out partnerships as they become older and less healthy (Lillard and Panis 1996). The underlying implication is particularly interesting – that people may decide to commit to a relationship when upon a downward health trajectory rather than when at their healthiest, and further that they will gain heavily from partnership in these cases. However, this would likely affect a small population, and is unlikely to dominate the selective role for entire populations. Nevertheless, it is likely to play a role at an individual level. We can see from tables 1.1-1.3 that this relationship has been shown explicitly to some degree, and sometimes only by implication, in a variety of situations (see e.g. Cheung and Sloggett 1998; Ren 1997; Simon 2002).

TABLE 1.3. *Tallies for Hypothesis shown in Tables 1.1 & 1.2*

	N	PB	PS	CU	NS
OECD (excl. U.S.)	21	90.48%	19.05%	0.00%	4.76%
U.S.	27	85.19%	37.04%	3.70%	7.41%
Total	48	87.50%	29.17%	2.08%	6.25%

*NB: We only count those studies where the hypothesis considered formed the main argument (demarcated by a 'Y' in tables 1.1 & 1.2 above)

Underlying this discussion is an understanding of how time is socially organized, and how the transition matters both to selective and beneficial processes. This organization of time is the topic discussed in the following section.

LIFE COURSE THEORY: THE UNDERLYING STRUCTURE

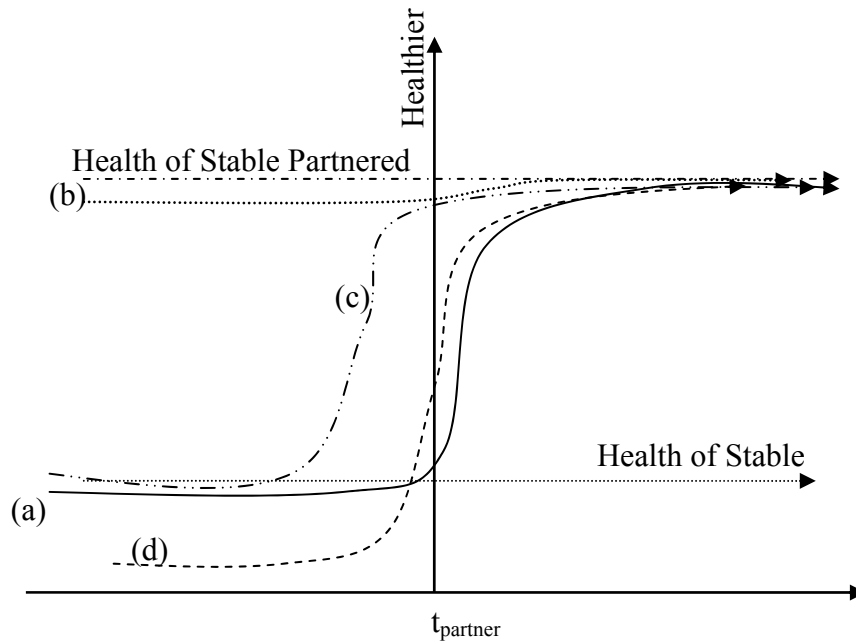
Elder (1983) insightfully notes that much of what we do as individuals and societies involves socially structuring time, both in terms of major lifetime activities and of day to day time use. Time in a life course is structured by inclusion of individuals into stages marked by significant life events or life course transitions such as entrance into a partnership (here marriage or moving in together). Life events can include any events through which the lives of individuals experiencing these changes go through a real change in behaviour, status, time use, everyday experiences, *etc.* Transitions mark important events, like parenthood, cohabiting, marriage, or even death that are important to social life (Elder 1985). Transitions are often marked by rituals or ceremonies, though they can also simply be demarcated by extant changes in behavior, and can include changes in marital status, death, birth, entry into employment or schooling, promotion, *etc.* Life course transitions have become increasingly important in determining how people understand social impacts on health in the sociological and epidemiological literatures (Cherlin, Chase-Lansdale, and McRae 1997; Halfon and Hochstein 2002; Kuh and Ben-Shlomo 2004; Moen, Dempster-McClain, and Williams 1992).

Life course stages provide an overarching structure with which to understand differences between some sub-groups such as ‘single’ versus ‘married’. Transitions are particularly important for this study as they provide an underlying framework for the consideration of selective, causal, and timing issues before and after the entrance into a

partnership. Specifically, if partnerships are thought to confer health benefits, strictly speaking, those should only be reaped *after* commitment to a new partnership has been completed. We can make similar statements that summarize the timing implications of health improvements for the other four hypotheses laid out above.

Figure 1.1 illustrates what the four hypotheses developed above (*Partnership Benefits*, *Positive Selection*, *Cleaning Up*, and *Negative Selection*) might lead us to expect if we observed individuals through their life course transition into partnership. These are not exhaustive sets of the possibilities (indeed, as explored above negative selection may be evident in the direction of change prior to partnership and positive

Figure 1.1: *Differing Explanations for Marital Benefits*



- (a) Positive Benefits – PB
- (b) Positive Selection – PS
- (c) Cleaning Up for Partnership – CU
- (d) Negative Selection – NS

benefits may take some time to accumulate to match those who are already married), but rather represent ‘ideal types’ for the hypotheses shown above. First, assuming that health increases along the Y axis, note the trajectory of the married are on top, while the single is at the bottom (this is further assuming stability of these two statuses during the period of observation). When reading this graph it is clear that prior to partnership we have two comparison groups: those who were partnered throughout and those who were single throughout. However, upon partnership this comparison actually increases to three – the original two as well as the group themselves before they entered partnership. This allows for a depth of comparison that may help to clarify whether people are being selected, whether they compare to those who were single or partnered, and then whether there is a change that can be attributed to partnership.

Positive Benefits (curve (a) in figure 1.1) are expected to occur after partnerships begin, and are expected to be either dose-response as shown here, or as an immediate gain followed by steady increases over time, to eventually reach the level of the stably married. Positive selection would follow curve (b) in figure 1.1, with those who enter into partnership being healthier on average than those who remained single. Cleaning Up for partnership would be evident as a ‘benefit’ to health in anticipation of the entrance into a cohabiting partnership as is shown in curve (c) in figure 1.1. Finally, negative selection would approach curve (d) in figure 1.1, suggesting that those who are less healthy than average would be more likely to become partnered in order to benefit from greater health benefits, and they increase in health after partnership. Nevertheless, it remains important to also suggest that some differences may lie not simply in ‘partnered’ versus ‘single, but rather in the types of partnership, the sub-groups of society, or the gender. Indeed, a

partnership is created differently and relies on different assumptions in different places, and at different times – a marriage among those who have no one else to rely upon may differ from a cohabiting partnership among those who are protected by the state, or who have strong external social networks. The following section considers three particular potential confounders in the relationship between partnership and health: partnership type and gender.

PARTNERSHIP TYPE AND GENDER

There are a variety of reasons to expect that the selective and causal processes described thus far vary significantly by the formalization of those partnerships and by an individual's gender. The following sections consider how causal and selective processes may differ by partnership type and gender respectively.

Partnership Type

Cohabiting relationships are 'sometimes' different than marital ones. Research regarding the impact of cohabitation as compared to marriage on health is much less clear and indeed is often conflicting. First, cohabiters are reportedly less healthy than those who marry, though this seems predominantly the case in studies in the U.S. Second, it suggests that cohabitation provides fewer benefits and are not as positively selective of health (Musick and Bumpass 2006). Tables 1.1 and 1.2 above also describe the results for cohabiters as compared to married individuals in those cases where the distinction was considered explicitly. Furthermore, there seem to be gendered difference in the returns to partnership type. Specifically, the evidence suggests that partnership type matters less to men's health than to women's health, whereas positive selection is more important for men (Meadows, McLanahan, and Brooks-Gunn 2008; Meadows 2009).

Many remain convinced that marriage is the most beneficial partnership type for health (see e.g. Waite 1995; Waite and Gallagher 2000). What should be highlighted here is that partnership benefits may differ by partnership type, though results have been fairly non-standard. Moreover, health selection into partnerships is very likely to differ by partnership type. For instance, those entering into marriages may seek this extra legal backing because it increases their guarantee of care and support should they experience health problems, while those entering into cohabiting partnerships may choose to do so in part because there is nothing for them to gain from legal protection (which is more likely in places where the state can stand in and protect quality of life if a partner does not).

Gender

The causal and selective processes that occur around life course transitions are likely to be experienced differently by gender (Denton, Prus, and Walters 2004; Goldscheider and Waite 1991). Tables 1.1 and 1.2 describe the impact of gender, showing that throughout the research men and women tend to have somewhat different health patterns, though there is significant heterogeneity in findings depending on measure, sample, etc. Gove (1973), for instance, showed that men gained much more than women when considering (mostly behaviorally-determined) mortality (suicide, cirrhosis, homicide, etc.). However, when considering depressive symptoms, Simon (2002) shows that women stand to gain more from partnership than men. Lillard & Panis (1996) suggest that negative selection is only evident for men as they search for women who can offer care, though Cheung & Sloggett (1998) show that men and women under 23 were both adversely selected into partnership. However, from the literature we might posit that men are more likely to be able to select negatively into partnership as they age

and are quickly outnumbered in the marital market by women.⁴ In sum, gender modifies the selective and causal processes – however, the impact of the state is in part evident in defining who is at risk and who will gain from partnership, a concept explored further in the following section.

THE WELFARE STATE: SETTING THE STAGE

Health and inequality are modified by a wide variety of public policies, including but not limited to health policy (Black, Morris, Smith, Townsend, and Whitehead 1982; Blane, Bartley, and Smith 1997; Bloor, Samphier, and Prior 1987; Evans, Barer, and Marmor 1994; Smith, Blane, and Bartley 1994; Townsend, Davidson, and Whitehead 1982). However, limited knowledge exists regarding the (often unintentional) impact that policy has on modifying the health selective and causal mechanisms that underlie the four hypotheses presented earlier. This is particularly surprising given that the incentives involved in assortative mating and the potential benefits gained from partnership may be more important in an environment where the state has abdicated the responsibility for healthcare and social protection in the hands of households (Garrison 2007). Thus, states can be ranked according to the extent of “defamilialisation” of their policies (Bambra 2004). Indeed, we know that in the absence of social support and sufficient knowledge that partners can be very risky to an individual’s health (Anglewicz, Bignami-Van Assche, Clark, and Mkandawire 2010; Clark, Bruce, and Dude 2006). Though the risk is particularly clear in developing countries where HIV/AIDS is endemic, it is not limited to this particular context: given a universal health system with free access to physician and hospital services, it is much less likely that individuals will see partners and their health

⁴ Though this gender imbalance may be reducing in magnitude in coming years, as the life expectancy gap may eventually narrow: Preston, Samuel H. and Haidong Wang. 2006. "Sex Mortality Differences in the United States: The Role of Cohort Smoking Patterns." *Demography* 43:631-646.

as a source of risk, thereby decreasing the importance of finding a healthy partner. Together this suggests that in a more ‘social-democratic’ (using Esping-Anderson’s (1990) classification) policy context people will be more likely to benefit from their partnerships, more likely to negatively select into partnerships, and less likely to seek out or indeed to require that their partners be in excellent health.

In comparative research, important cultural differences can impede efforts to compare policy differences across a number of societies. Moreover, data harmonization efforts can be difficult, and costly. While a large literature compares countries by some agglomerated welfare state characterization (see e.g. Eikemo, Bambra, Joyce, and Dahl 2008), it is unclear that such a characterization is always suitable (Lundberg 2008). However, welfare state comparisons can be too vast and instead, considering smaller, more focused policy variations may be more fruitful than large-scale multi-state comparisons (Olsen 1994). For instance, Canada and the U.S. are often characterized together as ‘liberal’ welfare states (Esping-Anderson 1990). While they maintain a number of distinct cultural features, Canada’s small population and geographic proximity ensures a large consumption of cultural products from the U.S., thus ensuring a certain level of shared cultural referents across the borders. Yet, despite these similarities, these two countries differ substantially on key social policies that influence gender, partnership, social inequality, and health (Siddiqi and Hertzman 2007). The following section considers risk and potential rewards to partnership in each country.

The United States

In the United States, health insurance is primarily provided through employment benefits packages, with public insurance covering only those who are poor, disabled, and

over 65. In contrast to the social insurance schemes of most Western European countries, this entrepreneurial health system does not generally provide ‘mandatory’ health insurance coverage (Massachusetts and Hawai’i being the only current exceptions⁵); this has led to a substantial share of the population being uninsured, a proportion that has been rising steadily for the past nine years from 14% in 1999 to 15.3% in 2007 (U.S. Census Bureau 2009). Indeed, a substantial proportion of the working-poor suffer from a set of barriers to healthcare, including lack of health insurance, poor healthcare and welfare policy, and lack of knowledge on how to navigate the healthcare system (Ahmed, Lemkau, Nealeigh, and Mann 2001). Help and insurance, especially payouts, are often denied to employees due to prior health problems or pre-existing conditions, or due to quickly sliding standards in healthcare benefits (Fronstin, Goldberg, and Robins 1997; Quesnel-Vallee 2004). Unfortunately, health problems are the leading reason for bankruptcy in the U.S., often causing employed, insured families to file for personal bankruptcy⁶ as they lose their health insurance (often with their jobs) when facing catastrophic healthcare bills (Himmelstein, Warren, Thorne, and Woolhandler 2005), a process that seems to be becoming more impactful over time (Himmelstein, Thorne, Warren, and Woolhandler 2009).

In terms of family policy, American workers are largely denied parental leave, the U.S. being the only country in the world that lacks federal maternity leave policies (Heymann 2006). Indeed, when offered, maternity leave is limited, with only 46% of eligible female workers able to take up to 12 weeks of unpaid maternity leave (OECD

⁵ The Obama Administration’s Healthcare bill may substantially increase the coverage around the entire US, though the impact may not be universally encompassing.

⁶ Note that the cost of healthcare for its employees and pensioners also played an important role in the General Motors bankruptcy.

2001, pp. 151). Moreover, sickness and disability insurance are largely inaccessible: they are only available from the private sector and cover only 30% of the workforce (BLS 2006).

Taken together, this policy landscape evident only in the U.S. suggests that many are faced with a context-specific reality: that their partnerships may provide them with an important source of financial, maternity and health insurance, but that partners also act as a significant source of risk to the well-being of the partnership itself. The selection of a suitably employable and healthy partner and the importance of securing that partnership legally and formally through marriage becomes all the more salient. This is in direct contrast to other countries where social supports are greater, and defamilialisation increased. A first hint at divergent processes is provided by the contrast between tables 1.1 and 1.2 highlighted in table 1.3 above: while the results from other OECD countries indicate strong support for partnership benefits, those from the U.S. are not as unequivocal. Indeed, the role that positive selection has in the U.S. is as a contrasting argument, whereas in the other OECD countries it plays a secondary role to studies finding partnership benefits. We delve into this dichotomy further in the following discussion on Canada.

Canada

Canada provides an interesting contrast for a number of reasons. Since Canadians live in a different policy context, with a universal health system and equitable gender and social policies, the extent to which social inequality affects health is also reduced (Ross, Wolfson, Dunn, Berthelot, Kaplan, and Lynch 2000). In particular, Canada should be able to limit the impact of health selection as the risk of potential health risk is limited to

manageable levels (such as 1 week's pay (Clouston 2009)). For instance, since the early 1990's Canadians received an average of 17 weeks of paid maternity leave. The Canadian government pays this year at 55% (up to a cap of 39,000\$) of their wages to those eligible for employment insurance (worked at least 600 hours), with employers supplementing this pay due to collective bargaining or as part of benefit packages (Baker and Milligan 2008). Since 2001, 35 additional weeks of paid parental leave have been made available (TBCS 2009). Though this stands in stark contrast to the U.S. maternity leave policy, Canada and the U.S. remain in the low-coverage class of OECD countries because its alignment within employment insurance means that 10% of all employed mothers are left out (van den Berg, Parent, and Masi 2004).

Healthcare is delivered by doctors on a fee-for-service basis in Canada as well as the US; however, payment for the vast majority of medical services in Canada is administered and delivered by the provinces for all medically necessary services (Goldsmith 2002). Private supplemental insurance covers extra costs such as private rooms and dental services, and accounts for about 30% of all healthcare spending, and about 12% of all health care expenditures (Hurley and Guindon 2008). Government sponsored sickness insurance, which provides cash benefits to individuals on a temporary basis for taking leave from work due to illness, does not exist in either country as it does in other countries in the OECD (Sweden, Norway, etc.). Instead, sick leave in Canada is covered through the Employment Insurance (EI) program and covers up to 80% of people who fall ill, with benefits paying out for up to 15 weeks of illness (Scruggs and Allan 2006). On top of this coverage, the Canada and Québec Pension Plans (C/QPP) cover

extended leaves of absence due to illness or disability (Campolieti and Goldenberg 2007). Canadians should thus be less likely to focus on health as risk when selecting a partner.

Finally, while we have described the policies above from a “Canadian” perspective, in this federation many policies are enacted at the provincial levels, and thus there exist significant cross-national policy experiments within Canada. More specifically, there are two policy regimes under one national flag: those of Québec and those of the rest of Canada. While the previous discussion related mostly to Canada as a whole, the following explicates key differences between Canada and Québec.

Québec

Québec is an interesting case for comparison to English Canada. Indeed, despite shared cultural and historical, if not necessarily linguistic, traits, Québec has historically favored more social policies than the rest of Canada in an explicit attempt to align with social democratic countries rather than liberal ones (Noel 2006). For instance, Québec negotiated with the Federal government to enact its own system of parental leave in 2006, which is more generous (both in terms of a higher level of reimbursement and of a higher maximum insured income), and covers a larger proportion of the population, including the self-employed. Of course, causality is difficult to assess in this case: did policies move to match attitudes, or were attitudes shaped by policies? There is undoubtedly a certain amount of path dependency here stemming from more equitable gender roles that began to emerge in the late 1960’s. This eventually led to generous work-family conciliation policies being enacted in recent years so that Québec now has a far higher proportion of recent mothers’ labor force participation than the rest of Canada (Lefebvre and Merrigan 2005). Perhaps not surprisingly then, Québec resembles Social Democratic

countries on certain social indicators of interest to this project, such as cohabitation, a transition that has yet to occur in the rest of Canada, which looks more like the U.S. on this count (Beaujot and Wang 2009). Indeed, while cohabitation rates match Sweden in Québec (30% in 2001, though growing), those of English Canada (at 12%) are closer to those of the U.S. (8%) (Kerr, Moyser, and Beaujot 2006). In sum, then, it could be argued that Québec provides an interesting contrast within Canada with regards to even further defamilialisation of risk.

CONCLUSION

Partnership marks a fundamental transition towards creating a non-individually-based household with all the benefits and economies of scale that are often evident in such households. Partnership can be beneficial to health, with social support and greater interaction as possible mechanisms for benefits; however it is also highly selective – as those searching for partners seek out the best partner and decide when to commit, though this selection need not always be directly related to health. In some cases, selective and beneficial factors work together to produce the end effect. In every case, public policy has the potential to impact who marries, when they marry, and who benefits from that marriage.⁷ The current literature has focused on answering the following question: is the known relationship between partnership (mostly marriage) and health (often mortality) due *entirely* to Health Selection or social causation? We suggest that a careful reading of the literature presents a more nuanced question: when is selection important, when are partnership benefits important, and what explains these differences? Further questions

⁷While in this study we refer to the more subtle forms of the state in helping to impact marital choices, more overt examples also exist. Indeed, one only need look at historical accounts of who could and could not marry to see the substantial direct impact that the state often has: for instance, the contemporary global debate regarding homosexual marriage.

complicating this inquiry stem from the fact that incentives involved in partnership are modified by overlapping distinguishers, including gender and partnership type along with policy context. Health benefits inherent to partnership are also more likely to emerge in areas where Health Selection is not as important. Positive health selection is much more important when a spouse's health acts as a source of risk to the household.

In seeing this, we believe that it is not productive to ask whether 'positive selection' or 'partnership benefits' are 'the explanation' but instead we argue that what social policy does is to increase the risk that is inherent to partnership in some places and not in others in a way that affects the incentives relating to choosing a healthy partner, and that thus social policy affects whether selection or causation is 'the explanation', and that even then gender and partnership type modify how each pattern plays out at the population level. This is a fundamentally socio-demographic question that seems to have been occluded by the current focus, but nevertheless underlies the arguments evident in the literature.

Preamble to Chapter 2.

Chapter 1 outlined a theoretical program in which we consider the selective and causal processes that are evident when entering into a partnership, while also considering the impact of gender, partnership type, and public policy. In the previous chapter we also noted the divergence in the literature between U.S. results and the rest of the OECD. The overarching goal of this dissertation is to help explicate why selective and causal processes may differ between countries and in different contexts. The next chapter represents an attempt to consider the impact of selection and causal processes in one country: the U.S. Most of the recent research has suggested that partnership (usually marriage) is no longer beneficial to health, but rather that important selective forces are at play. Marriage is ultimately still a very strong ‘institution’ in the U.S., though deinstitutionalization of marriage is also occurring quickly. Cohabitation, a more fluid and less legalistic form of partnership, is increasingly important, though the numbers remain small in comparison both to those who marry and to the proportions of those who cohabit in other countries. In this study, we interrogate the importance of selective and causal processes with regards first to partnership and then with regards to partnership type. We end by recommending that policy makers consider the impact of health risk as an incentive involved in determining the importance of selection in finding a partner. The following section reinterprets the theoretical section discussed above in the U.S. context. Due to the paper-based format of the dissertation, the theory section below largely replicates portions of the theoretical chapter one and may be skipped (to pp. 45, § Data) by the reader if necessary.

2. Health Selection into Cohabiting and Marital Partnerships in the U.S.

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***ABSTRACT** Married and cohabiting individuals live longer, healthier lives than those who are never-married, divorced, separated, or widowed. Four hypotheses have arisen to explain the relationship between health and partnership: partnership benefits, cleaning up for marriage, positive selection, and negative selection with benefits. Although these provocative explanations provide entirely different understandings of why partnership might be related to health, they have not yet been tested against one another. I use the timing of changes in health in relation to the transition into a cohabiting partnership to differentiate between these theories. Longitudinal data come from years between 1984 and 2005 of the Panel Study of Income Dynamics (PSID). I use observational-experimental graphical analysis, which allows us to separate the important health selective and social causative effects of cohabitation on health. Findings do not support direct causal health benefits approaches. Instead, both direct and indirect forms of selection were present. Indeed, this selection explained the difference in self-rated health between those who remain single and those who enter partnership. Women's patterns were different than men's, with women experiencing a net loss after partnership. Future research should focus on understanding how particular partners affect how partnership is selected and then benefits individuals.*

There is ample evidence showing that partnered people live longer, healthier lives, but why they do so is not well understood (see e.g. Gove 1973; Rogers 1995; Wood, Goesling, and Avellar 2007). The family is the fundamental unit of social life, yet we know little about when and why it matters to everyday health. In one of the first studies to note the relationship between partnership and health in the United States, Gove (1973) showed that compared to married men, single men over age 25 had elevated mortality from suicide, homicide, motor accidents, and cirrhosis of the liver. Current studies have replicated this finding, showing that single men are twice as likely to die from all-causes, with even higher risk from some specific causes (circulatory diseases, cancer, respiratory diseases, and diabetes); moreover, these studies imply that men benefit much more from marriage than do women (Rogers 1995). The lowered burden of mortality translates into a lengthened life expectancy, with partnered men and women respectively expecting to live 10 years and 4 years longer than their never-married counterparts (Lillard and Waite 1995).

The current evidence does not establish whether the marital benefit is a product of positive selection into marriage or a causal benefit of marriage. A consistent argument exists that posits that these differences are largely due to selective mechanisms such that when seeking partners, individuals try to find partners who are as healthy as possible (Becker 1991; Williams and Umberson 2004). These theories posit that any health differences that arise are likely due to this selective process and not any benefits of being in a partnership. However, this forms a false dichotomization of the process and does not allow for the possibility that not everyone sees health as risky, and that not every benefit is equal. To that end, I use individual-level longitudinal data from 1984 until 2005 from

the Panel Study of Income Dynamics (PSID) that allows us to test the plausibility of these explanations by gender and partnership type. I begin by considering these relationships (replicating the discussion in chapter 1) in depth, suggesting how these explanations apply in the U.S. case as a prelude to our plans for testing them.

FOUR HYPOTHESES ABOUT PARTNERSHIP AND HEALTH

In almost every study focusing on relating social conditions to health – whether we discuss education, income, occupation, mobility, neighborhood, or social isolation, there exists an important debate about the direction of the relationship stemming back to the beginning of both sociology and public health (see e.g. Cheung and Sloggett 1998; Dahl 1993; Dahl 1996; Engels 2009; Goldman 2001; Link and Phelan 1995; Marmot 2004; Marmot and Wilkinson 2006; McDonald and Kennedy 2004; Michaud and van Soest 2008; Ogle 1885; Smith 1999; Smith 2004; Waldron, Hughes, and Brooks 1996; Wilson and Oswald 2005). The fundamental question revolves around whether social conditions affect health or whether health is a selector for many social conditions. The interpretation of the relationship between partnership and health is no exception. Moreover, at each point a number of mechanisms might be operating in each selective and benefits argument. In keeping with this insight, I discuss below two theories of partnership improving health and then two theories of health-related selection.

Partnership Benefits

This hypothesis suggests that there are benefits to partnerships that *cause* increases in health among those who are in partnerships. Proponents for this Social Causation argument have suggested that the overall health benefits resulting from a cohabiting partnership like marriage “may be as large as the benefit from giving up

smoking” (Wilson and Oswald 2005, pp. 3). At the forefront of this line of research, Waite and others have consistently argued that marriage is highly beneficial for the health of individuals and populations (Kiecolt-Glaser and Newton 2001; Lillard and Waite 1990; Waite 1995; Waite and Gallagher 2000). Several potential pathways leading from marriage, and to some extent cohabitation, to health have been suggested including that partnered people get more personal care; have more sex; are happier in general and with their sex lives; have more social interaction; and are more financially stable with more money to buy necessary health care.

Others have also pointed out that in the U.S., health may benefit not only from the social aspects of marriage but rather because it acts as a type of health and sickness insurance for its incumbents as those who are sick are cared for directly by their spouses, and not by the expensive and often inaccessible healthcare system (Smith, Frazee, and Davidson 2000). Indeed, while in the U.S. there remains substantial debate as to the benefits of marriage, outside of the U.S. the results are fairly clear that partnership does matter (see e.g. Cheung 2000; Ikeda et al. 2007; Joutsenniemi et al. 2006; Lund et al. 2002; Trovato 1991). I will use my data to examine this question within the U.S. population. Moreover, I will consider two additional questions: does the benefit to partnership depend on partnership type (marriage versus cohabitation)? And what is the timing of the benefit?

Positive Selection

It is clear from the assortative mating literature that those who enter into partnerships try to do so with partners that they feel, because of their jobs, incomes, wealth, and social ties, are attractive mates (see e.g. Ahmad, Gilbert, and Naqui 2008; Fu

and Goldman 1996; Goldman 1993; Goldstein and Harknett 2006; Oppenheimer 1994). Some analysts, including Becker (1991), have proposed that health contributes to a person's attractiveness. Moreover, we know that there is a process of homophily, and thus that people select as friends or partners people who are much like themselves, be it due to health or any other social status (Kalmijn and Vermunt 2007; Lazarsfeld and Merton 1954; Smith and Christakis 2008). Together, these suggest that finding a health partner ensure that they are most likely to be able to perform housework, maintain active employment, and fulfill other responsibilities (anticipated and unanticipated). Some evidence for positive selection has been found to be evident in studies of women: either among women who were not employed full-time (Waldron, Hughes, and Brooks 1996) or more generally (Meadows, McLanahan, and Brooks-Gunn 2008). Indeed, the belief in positive selection is so strong that one of the most prominent papers in the area states that "marital status differences in health appear to reflect the strains of marital dissolution more than they reflect the benefits of marriage" (Williams and Umberson 2004: pp. 93), suggesting that there is no positive change in health due to the transition into partnership.

Taken to its logical conclusion, there is a rational desire for individuals to actively search for partners who are best able to fulfill their role as partners, and this may be especially true in an environment where health and other risks can have devastating outcomes (Himmelstein, Thorne, Warren, and Woolhandler 2009; Himmelstein, Warren, Thorne, and Woolhandler 2005). The impact of this risk has recently been used to help explain why people cohabit as compared to marrying (Brien, Lillard, and Stern 2006). In this literature, those who are unsure about their partnership may seek to live together first in order to hedge the risk that is inherent to having a partner, thus suggesting that there

may be more positive selection with regards to marriage than cohabitation. It also suggests that each stage may be something of a trial, with partners looking for information regarding the quality of their matches, discussed in the following section.

Cleaning Up for Partnership

A third hypothesis, cleaning up for partnership, argues against the positive selection argument and questions the use of a two-point longitudinal change analysis (see e.g. Simon 2002; Williams and Umberson 2004), suggesting that we may need at least 3 observations, and maybe more if benefits accrue with time. The basic tenet is that partners change their behaviors prior to entering into cohabiting relationships in order to become a more ‘attractive’ partner. This relies on the notion that better health is found through positive behavioral change, and that people change their behaviors for their partners, even though they may not cohabit yet (see e.g. Lewis, McBride, Pollak, Puleo, Butterfield, and Emmons 2006). Thus, men and women may change their behavior and achieve better health in the time prior to co-residence as they begin to preemptively experience partnership benefits, a possibility that potentially challenges findings of positive selection in some of the studies shown in the positive selection section above.⁸ In their study, Duncan *et al.* (2006) find that a significant change in health behaviors occurs *in the twelve months preceding* partnership and cohabitation, and that the year after cohabitation also leads to lowered risky behaviors among individuals involved in high-risk drug-use. In this case, co-residence was seen to benefit both partners; however men tended to benefit most, as their riskier behaviors left them with the most to gain from such improvements. Behavioral analysis aside, it is clear that if people are in situations of

⁸ Specifically, those that rely on two-point change models such as those seen in: Williams, Kristi and Debra Umberson. 2004. "Marital Status, Marital Transitions, and Health: A Gendered Life Course Perspective." *Journal of Health and Social Behavior* 45:81-98.

using positive selection, that partners may ‘clean up’ their habits and may be healthier in the period leading up to partnership in order to suggest that they are good candidates for the next step. Moreover, we may expect that many of the benefits attributed to partnership may begin to play a role in the time leading up to partnership rather than just following. Insofar as this works, we may also expect that those who do ‘clean up’ are more likely to be those who also enter into marriages. However, as there are always two people involved in selection, we may also notice that those who are getting into partnerships have their own reasons for partnering, and it is this that will be discussed next.

Negative Selection

Negative health selection or “adverse selection” refers for the desire for those who are already ill to select into cohabiting partnerships in order to gain the perceived benefits of that partnership (Cheung and Sloggett 1998; Grossman 1972). People who perceive themselves as sicker than the average person, or those who have poorer health behaviors are more likely to want to partner because this ensures that they will have someone to care for them. This has been suggested to be particularly applicable to some populations including older, richer men with stable jobs (Lillard and Panis 1996). This implies that partnership may in fact provide even more health benefits than previously believed as those who are sickest are investing in it and are surviving longer because of it.

Finally, it should be noted that the above theories are not mutually exclusive. Many, or even most, may be operating at once. For example, Lillard and Panis (1996) suggest that positive selection dominates in men under 50 years, and that negative selection probably dominates in men over 50 years who are less healthy and are seeking

out the health benefits (thus implying the existence of the beneficial hypothesis above). Moreover, neither positive nor negative selection theories exclude the possibility that benefits occur after partnership, focusing rather on noting the importance of selection prior to partnership. In this paper, I investigate if and when each hypothesis is important.

GENDER AND PARTNERSHIP TYPE

A lively debate exists regarding the relative benefits that are afforded differentially to the genders. The literature is clear that there are significant gender differences in health that manifest in partnerships (see e.g. Duncan, Wilkerson, and England 2006; Lillard and Panis 1996; Waite 1995; Waldron, Hughes, and Brooks 1996). Women tend to report higher morbidity than men (Macintyre, Hunt, and Sweeting 1996). The multiple roles that women play, especially with cohabiting and childrearing, may not benefit them as much as roles that men undertake (Verbrugge 1983); while the double burden of working in an occupation and working in the home can raise levels of stress unequally for men and women (Simon 2002). Childbearing and childrearing tend to fall more heavily on women's shoulders, and may also limit their abilities to care for themselves in more extensive ways (Weissman and Olfson 1995). The literature thus suggests that understanding health trajectories may require a gendered lens as it is not simply the case that cohabitation benefits all, nor is it simply the case that men and women provide and receive within a partnership. Indeed, the four hypotheses above often refer differently to men and women, both in terms of type of differential benefits that are gained, and in the mechanisms of their employ. Thus, there are good reasons to believe that gender will be important to this study.

Similarly, it is clear that marital status sometimes acts as an important outcome, and that this may determine somewhat the health selectors and benefits that go into partnership (Waite 1995). Cohabitation often offers a stepping point between marriage and singlehood (Rindfuss and Van den Heuvel 1990), and also offers a time during which people can learn about each other and better assess their suitability as a partner (Brien, Lillard, and Stern 2006). However, cohabiting partnerships tend to be younger, include members with lower education, and are less assured than are marriages (Bumpass, Sweet, and Cherlin 1991). They also end quickly, with most quickly marrying or separating (Smock 2000), which may imply some selectivity as the healthiest marry. In particular, cohabitation seems to correlated with lower health and fewer benefits, though this generalization does not seem particularly robust to the inclusion of social controls (Musick and Bumpass 2006; Wu, Penning, Pollard, and Hart 2003). Moreover, it also seems clear that those dissolving cohabiting relationships are not negatively impacted by that dissolution to the same extent as divorce (Meadows, McLanahan, and Brooks-Gunn 2008; Meadows 2009). Indeed, while we are unsure as to the extent that benefits differ by partnership type, many remain convinced that ‘marriage matters’ (Waite 1995).

Interpreting this literature may be difficult with regards to the four hypotheses considered above. However, I suggest that those who cohabit may be less positively selected than are those who marry as their relationships are less formal and cohabiters are younger in age. This implies that they are both more likely to cohabit and less likely to have concrete information regarding the health and future employment of their partners. We might also expect from the Partnership Benefits literature (e.g. Waite 1995) that those who cohabit benefit from partnership to a lesser extent than do those who marry.

A Graphical Representation

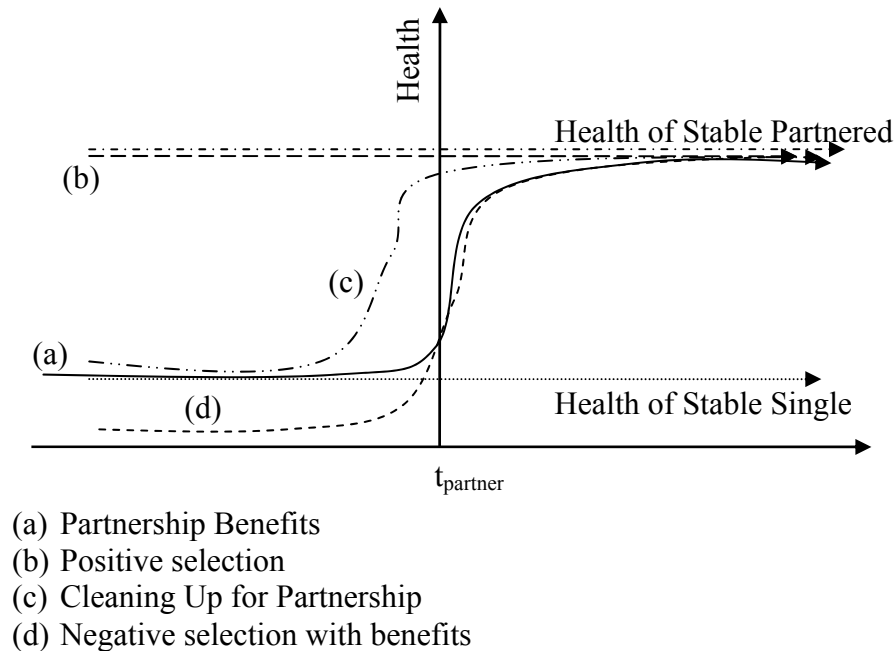
There is a great deal to be gained through a careful specification of the effects of time during partnership formation in relation to health and health changes. To clarify this statement, figure 2.1 presents theoretical curves comparing each of the four hypotheses. Here, I have plotted the health trajectory of a hypothetical person who remains in a partnership throughout the period, along with the health trajectory of a hypothetical person who remained single throughout as straight lines with respect to partnership. From the literature, I assume that partnered individuals are healthier than those who are not. If we assume a dose-response effect of partnership benefits (Hypothesis 1), a person's health trajectory should follow a dose-response curve similar to that shown in curve (a) of figure 2.1. The health trajectory of those who partner begins at the level of those who are single, then after partnership it moves up directly towards the level of health for those who are partnered, approaching the asymptote of the average partnered person after some period of time.

The positive selection (Hypothesis 2) explanation is exemplified by curve (b) in figure 2.1. Since this hypothesis assumes that healthier people get partnered, I would expect this curve to start higher among those who eventually get partnered in relation to those who do not. I might further expect that the cohabiting partnership is more of a confirmation of status than it is a beneficial arrangement, and thus the transition should not show significant causal change.

As figure 2.1 shows, people who are “cleaning up for partnership” (Hypothesis 3) have a trajectory similar to that of people who benefit from partnership, but with one exception. In this instance, the change in health occurs prior to partnership, as people

gain health during the period in which they make themselves attractive in their partner's eyes. I would therefore expect that the health trajectory (c) should look similar to that found in the health benefits research, with one slight difference: the benefit should begin

FIGURE 2.1: *Differing Explanations for Marital Benefits*



to manifest in the 12 months (and possibly 2 years according to Duncan, Wilkerson & England (2006)) prior to the consecration of the relationship. Trajectory (c) shows this: those bound to enter into a cohabiting partnership at $t=0$ start with health similar to that of other singles, they then approach the average health of the partnered population before actually entering the cohabiting partnership, finally reaching a plateau just before or soon after they begin cohabiting. The difference between trajectories (a) and (c) underscore how important the timing of health changes is to theories that purport to help us understand partnership benefits.

Similar to positive selection, negative selection (Hypothesis 4) suggests that the level of health among those who eventually cohabit differs substantially from the average single person. However, in negative selection their health would begin lower than those who were single throughout, as seen in curve (d) of figure 2.1. The overall argument here is that people are more likely to enter partnerships when they themselves are ill. Thus, I would expect that the start of the relationship should be followed by a much greater beneficial gain than might be expected under hypothesis 1 alone, as those who are sick experience partnership benefits and come to look with some time like those who were otherwise simply partnered on average.

Hypotheses

In this study, our interest focuses on reproducing an accurate representation of the transition between singlehood and partnership: we hope to reproduce figure 2.1 and see which curve is evident. This study therefore tests the following hypotheses arising out of figure 2.1 above:

- 1. If partnership benefits accrue, then health prior to partnership should be similar to that of singles, and should rise in the period after partnering to parallel that of the partnered respondents.*
- 2. If people clean up for partnership, then health 5 years prior to partnership should be similar to that of singles, should increase in the 2 years prior to partnership, and finally should approach that of partnered individuals shortly after the start of the partnership.*
- 3. If positive health selection occurs, health prior to partnership for those undergoing a transition will not be different from those who were partnered*

throughout the period, which will be the same after the commencement of cohabitation.

4. If negative selection occurs, then health prior to cohabitation should be significantly lower than the health of the singles, and should rise significantly to reach that of the partnered individuals.

5. Additionally, assessment of these trajectories by gender allows us to examine whether and to what extent selective or causal effects differ by gender, however generally we expect the overall effect sizes to be smaller for women than for men, and for there to be more negative selection among men, and more benefits to men.

6. Finally, partnership type will matter, favoring marriage in every way over cohabitation: marriage should be more positively selected upon, and should show a greater period of cleaning up, but should also show greater benefits than cohabitation.

DATA

The data used for this study come from the Panel Study of Income Dynamics (PSID) (Hill 1991). The PSID is a representative sample of households in the United States (ISR 2009). This dataset is widely used in the literature, and has been rated very high in terms of data quality of health measures (Gouskova and Schoeni 2005; Kim and Staffore 2000; Ratcliff, Shanks, Nam, Schreiner, Zhan, and Sherraden 2007). Marital status and family measures have previously been analyzed, showing that “this data set is among the very best for studying the beginnings and ends of marriages” (Lillard and Waite 1990, pp. 252-3). The panel includes data from an original sample of households in

1968 followed until 2005. The PSID is a longitudinal dataset, and includes an oversample for both black and immigrant Americans; as such, all analyses and descriptive statistics included have been weighted to the population.⁹ This study uses data for the survey years between 1984 and 2005 ($N = 1,086,444$ observations), which are the years that the dataset included measures of health.¹⁰ We further limit the results to those aged 18-50 ($N = 197,293$), those with non-zero weights ($N = 114,879$). We exclude observations the year before and following a dissolution event, observations for those who repartner within 1 year of a dissolution event, and those who are widowed (final $N_{\text{total}} = 100,512$). Table 2.1 shows the descriptive statistics for the three cohabiting patterns analyzed (single throughout, partnered throughout, and those who entered into a partnership).

In an effort to be conservative with measures and clear with the analyses, analyses shown here use data from respondents who were not widowed.¹¹ As with any longitudinal survey, missing data can be problematic. Here, controls have been imputed using longitudinal model-based imputation in order to increase usable data. This does not change the distributions significantly, but rather increases the overall N as can be seen in table 2.1 below.¹² All analyses are weighted to the U.S. population using individual weights included in the PSID. Attrition is controlled for in weighting and has been suggested to result in substantial bias in the PSID (Lillard and Panis 1998). However, it may bias the results positively as those who are least healthy may be more likely to drop out, suggesting that those in disadvantaged populations, including those who are single,

⁹ Unweighted sample N 's are reported for idiosyncratic reasons.

¹⁰ Data was collected annually until 1997, then biennially afterwards. I here assume that the transition occurs uniformly at a population level between two discordant marital statuses.

¹¹ We imputed information on control variables only. Imputing does not change the overall findings, the nature of the results, the impact of partnership nor the conclusions made herein. Data was only imputed when measures were missing but the respondent had responded to other questions to reduce bias.

¹² Results not shown.

are likely to be biased towards better health and that this health is likely to decrease less over time than we might otherwise expect. Table 2.1 shows the resulting means and averages for the independent and dependent variables.

METHODS

Previous research has focused heavily on cross-sectional comparisons, looking specifically at mortality as an outcome and theorizing about which causal processes are at play (e.g. Gove 1973; Lillard and Waite 1995; Rogers 1995). Others have used limited longitudinal data in an OLS framework, thereby assuming that partnership alone has a stable dose-response effect, which ignores the possibility that benefits accrue slowly over a good relationship rather than quickly (e.g. Lillard and Panis 1996; Waldron, Hughes, and Brooks 1996). Moreover, much of the prior research looking at partnership and health has not focused on the transition itself, though life course theory suggests that it would be an important period in the life course (see e.g. Elder 1985; Elder 1983; Elder Jr 1977; Elder Jr, Johnson, and Crosnoe 2003). A few studies have addressed this by looking at the changes in health surrounding the point at transition into a partnership, however these have yet to look at the complete set of theories above and have yet to look at self-rated health nor have they considered the differences between partnership type (Averett, Sikora, and Argys 2008; Stutzer and Frey 2003; Zimmermann and Easterlin 2006). Here, I use methods similar to those used in Averett et al. (2008), Stutzer & Frey (2003) and Zimmermann & Easterlin (2006) to replicate Figure 2.1 above.¹³ This can be understood as a type of social experiment conceptually similar to that used in the difference in differences approach (Ashenfelter and Card 1985), but with two comparison

¹³ This is an effective way of removing ‘observation time’ (in years CE) and replacing it with ‘real time’ (in reference to major life events) for those who are observed.

groups: the first group includes people who were and remained partnered throughout the observation period; and the second includes respondents who were and remained single throughout. This in a way replicates similar findings from a cohort-type analysis (see e.g. Kok, Kuh, Cooper, van der Schouw, Grobbee, Wadsworth, and Richards 2006; Rindfuss 1991) and more explicitly in analyses considering timing and sequencing within the life course (see e.g. Sacker, Wiggins, Bartley, and McDonough 2007). This temporally select group, sampled through the PSID to be representative of the population after weighting,¹⁴ is assumed to be representative of all of the partnership transitions within the population from 1984-2005. I use non-linear polynomial smoothers in order to draw the marginal parametric curves.

Controls were included directly into the health measure using the following equation rather than using the more standard regressive methods: $\dot{H} = H' - \bar{H}_k + \bar{H}_{gender}$.¹⁵ This is akin to a within-group fixed effects estimate, and adjusts directly for intersectionality¹⁶ in the sample, which is increasingly showing important signs in the literature (see e.g. Brah and Phoenix 2004; Crenshaw 1990; McCall 2005). Adjusting for controls in this manner also controls for potential indirect selectors, such that those who are selected into partnership are more likely to be educated, younger, etc. (Goldman 1993; Goldman 2001; Mare 1991; Mare 2008). We separate groups of individuals into

¹⁴ There is evidently some argument as to the outcome. However, the effort by definition, and especially as we delve further into individual determinants, is slated to produce non-random measures of individuals, but rather random measures of individuals over time. Thus, the individuals in 2005 are not random, but rather the time period since the start of the measure is.

¹⁵ Note that H' here indicates the last stage of controls, so that the first stage, H' is all the scores, while for the last stage, H' includes all the previous controls done in the first, second, and other stages.

¹⁶ Intersectionality refers most generally to the idea that when different aspects of disadvantage overlap, they are rarely linear so that being a 'black woman' is different than what we might expect from a 'black' person who happens to also be a 'woman'.

cells depending on their scores on the time variant and time invariant control variables.¹⁷ This is a categorical, and not a linear, process of control, which may therefore help to explain differences in interpretation that arise out of the adjustment process: no quantitative research method known to the author directly adjusts for what it means to be educated, black *and* employed in this field.¹⁸ Put simply, we adjust the means for black educated women to equal those of black/white, ((un)der)educated women. There is a total of ‘k’ cells, with k found by multiplying the number of response categories in each variable by the number of response categories in every other variable used. It is therefore important that the researcher not over-specify the data field, as the smaller that each cell becomes, the less individual variation will exist. Here, each continuous variable has been categorized such that at least 30 people remain in each cell.

Table 2.1 shows the R^2 statistics for each level of adjustment shown in the curves, using the imputed measure rather than the direct self rated health due to the desire to maintain number sizes within the cells. I have had to redefine R^2 using the following formula: $R^2 = (1 - SD_{\text{adjusted}}^2 / SD_{\text{unadjusted}}^2)$. This measure is substantively the same as an R^2 calculated for any OLS regression. Table 2.1 shows the R^2 analysis for each of the dependent variables under consideration. As we can see, the inclusion of more controls increasingly explains the variance left in the health measure, except in the case of those who remained single throughout. Below we present the variables used in these models.

¹⁷ Scores were further deflated to match the original scale for interpretability: (Self Rated Health after adjustment is at least 1 (poor) and at most 5 (excellent)).

¹⁸ Indeed, though fixed effects regressions often do make this adjustment, they are rarely allowed to still control both for within-time and within-multiple-group variation, which are both considered in this model.

MEASURES

Health

Self-Rated Health (SRH) is used to measure an individual's general health. SRH is well suited for our analyses because it gives a measure of health even for those who have not had any disease, making their inclusion in the analysis and the variation that they bring more meaningful. Moreover, SRH allows us to follow changes in health over the life course (including the transition into a cohabiting partnership), and can thus be an important measure of how small health changes can be affected by cohabiting partnerships. SRH has been shown to be correlated with morbidity, functional limitations, and mortality at all ages and socioeconomic statuses, as well as in many countries, often better than other more objective measures of health, and thus provides a good measure of general health (Burstrom and Fredlund 2001; Idler and Angel 1990; Idler and Kasl 1995; Idler and Benyamini 1997; Maddox and Douglass 1973; Mossey and Shapiro 1982; Quesnel-Vallée 2007). While it has been suggested that SRH is subject to bias or subjectivity (Bound 1991), evidence shows that measures of SRH are unbiased (Groot 2000), are related to mortality (Idler and Angel 1990; Idler and Kasl 1995; Idler and Benyamini 1997), may be better than more objective doctor's ratings (Maddox and Douglass 1973; Mossey and Shapiro 1982), and apply well in very different cultures (Subramanian, Subramanyam, Selvaraj, and Kawachi 2009). In each case, the process of controlling for such correlates will remove any biasing influence that these factors may have within the U.S. SRH was coded onto a five point scale from poor (1) to excellent (5). It is available in the PSID from 1984 to 2005. Table 2.1 shows the means and standard errors for SRH and all other variables used in the analyses.

Partnership Status

In the PSID, a person is marked as being part of a partnership when they are living in the same household and respond as a couple until 1983. After, it became possible to differentiate between cohabiting and married couples, though only 10% of the observations of those in partnerships are cohabiting partnerships. Many of the theories above do, however, distinguish between cohabiting and marital unions, though many also suggested that there is little reason to do so with true differences existing between singles and partnered individuals. Our first set of results interrogates the overall partnership patterns themselves, including both types of partnership as simply partnership. The second set of results presents these curves separated by partnership type in order to explicate any differences arising from this distinction.

Gender

Gender was measured dichotomously in the PSID. Due to the fact that altogether different processes may be experienced by both groups, and the importance of gender to this literature, all analyses were separated by gender.

Control Variables

Age has been included in the analyses as both a definitional variable and a control variable. Analyses have first been limited to the population ‘at risk’ of getting partnered, which for the purposes of this study has been designated as individuals who are over 18, when people can partner without parental consent. Lillard & Panis (1996) further suggest separating analyses at the age of 50 for more interpretable and consistent findings as these can be considered as occupying a similar stage in the life course. As such, only data

Table 2.1: *Descriptive Characteristics*

Proportion of Sample:		Single Throughout			Partnered Throughout				Entered Partnership		
		22.68 %			30.21 %				47.12 %		
	Reference	Observed	Expected	O-E	Observed	Expected	O-E		Observed	Expected	O-E
Male		50.92	47.20	-0.55	47.49	47.20	1.43		48.94	47.20	-1.17
Black		6.30	2.76	3.54 ***	1.70	4.01	-2.31 ***		5.12	6.345	-1.22 ***
Education	< High School	11.93	8.62	3.31 ***	9.34	8.62	0.72		6.57	8.62	-2.05 ***
	High School	36.43	35.23	1.20 **	37.15	35.23	1.92 ***		33.43	35.23	-1.80 ***
	> High School	51.64	56.15	-4.51 ***	53.51	56.15	-2.64 ***		60.01	56.15	3.86 ***
Employed		76.94	84.81	-7.87 ***	85.88	84.81	1.07		87.92	84.81	-3.11 ***
		Mean	SD		Mean	SD			Mean	SD	
Age		30.34	8.65		39.17	6.55			32.35	7.93	
Income		15521.98	21501.87		26276.81	33925.25			24836.35	52475.22	
N Children		0.57	1.01		1.56	1.17			0.99	1.14	
HH Size		1.55	0.50		1.94	0.31			1.68	0.43	
Hours Worked for Pay		1376.60	972.25		1696.99	953.60			1703.34	923.67	
Dependent Variable				R ²			R ²				R ²
Self Rated Health		3.61	1.02		3.92	0.94			3.93	0.93	
Age Adjusted SRH		3.40	0.80	0.38	3.74	0.75	0.36		3.65	0.74	0.37
Fully Adjusted SRH		3.35	0.69	0.54	3.46	0.62	0.56		3.46	0.63	0.55
N		Observations	100,512		Persons	25,862			Transitions	5,549	

NB: Sample retains only those who were not divorce that year or the year following, those who are less than 50 years of age, and those who were not widowed in the period of observation. Significance levels test observed proportions against that which would be expected assuming uniformity of distribution, while means are tested against that of those individuals who were single throughout.

on those who were between the ages of 18 and 50 inclusively were included.¹⁹ Age was then controlled for as a non-linear individual predictor.

Education is consistently shown to be important to health. Education is measured in three categories (those with less than high school, those who have a high school education, and those who have more than high school education). Education investments are often clear well before degrees are achieved, and this investment is notable to individuals and their potential partners before they graduate. Thus, we included education as a time invariant measure as the maximum education attained by the end of the survey.

Race in the United States has been shown to be important to control for when considering both health and partnership (Williams 1997). In this study, race is measured using self-reported inclusion in the following racial categories: White; Black; American Indian, Aleut, Eskimo; Asian, Pacific Islander; Hispanic; and Other. We have agglomerated due to small sample sizes into: White, Black, and Other.

Income in the PSID is a measure of the respondent's annual post-taxation income. Individual income has been suggested to correlate with an individual's health. Controls for both individual and household post-tax income have been included in the analysis. Adjustment required that groupings be sufficiently large to guarantee that variability remained, so individual income was grouped into 50 2 percentiles groups.²⁰

Employment Status has been included both dichotomously as working or not, and as the number of hours worked. Employment status is a role, but it also occupies time. Hours worked can be indicative of the ability for the individual to garner stable

¹⁹ This may bias the results against negative selection (hypothesis 4). A further analysis of aging and partnership will be forthcoming from the authors to look at these issues specifically among older individuals.

²⁰ Note that the first such groups in individual income were included in group 1 as they all had the same income of 0 in the PSID.

employment while also defining how much of the life is spent at work. Employment status has been included in its dichotomous form, while hours worked for pay has been included in 50, two-percentile groupings.

Number of Children has been included in its categorical format, along with *Household Size*. The number of children in the household is used as a proxy for the amount of time that the parents, usually the woman, spend caring for children and other dependents, including those household inhabitants who are unhealthy.²¹ Household size can also help to define this as the other individuals, be they working adults, grandparents, or other kin, can also be seen as possibly adding to the burden of care. Both measures have been allowed to vary with time.

RESULTS

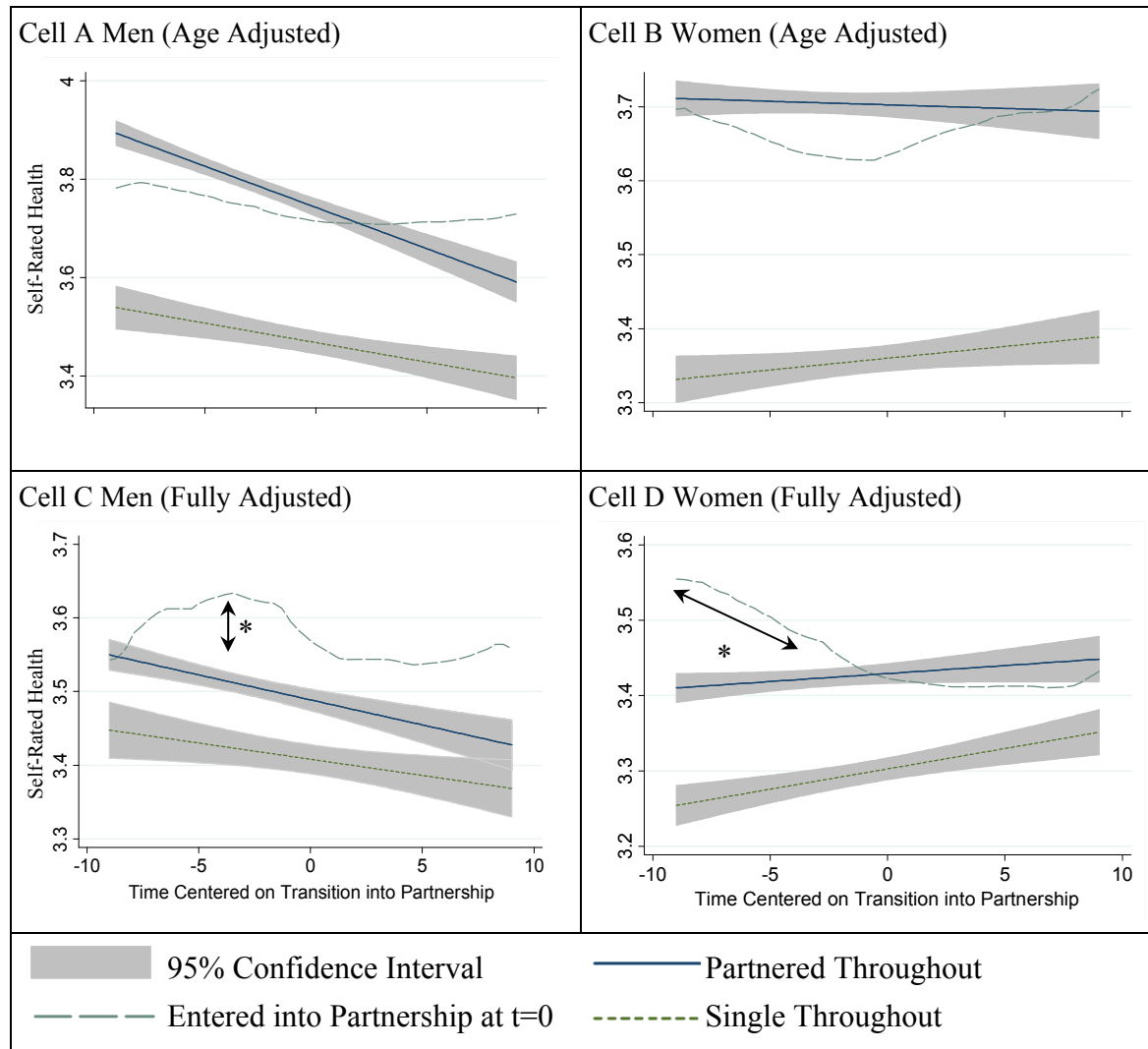
Table 2.1 above shows the descriptive characteristics after sample limitation and weighting. The means uphold what we might expect from basic life course theory, along with studies of partner selection and marital markets. Specifically, those who remained single throughout the period were very different on average than those who remained partnered or those who entered into partnership. It is evident from these characteristics that those who were partnered throughout were significantly more likely to be older, employed, more educated, to have higher incomes, to work more hours per year and to have more children than those who were single throughout. They were also much less likely to be Black. These patterns carry through those who entered into a partnership, except that they were likely to be even more educated, younger, and employed than either of the two comparison groups.

²¹ Indicators showing whether or not this child was new to the relationship as well as new to a new relationship were also included in preliminary analyses. However, no effect was evident on the overall pattern exhibited here. Results not shown here.

The second portion of table 2.1 shows the impact of controls on the means and standard errors of the dependent variable. When considering the inclusion of controls, we can see that there was an increase in the R^2 with the inclusion of each model. In total we reduce the variance by a full 55%, though much of this was due to the impact of Age, which explained about 37% of the variance in the dependent variable.

Figure 2.2 shows the graphical analysis of partnership patterns for men and women in the sample. Confidence intervals have been included for both comparison groups. These have been left out from the group who partnered for clarity, though they are roughly similar in size to those shown above. Cells A and B of figure 2.2 show the age-adjusted results in graphical format between entrance into partnership and health for men and women respectively. What we can see here supports the often found results – those who are in a relationship are healthier. For both men and women, the initial results support a story of positive selection. Men and women who entered a partnership were significantly healthier (before the addition of covariates) than were those who remained single throughout. However, support for hypothesis 1 (partnership benefits) was not found initially with partners seeing no change in their health following partnership. Furthermore, partnership seems to be more detrimental over time for men than remaining single net of age in this sample. However, the initial results also suggest that women who are getting into a partnership are getting worse in health in the period leading up to the partnership. After the transition into partnership, they gain in health. This may support the negative selection hypothesis, since this group enters partnership when they experience a decline in SRH.

FIGURE 2.2: *Health Patterns for Men and Women Entering Partnership*²²



Where necessary, significant changes in the effect for those entering into partnerships has been demarcated by '' and an arrow.

Upon modeling of fully adjusted time periods in Cell C, partnered men still show significantly higher average health than do men who remained single throughout, though

²² A note on reading these figures: they are based on figure 2.1 and can be read in similar ways, though many of these 'hypotheses' are in actuality not mutually exclusive. Selection must come prior to partnership, so when discussing selection I refer to this period. Benefits must come largely afterwards and will be noted when there is an evident *change* in the health patterns with time (a bend in the direction of the curve for instance, or an 's' at the point of partnership). The age-adjusted figures can be considered similar to 'bivariate' models, and give an idea of overall relationship size, and can provide some concept of 'indirect' selection (on observed controls that are health-related but not the DV). All 95% CI's are similar in size, though they have been left off for those entering partnership. Stars and arrows mark significant differences and/or slopes.

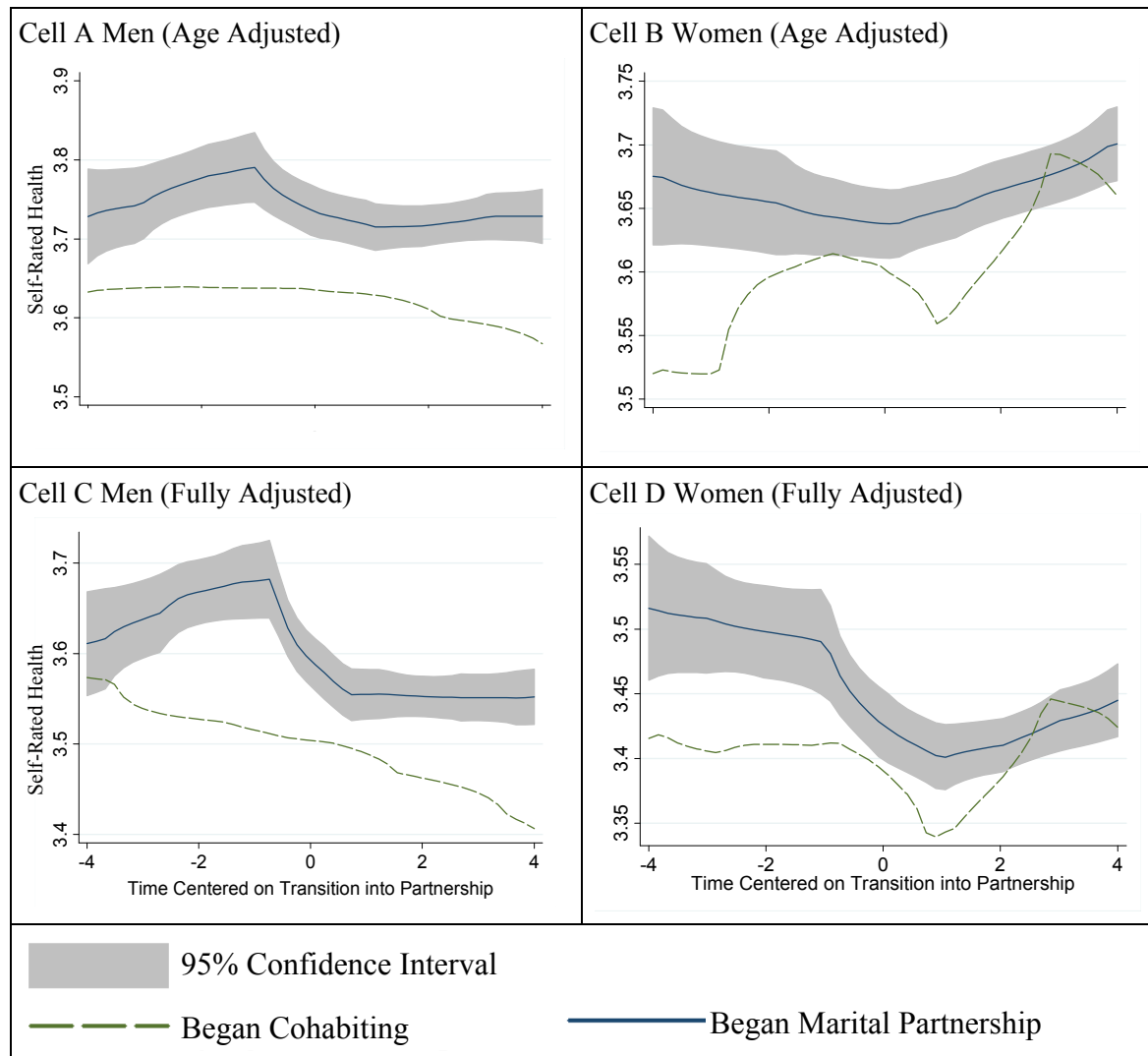
the difference is greatly reduced. Men also show a healthier ‘cleaning up’ period in the years leading up to partnership, with slight but significant gains made in the years preceding partnership, followed by an immediate return upon partnership to lower health. However, this is the healthiest group of individuals suggesting that either the period of time prior to partnership is particularly healthy for men, or that this group is substantively different than are other men.

Considering women after the inclusion of control variables, we see that there is a significant positive selection period after which women are significantly (if temporarily) worse off than are partnered women for the following eight years. This suggests that those women who were healthiest after controls were the ones that became partnered, and while they did not seem to experience a positive increase in health, there is a functional stabilization in the decline in health after partnership that suggests that partnerships are in some way protective of women’s health. However, as we can see, those who remained single and stable throughout also saw an increase in their health over time, suggesting that it may be that those who remain stable in their conditions are able to remain healthier with time and that negative change (not examined directly here) may play a large role in determining the health of singles over time.

Figure 2.3 shows the curves for those who were getting into cohabiting as compared to marital relationships. It should first be mentioned that much of this information relates directly to smaller sample sizes due to the limited number of cohabiting transitions and observations before and after. As such, the time has been limited to 4 years on each side, and there is more variation from year to year among those who cohabit than among those who marry. Nevertheless, some important differences

were evident among the groups and between the genders. Firstly, in all cases, those who entered cohabiting relationships were less positively selected on health, with lower health prior to partnership, than were those who entered marital relationships. However, after partnership, there were no systematic

FIGURE 2.3: *Health Patterns by Gender and Marital Status*



differences for women by partnership type. Differences between cohabitation and marriage were evident for men such that there were consistently negative health trajectories for men who were cohabiting, while men who married showed some stability

after marriage. Overall, among those who cohabited, the post-transition dip in health was less prominent than among those who married.

DISCUSSION

In these analyses, we show that there is significant positive health selection among women and men under the age of 50 years in the US. Moreover, we showed that partnership is not beneficial to health, but instead the results suggest that partnership is temporarily detrimental to their health. This seems especially evident in the 8 years after women enter into a partnership, where women experienced lower health on average than those women who remained partnered throughout.

The descriptive statistics play an important role in our analyses: they suggest that there is significant indirect selection in the variables considered based on employment, education, and race. The first and most important thing is that those who were single throughout were very different from those who were partnered or who entered into a partnership. Those who were single throughout were more likely to be black, less educated, less employed, to have lower income, fewer children, and worked fewer hours than those who entered into or were in a partnership throughout, supporting the view that indirect, assortative, selection in the mating process is important to health outcomes and in our sample overall (Fu and Goldman 1996; Goldman 1993; Goldstein and Harknett 2006; Mare 1991; Mare 2008; Oppenheimer 1994). This may be particularly important as it shows the importance of indirect (health related) selection to the sample, though this selection did not explain away the direct positive selection of health.

This study's unique approach to social data analysis has replicated some findings that are evident within the extant literature. Firstly, men's self rated health was better on

average than was women's (Macintyre, Hunt, and Sweeting 1996). Similarly, differences between partnered women and single women are smaller on average than those between partnered and single men as Gove (1973) originally suggested. These results mirror some found for BMI (BMI increases after partnership) (Averett, Sikora, and Argys 2008). Health of all groups declined over time, but this was especially true for women who remained single throughout and men who remained partnered throughout. The following sections detail what our findings imply for the four main hypotheses discussed above.

Partnership Benefits

The results shown here do not support previous findings reporting gains in SRH due to partnership alone, thus we reject hypothesis 1. Those who were partnered were healthier even after controls than singles, however this gain was limited in size and was not evident in a dose-response relationship between the entrance into partnership, whether cohabiting or married, and health. Instead, the curves for those partnered and single throughout appeared to converge over time. This pattern, coupled with our practice of removing those entering into important dissolution events, implicitly supports the concept that whatever partnership benefits there are in health likely arise from the lack of adverse events rather than any beneficial protection (Williams and Umberson 2004).

Positive Selection

Results show robust support for hypothesis 3 (Positive Selection) for both men and women (see e.g. Becker 1991; Lillard and Panis 1996; Waldron, Hughes, and Brooks 1996). Indeed, those who entered into a partnership were significantly healthier than both those who were partnered throughout and those who were single throughout, suggesting that positive selection was extremely important to attracting a mate. This was especially

true after adjustment for covariates, suggesting that this selection was not only occurring indirectly through observed measures of attractiveness often used in research on marriage markets (e.g. employment, education, income) but was also directly related to health.

Cleaning Up for Partnership

We also saw evidence to suggest that men were becoming healthier in the five years preceding partnership. Duncan, Wilkerson and England (2006) point out that people act differently in the period prior to partnership. Indeed, this period seemed to correlate with good health for men in this sample. However, all gains were lost immediately following partnership. Thus, there is something about the period leading up to a cohabiting partnership that may be healthy for men, leading to a positive but temporary change in self-rated health.

Negative Selection

Our results partially support negative selection, though with a different population than suggested by Lillard & Panis (1996). We saw limited findings suggesting that negative selection in the form of health deterioration may play a role in determining the timing of women's selection into partnership. This was tempered after the addition of controls, suggesting that it may be due to observed adverse selection. This suggests that when individuals enter into a cohabiting partnership, they may be in the midst of a negative deterioration in SRH. Indeed, this supports the concept that deteriorating health may give women an incentive to form partnerships.

Gender

Hypothesis 5 (health effects on males will be stronger than on females) was not supported. Positive selection seemed highly important to both men and women. The

difference between those who were single throughout and those who were partnered was slightly greater for women (0.4 before controls, 0.125 after) than for men (0.3 before controls, 0.1 after). Finally, inequalities in self-rated health after controls were significant irrespective of gender. However, gender did have an influence, changing the underlying relationships between partnership and health such that men experienced a cleaning up period while women showed a negative deterioration in health prior to partnership.

Partnership Type

Partnership type mattered, however the implications of this difference may be limited. Cohabiting partnerships did not lead to a ‘cleaning up’ period prior to partnership further supporting the potential halo effect of marriage, but then they also did not see a significant drop in health immediately following entrance into partnership. In contrast, over time the health of those in cohabiting partnerships deteriorated faster than those who remained married. However, this finding may be an artefact of the tendency for these relationships to transition into marriage or to dissolve, which may bias our findings as those who are left are a very specific subsample of all those within cohabiting partnerships.

Limitations

There are a few notable limitations with this study, not the least of which relate to the methodology and effect sizes of the results shown. The methods are new, and as such are unfamiliar and may be in need of further testing. However, they are also strong in that they allow the analysis of a variety of different trajectories while maintaining a consideration of two comparison groups: external (comparison to those who are ‘like’: single or partnered in comparison to those who are entering into partnerships); and within

individual (comparison across the centre point). Moreover, it allows us to consider these health curves as they change over time, giving a significant addition to the usual pooled and fixed effects analysis. Effect sizes seem small, however our ability to reduce standard errors was very good, and our results remained strongly significant. Moreover, considering that the standard deviations reported for the fully adjusted models in table 2.1 were around 0.5 points on the 5-point scale, the differences shown in figure 2.2 between those who were single throughout and those who were partnered throughout represent a change of almost 0.4 standard deviations for women and 0.2 standard deviations for men, suggesting that these effect sizes are in actuality quite strong. Finally, we are limited in using a subjective our measure of health. However, SRH has shown strong and consistent relationships to mortality and morbidity over time and cross cultures. Moreover, it is not dependent on other health-related (indeed partnership related as well) factors such as access to health resources. Furthermore, it is the only useful health measure that is available and usable over enough time to make this study feasible and as such makes an excellent, if subjective, measure for consideration here.

Implications

Partnered people are in better health and live longer than single people. Our findings suggest that this is not because partnership is itself a health determinant, but rather because assortative mating is selective of health, and that this selection brings with it a number of other benefits such as increased household incomes that then protect health. Public policy should understand that returns to health from partnerships are not immediately beneficial to either men or women, and seemed temporarily detrimental to self rated health. Partnered people are more cushioned from economic variations because

they are already powerful in society. Thus, protecting those who are unable to secure the stability of a partnership is more important because they tend to be less educated and employed. Similarly, more protections and consideration of women who have recently entered into relationships may work towards significantly easing the transition and power dynamics following the entrance into partnership for both women and men. Finally, we should make an effort to understand the possible impacts that gender and health policies have on the benefits received from partnership as well as on the incentives that are considered when selecting a partner. Public policy can change the risks considered when entering a partnership, either by lowering the possibility of bankruptcy due to illness or lowering the need for a partner who can work in a good job if you get sick. This is a topic that the authors will be considering in the future.

Finally, this study adds to the greater sociological enterprise by showing consistent and strong effects of the social measures used as both non-linear and intersectional controls. This helped to explain 21-28% of the standard error in self rated health. Second, we added to the literature the explicit examination of the transition into partnership. This suggests that life course transitions are important to interrogating both sides of partnership: who enters into family life (Health Selection), and what this change means in how social life affects health (Social Causation).

Preamble to Chapter 3.

Chapter 2 above considered the role of partnership and partnership type in the U.S. and found that, in accordance with Williams and Umberson (2004), the majority of the relationship between partnership and health is related to positive selection. We saw a temporary lowered health after the transition into partnership rather than any benefits. This suggests that those who argue the importance of benefits to health may be wrong. However, as seen in the first chapter, the international literature suggests that the importance of partnership may vary by country. The next chapter looks at the relationship between Social Causation and Health Selection in Canada. In this chapter, we show whether the relationships seen in chapter 2 hold in the face of a different policy context: do partnerships in Canada provide more benefits? Are they less positively selective than those in the U.S.? We start this by reiterating the major themes explored in chapter 1 above while specifying how this applies in the Canadian context. We then analyze self rated health through the partnership transition using the Survey of Labour and Income Dynamics, a dataset that is largely publicized by the Cross-National Equivalence File as being comparable in a variety of measures to the Panel Study of Income Dynamics that was used in chapter 2 above. The Canadian case also allows a further comparison between Québec and the rest of Canada, noting that differences in social policy (though not health policy) exist in these regions. Here, we suggest that cohabitation and marriage are important, but that they depend in part on the levels of social protection that the state provides. The following begins by replicating the discussion in chapter 1. The reader may skip to the data section (pp. 79) if desired.

3. Regionalism, Partnership and Self-Rated Health in Canada

Authors: Sean Clouston, Amélie Quesnel-Vallée.

Author Contributions: SC is responsible for the conception and design of the study, data analysis, and drafting of the paper. AQV advised on the design, analysis and interpretation of the data, and critically revised the article for important intellectual content.

ABSTRACT *Married men and women in Canada are healthier than are singles. This is largely thought to reflect the benefits that arise from partnership. However, it has also been argued that selective processes may produce this relationship. Furthermore, selection into partnership is defined by social structural processes and incentives that are themselves shaped by public policy. Here we interrogate the role that public policy plays in determining who benefits from partnership, what type of partnership is most beneficial, and who is selected into partnership by looking at the entrance into different types of partnerships (marriage vs. cohabitation) in Québec compared to the other nine provinces in Canada. Results suggest partnership benefits are stronger for women who marry, and that selection is more important to men who marry. Those cohabiting in Québec gain more from partnership than do those cohabiting in the rest of Canada. Gender defines different selection pattern: men are more positively selected, and women more negatively selected into partnership. However, both men and women in our sample benefited from partnership, though the extent of this benefit depended on partnership type (married persons benefited more in Canada and cohabiters in Québec). Our results suggest that differences in regional social policy affect: 1) the ways that partnerships are formed and 2) the importance of formalizing the partnership through marriage in receiving benefits.*

A wealth of historical and contemporary research suggests that marriage is an important social determinant of health, both in Canada (Gove 1973; Rogers 1995; Trovato 1998; Trovato and Lauris 1989) and abroad (see e.g. Dupre, Beck, and Meadows 2009; Gahler 2006; Tucker, Friedman, Wingard, and Schwartz 1996; Waite 1995). While this relationship may be attributed to a causal effect of marriage on health, arguments have been made that selective processes may be at play as well. For instance, these selective processes can play out indirectly, as more socially advantaged individuals tend to be both more “marriageable” and healthier. They can also play out directly, as healthier individuals experience an advantage in the marriage market (positive selection), or sicker individuals may partner in hopes of receiving care-giving or health insurance (negative selection) (Fu and Goldman 1996; Goldman 1993; Goldman 2001; Henderson et al. 2005; Townsend and Levy 1990; Waldron, Hughes, and Brooks 1996). Unfortunately, these different processes are rarely assessed in the same study, thus precluding a simultaneous view of their interplay (see e.g. Ai, Hiroyasu, Hideaki, Yoshihisa, Tetsuya, Takesumi, Yutaka, and Akiko ; Cheung and Sloggett 1998; Dupre, Beck, and Meadows 2009; Trovato 1998; Waite 1995).

Moreover, much of the research to date has focused on the health returns to marriage (Waite 1995; Waite and Gallagher 2000), leading to a knowledge gap on the selection into and returns from other forms of partnership, such as cohabitation. As cohabitation is less formalized and more unstable than marriage, it may involve a different set of incentives and rewards that will differentiate it with regards to its impact on health (or on the selective process). These processes likely depend on the policy

context and the necessity for the formal protection guaranteed by marriage versus cohabiting partnerships in these contexts.

In this paper, we fill the gaps noted above by examining health transitions in the periods preceding and following the start of a partnership, contrasting the trajectories for marital and cohabiting unions. Furthermore, we take advantage of the natural policy and cultural difference between Québec and the rest of Canada. In the following section, we present the four general hypotheses pertaining to the selective and causal processes involved in finding and living with a partner in a marital or cohabiting partnership. We then explicate why partnership type matters to this process, ending the theory portion of this chapter with a discussion of why social protections and policy context matter to the outcome.

PARTNERSHIP AND HEALTH

Four hypotheses have arisen in the literature to explain why marriage matters for health. Two hypotheses propose causal forces are at play; the other two argue that selective elements play a role in the relationship between partnership and health. In Figure 3.1, we illustrate these hypotheses graphically: assuming a health scale that increases along the Y axis, we first depict health trajectories of the stably partnered (on top) and single (on the bottom). Then, for those individuals that experience union formation during the observation period, we present four hypothetical curves derived from the hypotheses laid out in greater detail below. These curves are alphabetically ordered to match the order of presentation of the hypotheses below, and are centered around the participation transition.

Partnership Benefits (Curve 'a' in Figure 3.1)

It has long been posited that marriage is protective, especially for men (Gove 1973; Rogers 1995; Trovato 1998; Trovato and Lauris 1989). Indeed, married men have been shown to live up to ten years, and women up to four years, longer than those who are single (Waite 1995). This gain has been noted by some as being large enough to offset the negative effects of smoking (Wilson and Oswald 2005). A variety of mechanisms exist that may help to explain how partnership is beneficial, including sexual, social, behavioral, and financial benefits. Yet there remains much to be done to understand who benefits, and how and when those benefits arise. For instance, many of the above authors have ignored the timing of this gain, implicitly arguing that the gain is immediate, though recent research has begun to focus on the idea that partnership leads to a slower deterioration in health than does being single and may even show greater gains over time with stable relationships (Hughes and Waite 2009). The hypothesized impact of partnership benefits on health is exhibited as curve (a) in figure 3.1.²³ Here, the health of those who enter into a partnership starts similar to that of other singles, but soon after partnership (there is little in the literature to suggest when), health improves to meet that of other partnered individuals.

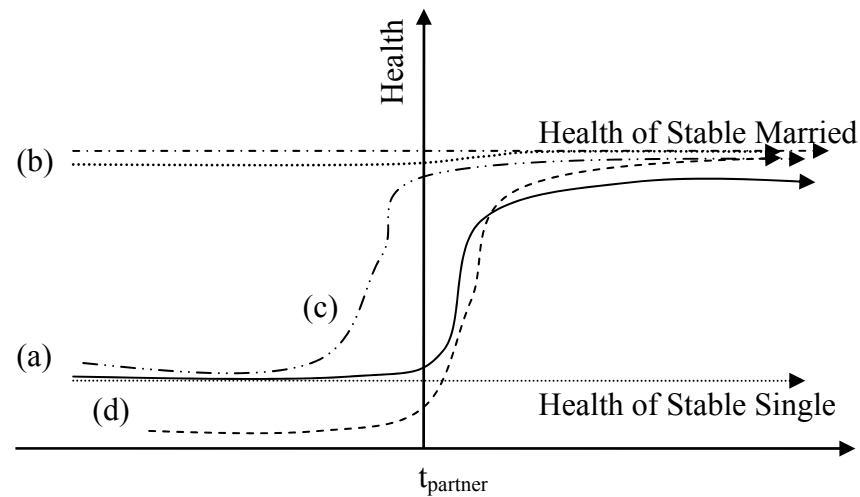
Positive Selection (Curve 'b' in Figure 1)

An alternative hypothesis to partnership benefits is the possibility that the health differences observed between married and unmarried individuals arise out of a natural tendency for individuals to seek the best partners available (Becker 1991). Thus, a claim that the association between marriage and health could be reflecting a selection process has recently found popular support (Williams and Umberson 2004). Social selection

²³ The argument that stability matters will be evident as those who are in partnerships for longer gain more over time rather than in a 'dose-response' way as is shown in figure 1.

could work indirectly and directly. First, assortative mating could lead to indirect selection by allowing selection to operate on the basis of socioeconomic status, which is known to have an impact on health (see e.g. Mare 1991; Mare 2008). Direct selection could also occur, to the extent that good health is observable and selected for, conversely

FIGURE 3.1: *Differing Explanations for Marital Benefits*



- (a) Partnership Benefits
- (b) Positive selection
- (c) Cleaning Up for Partnership
- (d) Negative Selection with Benefits

it may be that poor health is observable, and selected against (Fu and Goldman 1996; Goldman 1993; Hall and Zhao 1995; Stutzer and Frey 2003; Waldron, Hughes, and Brooks 1996). These selection processes are best characterized by curve (b) in figure 3.1, which illustrates that individuals who join a union start the period off with better health than other singles, and already at a similar level that those who were partnered throughout.

Cleaning Up (Curve 'c' in Figure 3.1)

In contrast to the marital benefit hypothesis, which does not postulate timing effects, a more recent causal argument has proposed that health may actually improve in the years of courtship prior to union formation, especially with regards to risky behaviours (Duncan, Wilkerson, and England 2006). The theory posits that due to the increased social contact prior to marriage, individuals will 'clean up' their behaviours prior to partnership, and insofar as we believe that better health behaviours translate into better health (the underlying argument in many studies including: Lantz, Lynch, House, Lepkowski, Mero, Musick, and Williams 2001; Link and Phelan 2009; Lynch, Kaplan, and Salonen 1997; Noar and Zimmerman 2005), we should see the same for health.²⁴ Of note, this hypothesis may easily be empirically confused with positive selection, especially if using a model that looks at change between only two time points (see e.g. Williams and Umberson 2004). However, it must truly be understood as a causal explanation, which focuses on the behavioural health benefits to marriage that may begin to accrue in the dating years before the union is formalized. It also helps to explain some potential gender differences, as men generally engage in riskier behaviors and thus may make a more concerted effort to 'sell' themselves as suitable mates. This is explicated by curve (c) in figure 3.1, which shows that people start as healthy as other singles until they begin to gain health benefits just a couple of years prior to partnership, eventually (at some theoretical yet undefined time) matching the health of people in partnerships.

²⁴ It is important to note that the early work on this topic mostly found differences in mortality relating specifically to behaviorally-related mortality including for instance, suicide, cirrhosis, and homicides: Trovato, F and G Lauris. 1989. "Marital status and mortality in Canada: 1951-1981." *Journal of Marriage and the Family*:907-922.

Negative Selection (Curve ‘d’ in Figure 3.1)

Negative selection hypotheses posit that individuals, knowing that partnership offers important health benefits, try to select into partnership at greater rates if they are less healthy. Originally, this hypothesis was derived from the experience of older males living in the U.S. (Lillard and Panis 1996). Negative selection may also be important in a universal healthcare system, as poor health may be less likely to be selected against than in a system where the social and financial costs to poor health are known to be substantial. This hypothesis is typified by curve (d) in figure 3.1, which shows that individuals who enter into a partnership start less healthy than others who are single. An important point highlighted by this figure is that this hypothesis is not a “pure” selection hypothesis, since it is predicated on the idea that, once they are selected into partnerships, these less healthy individuals then enjoy health benefits until they are similar to others who were partnered throughout.

While the literature we reviewed above is substantial, and offers directly testable hypotheses, we have found it to be lacking on two grounds: first, it does not explore the impact, if any, that gender has on both selective and causal processes; and second, it does not consider whether these effects are modified by partnership type. We address both of these issues in turn in the next section.

PARTNERSHIP TYPE AND GENDER

Gender

The benefit to marriage has been estimated to lengthen a woman’s life expectancy by 4 years over their single counterparts, while for men the contrast jumps up to 10 years (Waite 1995). Gender can be a modifying factor in the association between partnership

and health, as it saliently circumscribes the roles that people play within families. Furthermore, it may work to define how Health Selection and Social Causation work for those who are in partnerships, including who is chosen for partnerships. Indeed, women are well documented as having worse average health (see e.g. Macintyre, Hunt, and Sweeting 1996),²⁵ as the burden of both working and childcare are often placed on their shoulders, arguably limiting their ability to care for themselves (Weatherall, Joshi, and Macran 1994; Weissman and Olfson 1995). In contrast, men may gain disproportionate health benefits from partnerships from heightened social time; from extra personal care when ill; and from a reduction in poor health behaviors, to which they are more susceptible (Denton, Prus, and Walters 2004; Goldscheider and Waite 1991; Gove 1973; Pinquart and Sorensen 2006; Rahman, Strauss, Gertler, Ashley, and Fox 1994; Simon 2002).

However, whether these relationships are due to men cleaning up and gaining health benefits or to positive selection is debatable. It has been argued quite compellingly that individuals tend to be gendered in their selection of partners, with men traditionally more likely to be chosen by financial selectors and women for their ability to maintain a household (Becker 1991). While one would hope that these patterns will eventually be mitigated by more equal gender roles, for current cohorts, this means that positive selection may operate for both men and women.

Partnership type: marriage vs. cohabitation

Cohabitation is now the modal way of entering into partnerships in Canada, with marriages often coming after cohabitation if at all; however, the vast majority (86%) of

²⁵ This is in contrast to their well known lengthier life expectancies (though this is largely a result of increased mortality for men aged 17-21 and for men aged 65 and over).

existing partnerships are later formalized into marriage, suggesting that marriage remains an important partnership type in Canada (Kerr, Moyser, and Beaujot 2006). The literature is clear that differences between cohabitation and marriage should exist, as marriages are longer lasting, more satisfying, and more financially stable than cohabiting relationships (Stack and Eshleman 1998; Waite 1995; Waite and Gallagher 2000). However, the relationships are far from clear, for instance: divorce has been called one of the primary stressful events causing lowered health amongst those who are divorced (Williams and Umberson 2004), yet dissolution of cohabiting partnerships is less detrimental to health (Meadows, McLanahan, and Brooks-Gunn 2008; Meadows 2009).

While many studies clearly show the importance of marriage to mortality (Gove 1973; Rogers 1995; Trovato and Lauris 1989; Trovato 1991), these findings are biased and may be due in part simply to limited measures regarding cohabitation on administrative and even survey data until as recently as the 1990's (Le Bourdais and Lapierre-Adamcyk 2004). Since the 1980's, there has been clear evidence that cohabitation has become a normative alternative for marriage in Québec, while it remained more of a "testing" period before marriage elsewhere in Canada (Beaujot and Wang 2009). Globally, the evidence regarding the importance of marriage over cohabitation to health is much less clear, with marriage sometimes showing slightly more health benefits over cohabiting relationships (Joutsenniemi et al. 2006; Meadows, McLanahan, and Brooks-Gunn 2008; Meadows 2009; Musick and Bumpass 2006; Wu and Hart 2002; Wu, Penning, Pollard, and Hart 2003).

Substantial differences between marriage and cohabitation remain, with marriage being the more formalized arrangement and thus requiring more from individuals while

presumably providing more benefits. Therefore, we might expect people to be more positively selected when entering into the more formal arrangement than when entering a less formal arrangement, with those entering into cohabiting relationships gaining less though stability (a type of selective persistence) may make up for this. However, we might also expect there to be more negative selection as more vulnerable individuals seek out formalized partnerships that provide more benefits. Finally, given the greater formalization we might expect that those entering into marital relationships be more eager to ‘sell’ themselves for the more beneficial partnership and therefore they might ‘clean up’ for marriage more than for cohabiting partnerships.

To bring those two threads together, we need to consider that the impact of gender and the ways that genders will select into different partnership types. We must, for instance, consider the role that women have in society and the impact that this has on selective and causal processes. Indeed, we know for instance that Canada and Québec differ substantially in their use of cohabitation and that they are also different in the protections that the state offers with regards to women – mandating for instance the length of maternity leave, the coverage of day care facilities and even whether a woman takes their partner’s name in Québec in a way that is fundamentally different to that of the rest of Canada.²⁶ These differences will be the topic of the next section.

REGIONALISM IN CANADIAN FAMILIES

There is a delicate balance in modern welfare states concerning the respective roles and responsibilities of the State and families with regards to individuals’ well-being.

²⁶ Whether this is cultural or policy related may be argued. However, it is also fairly clear that these two covary as places with egalitarian public policy (Sweden, Québec, Denmark, etc.) are also places where cohabitation is more salient: Kiernan, Kathleen. 2002. "Cohabitation in Western Europe: Trends, Issues, and Implications." Pp. 3 - 31 in *Just Living Together. Implications of Cohabitation on Families, Children, and Social Policy*, edited by A. Booth and A. C. Crouter. Mahwah, NJ: Lawrence Erlbaum..

In Liberal welfare states, the market and the family are often seen as legitimate sources of social protection, with the State coming to supplement these sources, or occasionally standing in for them where the market fails to provide adequate support (as for children, the disabled and the elderly). Social policy in Québec has historically stood out from the rest of Canada through a commitment to more egalitarian policies, particularly where gender is concerned. Among the policies most salient for our analysis, Québec's strongly subsidized and universally accessible childcare (Lefebvre 2004) and more generous coverage of parental leave (52 weeks in Québec versus 18-52 over that period in Canada) (Baker and Milligan 2008) suggest that individuals may have less incentive to select healthier partners.

As Garrison (2007) argues, social policy relating to family may affect the incentives relating to partnership: women may perceive fewer incentives to entering into legal marriages in order to guarantee that they (and their offspring) are protected in times of financial trouble if the state already guarantees this. In Québec, the protections afforded to partners and their children irrespective of partnership type: benefits for cohabiting individuals are equivalent to those of married individuals while the partnership lasts. Moreover, while there is often a perception that cohabitation is interchangeable with legal marriage, the delineation between marriage and cohabitation becomes extremely clear upon dissolution.²⁷ Indeed, with more than 60% of children being born to unwed mothers in Québec, cohabitation has become what Le Bourdais & Lapierre-Adamcyk (2004) call the "basis for family life" in Québec (pp. 929). Thus, thanks to a mix of more permissive social norms around the acceptability of cohabitation

²⁷ This has been the topic of a very interesting and publicized legal debate regarding the amount that an individual has to support their former cohabiting spouse in Montréal, QC.

and more generous and gendered social policy, couples in Québec are much more likely to be cohabiting than in other provinces and are more likely to remain cohabiting rather than making the additional ‘step’ to marriage (Beaujot and Wang 2009; Le Bourdais and Lapierre-Adamcyk 2004). Indeed, while English Canada remains more or less equal in frequency of non-marital cohabiting couples to the U.S. (9%) (Kerr, Moyser, and Beaujot 2006), Québec (35%) stands out as having cohabitation rates equal to those of Esping-Anderson’s (1990) ‘Social Democratic’ countries. Thus, insofar as partnership matters, analysis within Canada must consider Québec separately as these policy measures and cultural differences regarding marriage and cohabitation are likely to affect the ways that people select their partners, while also affecting the amount and types of benefits that they receive from their partnerships.

Hypotheses

We present our hypotheses first in terms of “main” effects of partnership on health, and then, when applicable, in terms of the modifying effects of partnership type and gender respectively.

Mechanisms explaining the relationship between partnership and health

We expect evidence to support the theory of *Partnership Benefits* (curve a in figure 3.1), *given its prominence in the literature. We expect a weaker impact for positive selection and cleaning up and we expect to see no or limited evidence for negative selection* (curve d in figure 3.1).

Modifying effect of partnership type

Context will affect partnership benefits. *In Québec where cohabitation is equivalent to marriage, we expect that there will be no difference in partnership benefits*

between cohabitation and marriage. In the rest of Canada, we expect that there will be stronger benefits to marriage than to cohabitation.

Moreover, given the stronger legal responsibility it involves, *positive selection will be stronger for marriage than cohabitation outside of Québec, while in Québec selective differences should be limited.*

Modifying effects of gender

Positive selection on health (curve b in figure 3.1) is likely to operate for both genders, but as it is hypothesized to work directly only for women, *we will not observe direct selection on health for men.*

Conversely, given their higher propensity to “unhealthy” behaviours, *we will observe cleaning up* (curve c, figure 3.1) *primarily among men, and because of the greater social responsibilities and formalization we would expect it more for marriage than for cohabitation.*

DATA

We use the Survey of Labour and Income Dynamics (SLID), which is a nationally representative survey of the Canadian population, collected by Statistics Canada. This study uses data from Panel 3 (1999 – 2005), which includes six years of repeated observations (226,448 person-years). Response rates are extremely high, with 85% the first year, and over 90% thereafter. While the data originally included 226,448 observations for individuals within households aged 16 – 69, we restricted the sample to those aged over 18 (Obs. = 175,832) to those with valid responses to partnership and health variables (reduces by 12%) and then to those aged 50 or less (total obs. = 92386), as the literature suggests that the selective and causal mechanisms of those older 50 are

very different than those under 50 (Lillard and Panis 1996). Due to the known impact of divorce on health, all observations in the year preceding and the year following a dissolution event were dropped from the analyses. Widowed persons were excluded from analyses. Given our hypotheses, we stratified analyses by gender. On variables other than partnership and health, and where not already imputed by Statistics Canada (as with income), model-based and nearest-neighbor techniques were used to impute missing data for respondents who failed to respond only on some variables in a given year in which they otherwise answered other questions. This leads us to an analytic sample of $N_{\text{final}} = 50,616$. About half of respondents lived with partners every year in the period while another third lived alone throughout the period leaving about a seventh who enter into partnerships.

MEASURES

Dependent Variable

Self-Rated Health (SRH) is a strong indicator of an individual's general health, and an important predictor of mortality (Burstrom and Fredlund 2001; Idler and Benyamini 1997; Miilunpalo, Vuori, Oja, Pasanen, and Urponen 1997; Mossey and Shapiro 1982; Quesnel-Vallée 2007). While this measure is regularly critiqued for relying on subjective appraisals of health (Bound 1991), we deemed it of value for our analysis, which requires that health be measured regularly through the partnership transition and that it not depend on biases relating to healthcare access. We believe that SRH provides an opportunity to understand both causal and selective forces and is thus complementary to other studies in this field focusing on mortality (see e.g. Dupre, Beck, and Meadows 2009; Trovato 1998; Trovato and Lauris 1989; Waite 1995; Waite and Gallagher 2000)

or other health-related outcomes such as BMI, Satisfaction, and Happiness (Averett, Sikora, and Argys 2008; Stutzer and Frey 2003; Zimmermann and Easterlin 2006). SRH

TABLE 3.1: *Description of variables included in analyses*

		Total	Female	Male	
Female		49.70			%
Immigrant		15.27	15.40	15.14	%
Highest level of Education Achieved during observation	<i>Less than High School</i>	12.24	10.75	13.72	%
	<i>High School Diploma</i>	31.45	31.70	31.20	%
	<i>Non-University Certificate</i>	35.05	35.39	34.71	%
	<i>University Degree</i>	21.26	22.16	20.37	%
Employed		78.88	72.19	85.50	%
Partnership Type¹	<i>Single</i>	41.13	39.38	42.86	%
	<i>Married</i>	48.78	50.62	46.96	%
	<i>Cohabiting²</i>	10.09	10.00	10.18	%
Region of Residence	<i>Atlantic</i>	7.91	8.02	7.80	%
	<i>Québec</i>	24.98	24.71	25.25	%
	<i>Ontario</i>	36.90	37.07	36.73	%
	<i>Prairies</i>	17.36	17.44	17.29	%
	<i>British Columbia</i>	12.84	12.75	12.93	%
Age		35.40	35.43	35.38	
Hours Worked for Pay³		1549.27	1315.65	1780.11	
ln(Income)⁴		9.67	9.44	9.91	
Self Rated Health⁵		3.91	3.87	3.95	
Number of Children living in residence		1.17	1.23	1.11	
Household Size		1.77	1.78	1.75	
Weeks Unemployed		2.78	2.54	3.02	
Young Child in Household		0.07	0.08	0.07	

Notes: ¹Those leaving a relationship are excluded for year before and 2 years following - widowed are excluded from the analyses; ²Cohabitors who marry were counted as entering into a cohabiting partnership, however upon marriage their scores are attributed to the married group for two reasons: they had limited health change after partnership and their N was sufficiently small to ignore these transitions for this analysis. ³Total of hours worked over a year; Hours are assessed weekly by employment spell and including hours worked for pay at all jobs; ⁴Logarithmic, transformation of post-tax earnings from all sources derived from the Revenue Canada income files; ⁵Five-point self-assessed health scale rated from poor (1) to excellent (5) health;

is reverse coded on a five point scale from poor (1) to excellent (5). Finally, while more objective health measures may be ideal when trying to understand a particular community's health profile, comparative studies in health require a measure that is not easily confounded by regional differences in health system accessibility (posited to matter here) as do most objective measures like diagnosed conditions. Covariates include: Gender (*Female*), Immigration Status (*Immigrant*), Highest Level of Education (*Less than High School, High School Diploma, Non-University Post Secondary Certificate, and University Degree*), Employment Status (*Employed*), Partnership Type, Region of Residence, Age, Hours worked for pay, Income, Number of children residing in household, Household Size, respondent's weeks unemployed, and whether a young child (age < 5) lives in the household. Analyses are separated by gender (*Female and Male*), region of residence (*Québec versus Rest of Canada*), and partnership type (*Married versus Cohabiting*). Table 3.1 details the descriptive information for all variables used in the analysis.

METHODS

In this study we adapted the concepts underlying the difference in differences approach (see e.g. Ashenfelter and Card 1985) to work on an individual and longitudinal basis. We used smoothed transition-centered marginal curves derived from previous research that focus directly on the selective and causal processes surrounding partnership (Averett, Sikora, and Argys 2008; Stutzer and Frey 2003; Zimmermann and Easterlin 2006). We directly adjusted the outcome variable using control variable. This is done using a routine similar to within-group fixed-effects and is useful because it allows us to

control for complex, nonlinear categorical patterns using equation 1. This allows us to assume interdependence of the variables and control for observed intersectional variation.

$$\text{Equation 1: } \dot{H} = H' - \bar{H}_k + \bar{H}_{gender}$$

H' refers to a respondent's health score, H_k refers to the group-specific mean and H_{gender} refers to the overall gender-based population average. Equation 1 slices the sample into k groups based on answers to control variables and performs a within-group fixed-effects transformation, which is then centered on the population mean for comfort rather than zero. Put simply, this removes the average effect of being a college educated immigrant and equates that to those who are high school educated, unemployed, native-born Canadian. The resulting scores have been standardized for ease of interpretation and comparison. Here, one standard deviation rise in Self-Rated Health equates to nearly 0.9 points on the non-standardized five-point scale. Including these scores into the above method gives us the curve for those who entered into partnership. The two comparison groups of stable single and stable married are then randomly assigned overlapping time variables to match those generated for those entering partnerships.²⁸ We then model the group-specific curves together on one graph, which are smoothed using a locally weighted polynomial smoother available in Stata 11/SE. This effectively replicates the illustration in figure 3.1 using observed data, controlling for indirect selectors and other sociodemographic variables that are described below.

²⁸ There is an argument to not randomizing but simply limiting the time of observation to the available times for the comparison groups. Making that adjustment does not change the informational ease, but does create a new problem of yearly bias if the year designated as '0' marks a significant change in the population health trajectories of either those who are partnered or those who are single throughout. None such time is believed to exist, but the current method does not fail from this artificial temporal bias.

RESULTS

TABLE 3.2: Descriptors by Partnership Pattern

	Single Throughout		Partnered Throughout		Got Partnered	
	Female	Male	Female	Male	Female	Male
Immigrant	13.38	12.27	18.73	18.96	9.33	11.00
Employed	70.69	73.75	72.19	93.21	74.99	89.59
Highest Level of Education						
<i>Less than High School</i>	10.84	13.92	11.60	14.26	4.75	8.66
<i>High School</i>	33.22	36.28	31.12	27.58	27.89	27.04
<i>Post-secondary Certificate</i>	31.58	32.51	36.37	35.63	39.00	34.67
<i>University Degree</i>	24.35	17.29	20.91	22.53	28.36	29.63
Age						
<i>Mean</i>	30.49	29.83	39.45	40.21	31.95	33.18
<i>Std Error</i>	0.08	0.08	0.04	0.04	0.12	0.12
ln(Income)						
<i>Mean</i>	9.48	9.47	9.34	10.18	9.52	10.01
<i>Std Error</i>	0.01	0.01	0.01	0.01	0.02	0.02
Self-Rated Health						
<i>Mean</i>	3.88	3.95	3.86	3.90	3.92	4.08
<i>Std Error</i>	0.01	0.01	0.01	0.01	0.01	0.01
Hours Worked for Pay						
<i>Mean</i>	1276.78	1415.69	1310.82	2013.00	1374.76	1840.82
<i>Std Error</i>	7.10	7.49	5.55	5.32	11.86	11.77
Number of Children						
<i>Mean</i>	0.75	0.49	1.50	1.56	1.33	1.26
<i>Std Error</i>	0.01	0.01	0.01	0.01	0.02	0.02
Household Size						
<i>Mean</i>	1.63	1.59	1.92	1.92	1.72	1.70
<i>Std Error</i>	0.00	0.00	0.00	0.00	0.01	0.01
Young Children						
<i>Mean</i>	0.03	0.01	0.12	0.13	0.05	0.04
<i>Std Error</i>	0.00	0.00	0.00	0.00	0.00	0.00
Weeks Unemployed						
<i>Mean</i>	2.86	3.74	1.90	1.65	2.49	2.19
<i>Std Error</i>	0.08	0.09	0.05	0.05	0.12	0.12

First we sought to show indirect selective processes in the Canadian sample. Table 3.2 below shows descriptive statistics separated by partnership pattern. A number of clear socioeconomic selectors are evident from these descriptive statistics. Firstly, those who stay single throughout the observation period are much less likely to be employed, have lower educational attainment, were younger²⁹, and work fewer hours for pay. Men and women who became partnered stand between those who are single throughout and those who were partnered throughout on most variables. Men earned more than those who were single and less than those who were partnered throughout. Women spent more weeks unemployed than women who were partnered throughout but fewer than women who were single throughout. Women who were single earned the same as did men who were single. They also earned more on average than did women who were partnered throughout, which is likely due to the latter's increased responsibilities in terms of household and childrearing activities encroaching on their time to engage in remunerated employment. Thus, selection into partnership seems to exist, and the next set of results delves into these patterns by relationship.

Table 3.3 shows all the groups broken down by gender, province, and partnership (single throughout, partnered throughout or those who entered into a partnership). A number of differences become evident. Firstly, those who are cohabiting in Québec were the healthiest group. Moreover, Québeckers were more likely to be either single or cohabiting than married. Secondly, men who were single throughout were much less likely to be employed, worked fewer hours, and were unemployed for more weeks of the

²⁹ There is sufficient reason to think, then, that age may confound some of these descriptive analyses.

year than men who were partnered throughout, suggesting that significant indirect selection was present in the male sample. This is borne out in the educational results,

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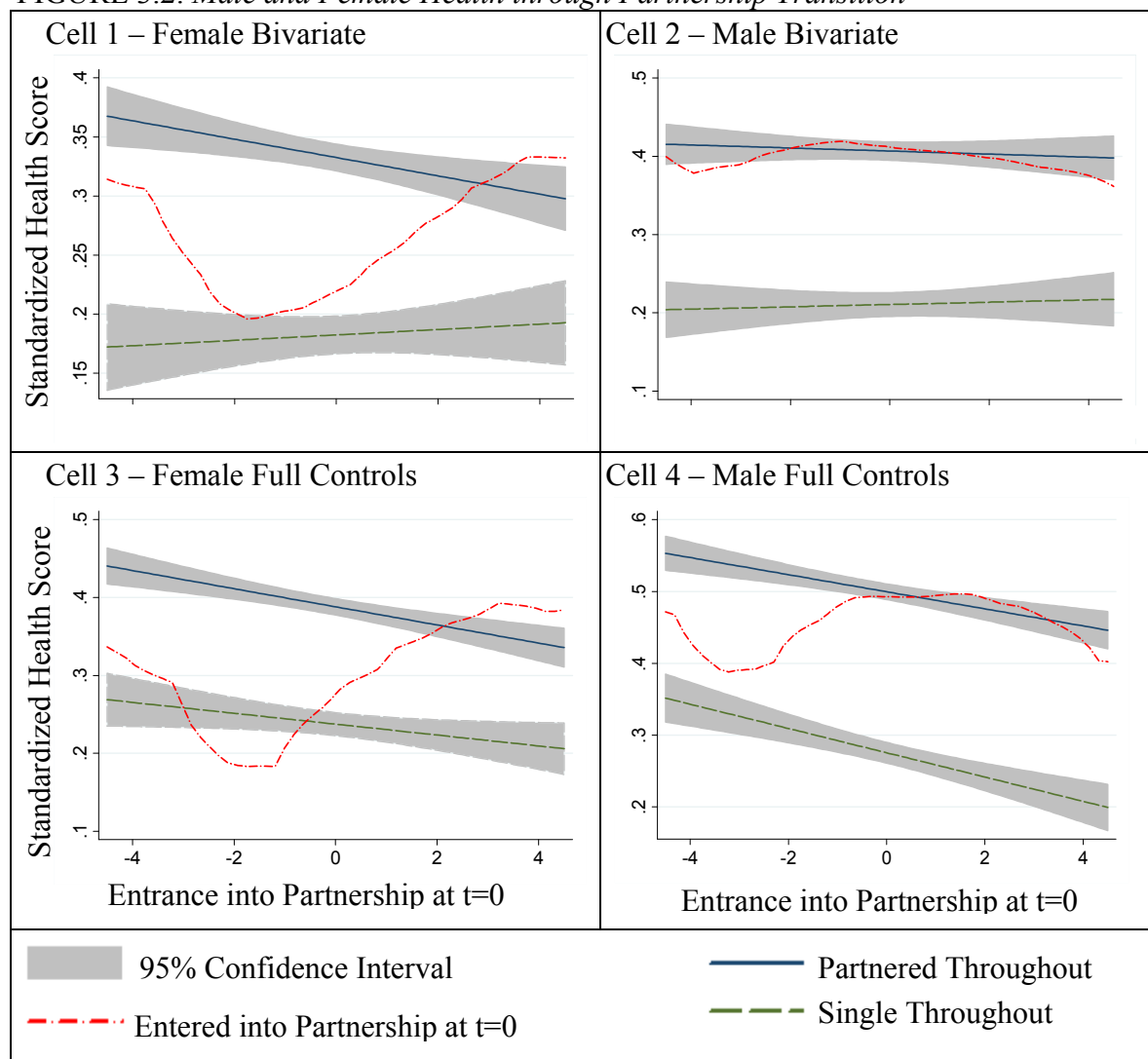
³⁰ There is sufficient reason to think, then, that age may confound some of these descriptive analyses.

TABLE 3.3: Descriptive Comparisons between Gender and Partnership Type

	Single		Females Married		Cohabiting		Single		Males Married		Cohabiting	
	Canada	Québec	Canada	Québec	Canada	Québec	Canada	Québec	Canada	Québec	Canada	Québec
	37.94	43.70	55.74	35.24	6.32	21.06	41.78	46.10	52.09	31.57	6.13	22.33
Employed	71.17	72.88	72.15	72.32	74.74	74.89	75.31	75.06	94.03	91.45	88.62	91.30
Highest Level of Education												
<i>No High School</i>	8.77	13.79	9.43	15.29	12.14	15.61	11.90	17.81	11.91	16.45	17.41	19.87
<i>High School</i>	35.27	25.55	30.27	33.23	34.75	27.19	37.72	27.91	28.37	25.64	32.69	26.04
<i>Post-Secondary Certificate</i>	32.23	34.40	37.89	33.19	34.91	33.96	31.10	38.39	35.97	34.65	33.44	35.38
<i>University Degree</i>	23.73	26.27	22.41	18.29	18.20	23.24	19.28	15.88	23.75	23.26	16.46	18.71
Age												
<i>Mean</i>	30.14	31.72	38.76	39.99	34.02	35.41	29.64	31.19	39.55	40.72	35.58	36.58
<i>Std Error</i>	0.08	0.17	0.05	0.12	0.17	0.17	0.08	0.16	0.05	0.12	0.17	0.17
ln(Income)												
<i>Mean</i>	9.50	9.59	9.36	9.20	9.55	9.54	9.52	9.57	10.24	10.02	9.74	10.07
<i>Std Error</i>	0.01	0.02	0.01	0.04	0.03	0.03	0.01	0.02	0.01	0.03	0.05	0.03
Self-Rated Health												
<i>Mean</i>	3.86	3.91	3.85	3.86	3.83	4.04	3.98	3.98	3.89	3.92	3.79	4.14
<i>Std Error</i>	0.01	0.02	0.01	0.02	0.02	0.02	0.01	0.02	0.01	0.02	0.02	0.02
Hours Worked for Pay												
<i>Mean</i>	1302.41	1290.22	1319.07	1288.52	1380.18	1316.87	1470.77	1418.39	2046.27	1931.44	1856.59	1830.64
<i>Std Error</i>	7.29	14.18	5.85	15.03	16.68	17.70	7.84	14.61	5.56	14.94	17.81	15.66
Number of Children												
<i>Mean</i>	0.82	0.74	1.54	1.49	1.27	1.41	0.51	0.51	1.59	1.63	1.21	1.44
<i>Std Error</i>	0.01	0.02	0.01	0.02	0.02	0.02	0.01	0.01	0.01	0.02	0.02	0.02
Household Size												
<i>Mean</i>	1.65	1.56	1.92	1.92	1.72	1.78	1.61	1.51	1.91	1.94	1.70	1.77
<i>Std Error</i>	0.00	0.01	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.01	0.01	0.01
Weeks Unemployed												
<i>Mean</i>	2.64	3.27	1.80	1.82	3.42	2.70	3.24	4.52	1.34	2.12	3.83	2.26
<i>Std Error</i>	0.08	0.18	0.05	0.14	0.20	0.20	0.08	0.20	0.05	0.16	0.23	0.18
Young Children												
<i>Mean</i>	0.03	0.03	0.11	0.11	0.08	0.11	0.01	0.01	0.12	0.13	0.08	0.11
<i>Std Error</i>	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.01	0.01	0.01

likely to be employed, worked fewer hours, and were unemployed for more weeks of the year than men who were partnered throughout, suggesting that significant indirect selection was present in the male sample. This is borne out in the educational results,

FIGURE 3.2: *Male and Female Health through Partnership Transition*



which suggest that those who were partnered were more likely to have university degrees and were less likely to have only finished high school. All of these results may, however, be confounded by age, since cohabiting partners were about 5 years older than single individuals on average, while married individuals another 5 years older still.

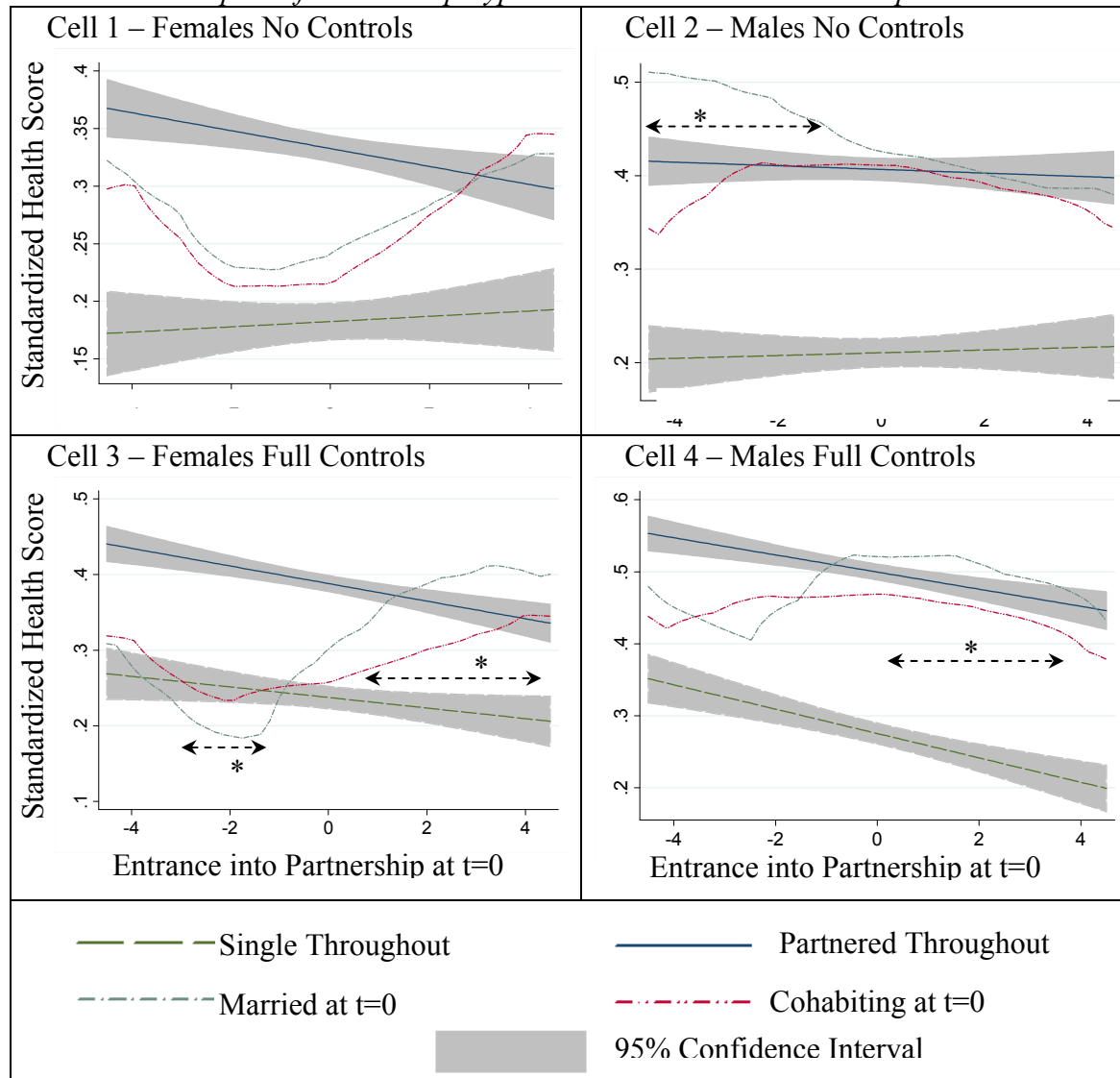
The descriptive analyses presented above suggest that selection both into partnership and by partnership type exists, and they paint a plausible picture of differences in partnered life for both men and women. In the second set of the analyses we examine the salience of the four hypotheses laid out in figure 3.1 for health by partnership status. Figure 3.2 shows results of those who enter into a partnership compared to those who do not, either remaining single or partnered throughout the time period. In figure 3.3, we contrast the health trajectories of those who entered into a cohabiting union with those who got married during the observation period. Finally in figure 3.4, we present results for the groups who got partnered during the observation period decomposed by partnership type and stratified by region (Québec vs. the other Canadian provinces). Table 3.4 summarizes these findings marking supported theories with a ‘Y’ and unsupported theories with an ‘N’. We discuss these results in turn below.

The first two cells of figure 3.2 show the bivariate relationships between partnership status and health, controlling only for age, while the second set of cells shows results after inclusion of covariates. In this figure, we show 95% confidence intervals for the comparison groups of the single and married throughout. Though these intervals have been omitted for those entering partnership to avoid visually overburdening the figure, it is important to note that they are roughly equal in size to those shown. In figures 3.3 and 3.4, we explicitly highlight periods where differences are significant periods.

The results provide a nuanced view of the ways that partnership interacts with health over time. Women who entered into partnership during the observation period were positively selected, being healthier on average prior to the transition than single women. However, in the two years prior to partnership they also show deterioration in

health. When controlling for covariates we still see these differences: women start the period significantly healthier but become less healthy in the two years prior to partnership when compared to people who remained single throughout. They benefit significantly

FIGURE 3.3: *Impact of Partnership Type and Entrance into Partnership*



Note: * Designates when Married and Cohabiting trajectories were significantly different at $\alpha = 0.95$, bounds are shown using arrows

from partnership; however, ending the period higher than their baseline health, and similar to women who were married throughout. Contrary to our hypothesis it appears that negative selection may play a role for women entering into partnerships in Canada. These results also offer partial support for the partnership benefits hypothesis.

In contrast, positive selection appears to be operating for men in the bivariate models, as the health of those who entered into partnership does not differ from that of those the partnered throughout. After the adjustment for controls, men's health was still positively selected. However, they were no longer healthier than those who were partnered throughout, suggesting indirect selection (selection on observable health-related factors that are not the dependent variable – income, education, employment, etc.). Finally, these men showed significant cleaning up in the years prior to partnership. By the time of the entrance into their partnerships, formerly single men's health matched that of men who were partnered throughout.

TABLE 3.4: *Summary of Support for Four Hypotheses*

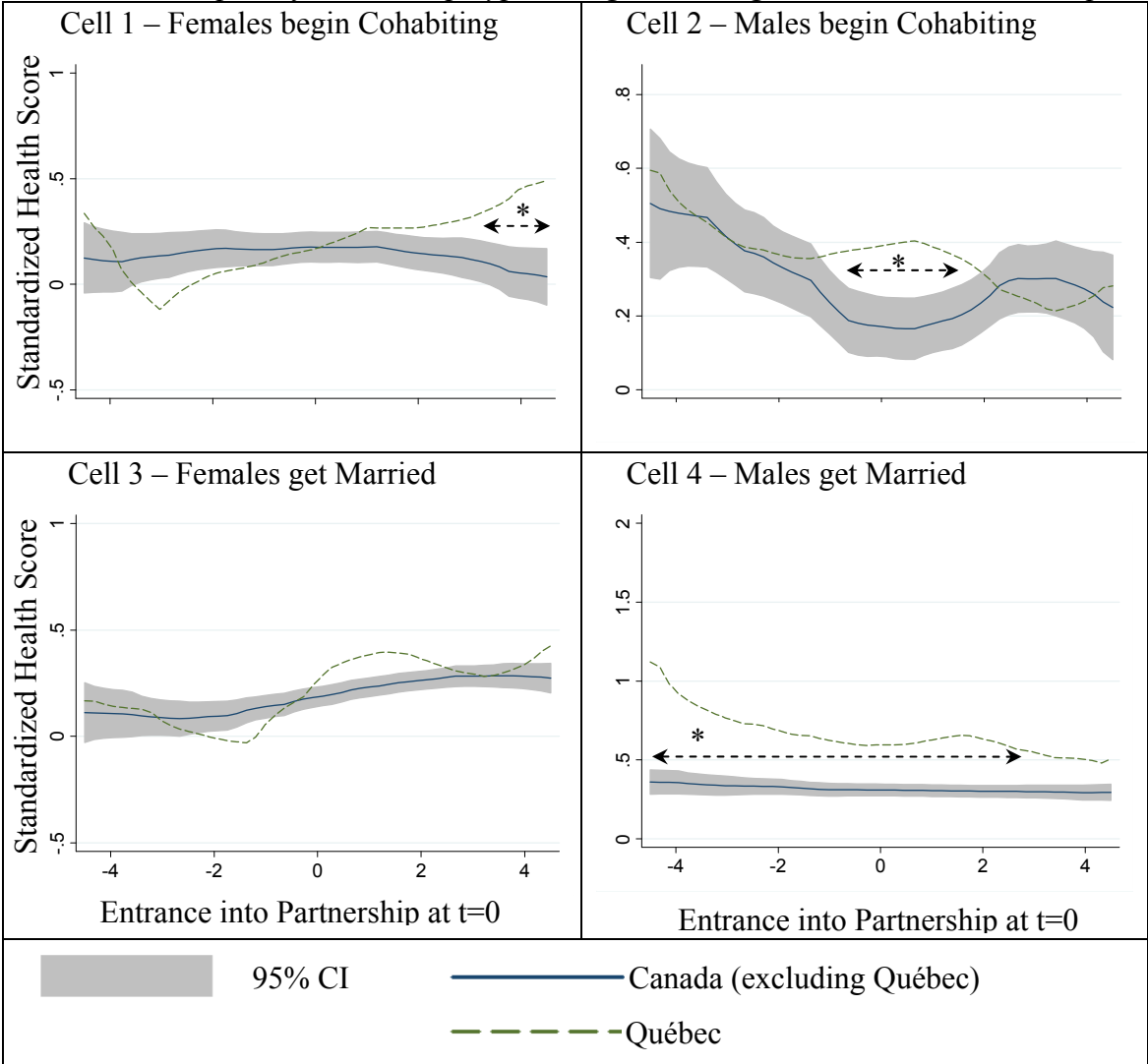
<i>Fig.</i>		<i>(Reference)</i>	Partnership Benefits (PB)	Positive Selection (PS)	Cleaning Up (CU)	Negative Selection (NS)
	Females		Y	N	N	Y
3.2	Males		Y	Y	Y	N
	Females	Married	<i>(Cohabit)</i>	More	.	.
3.3	Males	Married	<i>(Cohabit)</i>	More	Indirect	More
	Females	Cohabited Québec	<i>(Canada)</i>	More	.	.
3.4		Married Québec	<i>(Canada)</i>	.	.	.
	Males	Cohabited Québec	<i>(Canada)</i>	More	.	.
		Married Québec	<i>(Canada)</i>	.	More	.

Figure 3.3 separates the health trajectories of those who got partnered in the observation period by partnership type. In this figure, significant differences ($\alpha = 0.95$) between partnership types have been highlighted using an asterisk with length of time of the significant periods demarcated by arrows. Here, again, gender differences are striking, with women experiencing negative health selection, and men experiencing positive health selection, regardless of partnership type. However, for both genders, those

who got married experienced stronger health benefits and did so more rapidly than those who cohabited.

Figure 3.4 shows the fully adjusted health curves for women and men comparing Québec respondents to those in other provinces in Canada. Cells 1 and 2 show women and men who enter into cohabiting partnerships, while cells 3 and 4 respectively show

FIGURE 3.4: *Impact of Partnership Type in Regions during Entrance into Partnership*



Note: * Designates when Married and Cohabiting Curves were significantly different at $\alpha = 0.95$, bounds are shown using arrows

women and men entering into marital partnerships. Women who began cohabiting gained significantly more in health benefits in Québec by the end of the observation period than

they did in the rest of Canada. In contrast, males entering into cohabiting partnerships in Québec showed significantly better health in the year before and the year after partnering, suggesting a ‘halo’ or ‘honeymoon’ effect (see e.g. Zimmermann and Easterlin 2006). There were no significant differences between women in Québec and those in the rest of Canada in their marital-health profiles. Moreover, women who cohabited in Québec followed the same health trajectory as those who got married in Québec and Canada. In contrast, men who married in Québec show a significantly greater positive selection than either cohabiters in Québec or indeed men entering any partnership in the rest of Canada.

Together this suggests that cohabiting in Québec is not strongly differentiated from marriage. For women in fact, the only significant difference emerges from cohabiters in other Canadian provinces, who do not experience the health benefits of their married counterparts or of the partnered in Québec. For men instead, it was the married in Québec who exhibited a distinctively stronger pattern of positive selection.

DISCUSSION

In this paper we sought to understand the complex relationship between partnership and health in Canada by using four major theories extant in the literature. We have shown first that there is significant Health Selection (both positive and negative) and that partnerships do appear to confer health benefits. The following section takes each of the four hypotheses illustrated in Figure 1, and summarizes pertinent findings.

Partnership Benefits

Our results provide straightforward support for the partnership health benefits hypothesis, for both men and women, and married and cohabiting (though only in Québec) (Gove 1973; Rogers 1995; Waite 1995; Wilson and Oswald 2005). However,

these benefits also depended on the intersection between gender and the policy context. Thus, for women, marriage was more beneficial to health than was cohabitation. The exception was Québec, where cohabitation brought the same health benefits than marriage. Indeed, the extent of the benefit to cohabitation seemed to depend on length of time together, suggesting that the stability of a relationship is likely more important than the type of partnership when discussing health benefits. This benefit was quite large, and was pervasive.

Both women and men who married seemed to gain over those who cohabited outside of Québec and that both saw significant benefits of around half of the difference between the two comparison groups (single and partnered throughout). Moreover, we know from other research that poor self-rated health is related to a two-fold increase in risk of mortality (Burström and Fredlund 2001; DeSalvo, Bloser, Reynolds, He, and Muntner 2006). Under these assumptions, our results predict a likely change in risk of mortality due to the benefits of cohabiting for women in Québec of around 0.5 SD and for women getting partnered in the rest of Canada of around 0.25 SD. This translates into a step of about 0.25-0.5 points on the overall self-rated health scale (after controls) and thus may be related to a decreased risk of mortality of around 6.2% and 24% (depending on starting position) (DeSalvo et al. 2006: pp. 271).³¹ Considering that health tends to decline over the life course, as we saw with many of these curves, these gains in health remain non-trivial. Indeed, while these individuals are unlikely to be engaged in a

³¹ This may not be enough to offset the elevated risk that smoking has on all-cause mortality after inclusion of controls (OR = 1.65 on page 206 of Blair, Steven N., James B. Kampert, Harold W. Kohl, III, Carolyn E. Barlow, Caroline A. Macera, Ralph S. Paffenbarger, Jr, and Larry W. Gibbons. 1996. "Influences of Cardiorespiratory Fitness and Other Precursors on Cardiovascular Disease and All-Cause Mortality in Men and Women." *JAMA* 276:205-210.) as has been suggested by Gardner, Jonathan and Andrew Oswald. 2004. "How is mortality affected by money, marriage, and stress?" *Journal of Health Economics* 23:1181-1207.

persistent upward trajectory, these gains, even if transient, may “reset” these individuals’ health trajectories at a higher level, thus forestalling later decline that occurs inevitably with aging.

Positive Selection

The results also supported the theory of positive selection, but for the most part does not follow Williams and Umberson’s (2004) statement that positive selection was wholly responsible for the relationship between marriage and health. Rather, in this sample positive selection acted in concert with partnership benefits to create social inequalities in health (as previously argued in Waldron, Hughes, and Brooks 1996). Indeed, it seems as though for men positive selection explains around half³² of the relationship between partnership and health, while benefits explain the other half. Positive selection was, however, less evident with women, thus going against our hypothesis for this mechanism. Indirect selection was also an important factor and was particularly evident among men who married as compared to men who cohabited (indirect support hypothesis 2c). However, indirect selection was not the only component, indeed the strongest evidence for (direct) positive selection came from men who got married in Québec. However, even in this case, this selection was not significant enough to argue that such selection accounted for the entire relationship.

Cleaning Up

Our findings do support the hypothesis posited by Duncan et al. (2006). We saw men become healthier in the two years prior to partnership (table 3.3.4), suggesting that indeed what may approximate positive selection in two time-point models (Williams and

³² This refers to the placement of the health trajectory of those who entered partnerships between (distance from each was similar) those who were single throughout and those who were partnered throughout.

Umberson 2004) may be related to other ‘causal’ elements that happen prior to partnership, especially for men. The nature of this cleaning up may be debated, and may not necessarily simply refer to a conceptually causal mechanism as originally argued (non-cohabiting partnership → fewer risky behaviours) but rather may be quasi-selective (potential partnership → reduction in risky behaviours → partnership) as those who are trying to attract a mate ‘sell’ themselves as healthy, suitable partners. However, as males who did enter into partnership did not experience any downward drift after partnership, these two possibilities are interpretably the same, and distinguishing them empirically is beyond the scope of this study. Finally, men did clean up for marriage but not for cohabiting partnerships, again in support of our hypothesis, suggesting that partnership type may define small differences in everyday behaviours that then explain larger health outcomes.

Negative Selection

Contrary to our hypotheses, we find evidence of negative health selection into marriage among women in Canada. While women who get partnered begin the observation period substantially healthier, they were also much more likely to show health deterioration in the two years prior to partnership. There is little theory regarding why this may occur, however it could relate to other health behaviors, specifically the increase in BMI preceding partnership (Averett, Sikora, and Argys 2008). Single women in this sample were earning comparable salaries to men and do not earn more upon partnership. Assuming that earning equals power, these higher earners may therefore be pushed into finding a partner because they are becoming less healthy. Conversely, there may be timing reasons related to the upcoming partnership that leads to such negative

selection, in particular it may be that the entering into a partnership is stressful yet the benefits are limited until it is evident that a relationship is stable (or the relationship is good enough to become stable). This finding suggests a new and interesting line of research focusing on understanding how health interacts with life to create partnership for women, while also suggesting that partnership benefits may be larger for women than previously thought, given the “catch-up” that occurs post-partnership.

CONCLUSION

In this study we sought first to test hypotheses from the literature regarding the role of selection and causation in creating partnership disparities in health. We showed that selection played only a limited role in explaining this pattern for women, though positive selection did explain about half of the relationship for men. We also showed that partnership benefits were important for both men and women in Canada and Québec. Finally, by relying on the natural social experiment that Québec’s social policies and marital patterns provide, we illuminated how the intersection between partnership type and regional policy shape these health trajectories: partnership type was important, but more so when social protections were limited.

In this study there were limitations in the data. Firstly, the SLID has very limited measures of health. In order for this study to work, we required a regular measurement of health that did not depend on access to healthcare and was comparable: the best measure provided in the SLID was self-rated health. Perfect would have been to have a continuous measure of objectively rated health including biomarkers along with the more standard and well known self-rated health measures. However, self-rated health is a useful measure and was used here without prejudice. Secondly, we introduced some selectivity

by eliminating the observations of those who dissolved their partnerships. Partnership dissolution introduces some significant biases that were deemed problematic to our study, specifically the negative bias of dissolution events. However, removing these observations means that what we study here refers to those who enter into stable partnerships, an increasingly select group. Moreover, while we believe that we show a causal benefit of partnership to health, some of this relationship could be impacted on by this selection – is it that beneficial partnerships stay together and non-beneficial partnerships do not? There are reasons to think that this might be true, however we believe that this supports our thesis that over time partners benefited from their partnerships, be they cohabiting or marital partnerships, and that this gain was significant though selection was also clear.

These results suggest that partnership matters to health in part because it guarantees supports for partners above and beyond what the state may provide. Insofar as those guarantees are required, the formalization of that partnership will matter as well: marriage defers risk only when it is riskier to be single (or a single parent).

Public policy may seek to think about the role of the state in regulating, or relying upon, the family. Here we showed that family patterns are determined in part by public policy. However, we also showed that a very particular subset of the population gets married and that when they do so is related to external factors. This should not be surprising, but is important to consider when thinking about creating equitable policy. Reliance on the family as a public good may be fiscally interesting, but doing so leaves behind all those who either lack partners, or whose partnerships are not stable enough or endowed enough to protect individuals. As such, leaving healthcare, old age care,

pensions, disability, etc. (i.e. household risk) to partners will first leave many behind *and* will make younger individuals more careful and selective about their partners (both in making and breaking relationships).

Preamble to Chapter 4.

The last two chapters have considered the impact of partnership on health within Canada and the U.S. Findings, both in terms of which theory finds the most evidence and how gender differences presented themselves varied across the two countries. This paper considers explicitly why we might expect differences to arise in how partnership and health relate between the two countries – what about the U.S. differs from Canada? What does not? How does this matter for gender? The following chapter enables direct comparison between the countries by using internationally comparable measures along with harmonized data and methods. The analysis section tests the importance of partnership to health in both contexts, highlighting the similarities and differences between Canada and the U.S. We argue that policy context can be used to help explain existing differences in the selective and causal relationship between partnership and health.

4. Political Context and the Relationship between Gender, Health and Partnership

Authors: Sean Clouston, Amélie Quesnel-Vallée

Author Contributions: SC is responsible for the conception and design of the study, data analysis, and drafting of the paper. AQV advised on the design, analysis and interpretation of the data, and critically revised the article for intellectual content.

ABSTRACT Partnered individuals live longer healthier lives. Yet, these benefits do not accrue equally between genders, as partnered men gain ten years on average, while women gain only four. Four hypotheses help to explain this relationship between partnership and health, two postulating causal effects: partnership benefits and cleaning-up, and two positing selective processes: negative selection and positive selection. These hypotheses posit mechanisms that are likely to affect genders differently. Moreover, the impact of each hypothesis may differently affect genders depending on state policies meant to protect women and men as they proceed through the life course. Using comparable data from the U.S. Panel Study of Income Dynamics and the Canadian Survey of Labour and Income Dynamics, we test the selective and causal relationships evident during entrance into partnership. We stratify these analyses by gender and public policy context in order to highlight differences. We model non-linear longitudinal health curves as respondents approach and enter partnerships. In Canada, partnership benefits were evident; women were negatively selected and men were positively selected. In the US, men and women were positively selected and showed temporary health shocks due to partnership. Thus, gender and health policies do seem to determine how people partner and the health impact of that partnership.

Married men live an average of 10 years longer than single men, while for married women the gain is only 4 years (Waite 1995). Reasons often given for the difference between single and partnered individuals can be summarized by four general hypotheses with gendered implications: *partnership benefits*, where men receive the vast majority of the benefits provided usually by women; *positive selection*, when partners select healthier, more ‘competitive’ spouses; *cleaning-up for partnership*, whereby males reduce risky behaviors in order to seem more attractive to their potential mate; and *negative selection*, where older, sicker men actively seek a spouse to act as health insurance and caretaker, whilst women seek employed men in order to benefit from the more formalized health insurance benefits. However, a careful reading of the literature indicates that selection and benefits may occur in tandem. Moreover, which theory dominates may depend on context-specific factors, as they can modify the levels of risk that a partner’s health brings to a partnership. Thus, partner selection and benefits do not operate in a vacuum, and are subject to significant policy intervention. For instance, incentives towards picking healthy mates (positive selection) will be more important in places where healthcare and disability insurance are delegated to the family. The purpose of this paper is to explore the selective and causal mechanisms involved in forming cohabiting and marital unions, or ‘partnerships’, in two different policy realms.

FOUR HYPOTHESES

a) Partnership Benefits

Researchers who argue that there are benefits to marital and cohabiting partnerships often suggest that these partnerships are highly beneficial for the health and economic wellbeing of individuals and populations (Becker 1991; Kiecolt-Glaser and

Newton 2001; Lillard and Waite 1995). Proponents of this argument have suggested that the overall health benefits resulting from being in a cohabiting partnership like marriage “may be as large as the benefit from giving up smoking” (Wilson and Oswald 2005, p. 3). Some have explained that benefits result because cohabiting partnerships often act as health, sickness and disability insurance when healthcare is expensive or unavailable (Smith, Frazee, and Davidson 2000).

Many have recently suggested that stable partnerships may provide more health benefits with time and therefore any perceived health benefits may accrue slowly and with time (Wilson and Oswald 2005), while others have noted that singlehood is harmful to health and thus any partnership seems beneficial (Joutsenniemi et al. 2006). In all cases partnerships are seen as beneficial to the health of the partners (Hughes and Waite 2009; Tucker, Friedman, Wingard, and Schwartz 1996). However, it has been just as clear that gender defines the types and impacts of benefits from partnership, with women generally benefitting less in health than men (Gove 1973; Murphy, Grundy, and Kalogirou 2007; Trovato and Lauris 1989; Waite 1995; Wu, Penning, Pollard, and Hart 2003).

Curve (a) in figure 4.1 illustrates the basic partnership benefits approach, which could be extended to include stable relationships by showing health for those who entered into partnership increasing with time, though this is likely to taper off at some point once all benefits are realized. Partnership benefits will be supported if those who enter partnership see a non-linear increase in health after partnership.

b) Positive Health Selection

Becker (1991) suggests that positive health selection may be important when choosing a partner because it ensures that the partner will be able to fulfill their

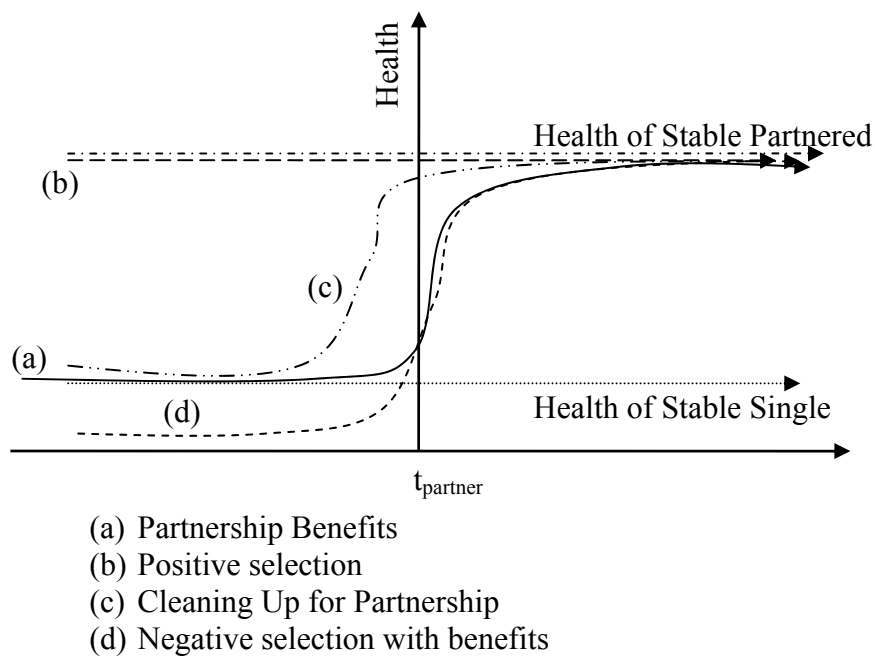
anticipated responsibilities. Evidence for positive selection has been shown for women who were not employed full-time (Waldron, Hughes, and Brooks 1996). Indeed, the influence of positive selection hypotheses is so strong that it has spurred many to accept that partnership are not beneficial (Williams and Umberson 2004). Moreover, we can also posit that this is more important in contexts where poor health in a spouse is a real and known path towards bankruptcy and poverty (Himmelstein, Thorne, Warren, and Woolhandler 2009; Himmelstein, Warren, Thorne, and Woolhandler 2005). Little is known as to the gender differences in positive selection. In seminal analysis, Becker (1991) argues that the incentive to choosing a healthy partner does not depend on gender. This may depend on policy context however, as in places where healthcare ensures the survival of the family in the case of ill health, positive selection may be more important for the (often male) breadwinners than others in the household. Positive selection, shown as curve (b) in Figure 4.1, will occur if singles entering into a relationship are healthier before entrance into partnership than those who remained single throughout.

c) Cleaning Up for Partnership

A challenge to the preceding hypothesis suggests that partners “sell” themselves by changing their health behaviors prior to (Duncan, Wilkerson, and England 2006), or shortly after entering a cohabiting partnership (Lewis et al. 2006). In their study Duncan *et al.* (2006) find that a significant change in men’s health behaviors occurs in the twelve months before entering into a cohabiting partnership, and that the year after partnership also leads to lowered risky behaviors among individuals involved in high-risk drug-use. Both partners could potentially benefit, though men are often believed to benefit more as their riskier behaviors leave them with more to gain. This suggests that only men have a

lot to lose by failing to ‘clean up’ for partnership. However, it may also be the case that ‘cleaning up’ is more important in part because men’s health is directly related to the financial well-being of the family, especially in male breadwinner systems and systems with low social protections. As such, we may expect that men’s ability to clean up is important for their ability to partner. Cleaning up for partnership, shown as curve (c) in Figure 4.1, will be supported if in the period prior to the start of a partnership, the health of individuals increases significantly.

FIGURE 4.1: *Differing Explanations for Inequalities in Health Arising from Marital Status*



d) Negative Health Selection

Finally, negative health selection occurs when those who are already ill select into cohabiting partnerships, while ‘adverse selection’ is when those who are less ‘attractive’ (economically, educationally, etc. – but not less healthy) are more likely to partner. This

was originally posited to apply only to older men (Lillard and Panis 1996). Such a process may be especially true in circumstances where institutional, non-familial, healthcare does not delegate the risk of illness to the family. Negative selection is most likely to define the relationship for those whose health does not define their current or future economic prospects, and has been shown for young women (Cheung and Sloggett 1998) and for older men (Lillard and Panis 1996). As can be seen in Figure 4.1 curve (d), negative selection occurs when those who enter into a partnership are in worse health prior to cohabitation than are singles. Finally, it is important to note that while these hypotheses have distinct theoretical positions, that more than one may be present in our analysis.

The four hypotheses investigated above depend substantially on the gender of the respondent and by the context in which that gender is expressed. Public policy defines the risk versus rewards structure and may unintentionally modify the relationship that partnership has on health. This topic is considered in greater depth in the following section.

THE STATE

The incentives involved in assortative mating may be more important in an environment where the state has left the healthcare and disability insurance responsibilities in individuals' and families' hands. Thus, the Health Selection and Social Causation patterns may be specific to the context of the individual. If the state does not offer social protections or benefits, the family must in order to guarantee the safety of its members. This means that poor state protection may force potential partners to give more weight to the assessed health risks of potential mates in their selection process. Thus, a

greater burden placed directly on the family rather than the state, might affect how and when benefits accrue within partnership, while also changing the incentive structure involved in selecting a partner.

Two countries that differ in their social protections, but are similar in many other ways, are Canada and the U.S. The following section discusses the important differences in gender and health policy between the countries.

Welfare State Comparisons

Welfare regime hypotheses often lump Canada and the U.S. together as ‘Liberal’ Welfare states (Esping-Andersen 1990). Yet, when a fuller range of policies are considered, differences in social policy between Canada and the U.S. are arguably vast (Scruggs and Allan 2006). Indeed, social and gender theorists have noted the differences in the degree of ‘defamilialisation’ due to differences in gendered social policy between Canada and the U.S. (Bambra 2004; Bernard and Boucher 2007). Moreover, when doing comparative policy analyses, some have argued that focusing on specific instances of variations in social policy may be more fruitful than larger generalized hypotheses (Olsen 1994). This paper compares Canada and the U.S. to understand how specific public policy differences might change the ways that partnership interacts with health (see e.g. Siddiqi and Hertzman 2007). The following discusses some of the most important gender and health policies (including maternity leave, sickness insurance and healthcare) relevant to partnership and health in the U.S. and Canada, noting briefly that the lack of one policy is as telling as is the existence of another.

Cross-national differences in policies pertinent to Gender and Health

Family programs in the U.S. provide much less support to parents than those in Canada. Indeed, while the number of mandatory weeks of maternity leave puts Canada and the U.S. in the same low coverage category among OECD countries (van den Berg, Parent, and Masi 2004), important differences in specific health and gender policies remain. Since 1982 Canada has stood in sharp contrast to the U.S. in terms of its financial support, parental leave and population coverage by offering at least 17 weeks of maternity leave in every province (Baker and Milligan 2008). In Canada, 17 weeks of maternity leave is insured for up to 55% of the mothers' wages via the employment insurance (EI) program, with employers supplementing the level of pay as part of benefits packages. Since 1999,³³ this has been extended to include 35 additional weeks of parental leave, thus providing at least a year's worth of parental leave in every province of Canada (TBCS 2009). The Canadian system nevertheless leaves 10% of employed mothers ineligible for benefits. Maternity leave is substantially different in the U.S., where it is extremely limited and highly unequal. There is no federal policy mandating minimum leave benefits, and any parental leave is defined by employers rather than governments. Thus, mothers receive between 0 and 12 weeks of unpaid maternity leave and only at businesses of more than 50 employees (limiting potential users to about 46% of the female labor force) (OECD 2001, pp. 151).

Sick leave in Canada is covered through the Employment Insurance (EI) program and covers up to 80% of people who fall ill, with benefits paying out for up to 15 weeks of illness (Scruggs and Allan 2006). On top of this coverage, the Canada and Québec Pension Plans (C/QPP) cover extended leaves of absence due to illness or disability

³³ For all but British Columbia, where maternity leave was extended in 2001: Baker, M and K Milligan. 2008. "How Does Job Protected Maternity Leave Affect Mothers' Employment?" *Journal of Labor Economics* 26..

(Campolieti and Goldenberg 2007). This level of coverage is considered middling in strength in the OECD countries. Nevertheless, it stands in stark contrast to the benefits offered in the U.S. where sickness and disability insurance, available only from the private sector, covers only 30% of the workforce – low-income families simply cannot pay for coverage (BLS 2006).

Healthcare is one of the most marked differences between the U.S. and Canada. In both countries, healthcare is primarily delivered privately by doctors on a fee-for-service basis. In Canada, physician and hospital services are paid for and delivered primarily by the government via a progressive income tax-based system, administered at the provincial level, and delivered universally to residents of Canada (Goldsmith 2002). Yet, holes in public coverage exist, notably with regards to medication, dental and eye services. This explains why 30% of total health expenditures in Canada come from the private sector (split fairly evenly between out-of-pocket payments and private insurance). Private health insurance is primarily offered through employment benefits, and thus only covers about 36% of those aged 18-29 and 72% of those aged 30-49 (Clouston and Quesnel-Vallée 2006). However, as this supplementary private health insurance is perceived to play only a marginal role in care provision, it is not likely to affect partnership to the same extent as primary private health insurance does in the U.S.

In contrast, the U.S. does not offer universal health insurance or mandate health insurance coverage, instead relying primarily on employer provision of health insurance for the adult population of working age. Coverage is offered as a benefit to employees *and increasingly less frequently, to their spouses*. However, with marital homogamy, individuals and their spouses often share employment and educational characteristics,

thus resulting in a double jeopardy for lower SES couples (Blau and Gilleskie 2006). Moreover, there is no governmentally-mandated minimum package in health insurance, and thus any existing coverage may be inadequate to cover the total costs of medical care. This undoubtedly underlies the fact that 62.1% of personal bankruptcies in the U.S. in 2007 were due to medical costs, and that 75% of those were to individuals with health insurance (Himmelstein, Thorne, Warren, and Woolhandler 2009). Thus, in the U.S., health insurance is an asset that is not randomly distributed in terms of either access or comprehensiveness (Adams, Lucas, and Barnes 2008; Olsen 2007).

The differences cited above may modify the risks and rewards that individuals face when finding partners in these two countries (Garrison 2007). Specifically, in Canada the universality of healthcare and the availability and coverage of both sickness and disability insurance reduce the risk posed by a partner for devastating health costs and financial loss, while comprehensive maternity and parental leave increases the family's ability to both maintain their earnings and spend time caring for others.

While we cannot say that those who are finding partners think explicitly about finances and health when choosing a partner, cross-national differences in public policy affect incentives involved when finding a partner. This implies that policy has the potential to change the ways that populations in the U.S. and in Canada select, are selected into, and finally benefit from partnerships.

OBJECTIVES

The objective of this paper is to examine the interplay of health selection and partnership benefits on health, focusing explicitly on how these processes differ by Gender and Public Policy.

DATA

Data for this study include harmonized data from the Survey of Labour and Income Dynamics (SLID) collected by Statistics Canada (Canada 2009) and from the Panel Study of Income Dynamics collected at the University of Michigan (ISR 2009). The SLID is a six-year annually observed refreshing household panel study, from which we used panel 3 representing the period between 1999 and 2005 (Duddek 2007; Lutz, Sauv  , and Wallace 1999). The PSID is a longitudinal panel dataset that originally followed 9000 families from which data on health was available from 1984-2005. We use all partnership transitions from these years, but limit the range of the analysis to match with the maximum range of those in Canada. Variables used here were harmonized for cross-national comparability by the Cross-National Equivalence File (CNEF) (Frick, Jenkins, Lillard, Lipps, and Wooden 2007). Multiple imputation using both longitudinal model-based and nearest neighbor methods have been used to impute missing data on income by Statistics Canada and for the PSID similarly by analysts in the CNEF, any other missing data were included in the analyses as separate groups within the control procedure itself. There were 15,632 respondents in the SLID with 92,386 included observations, with similar numbers (25,862 persons over 100,512 observations) in the PSID. Response rates in the SLID are about 85% for the first year with follow response rates above 90% (StatsCan 2009). The PSID's response rates in 1968 were 76%, with longitudinal response rates maintaining at around 97% though the longer time period implies that more individuals have left the sample with time (ISR 2009). In both cases, weights provided account both for cross-sectional representativeness and for attrition

with time.³⁴ Analyses have been run using Stata 10/SE. Analyses and descriptive statistics have been weighted to the total populations using supplied weights. In view of the research questions, we have restricted the sample to individuals between 18 and 50 years of age.

METHODS

Our method provides a visual assessment of health trajectories of individuals entering into partnership, with the comparison group contrast of the stably partnered and the stably single. Thus, we first plot the average health over time of those who are respectively in partnership and single throughout the period of observation. We then plot these same curves for those who entered into a partnership during the observation period, centering the data on the incidence of partnership.

We use longitudinal non-linear methods to model health curves as respondents enter partnerships. The data described above allows us to observe individuals as they pass through the partnership transition. In trying to understand that transition, time for this study was reformatted to center around the transition point. A first necessary assumption is that transitions are assumed to occur uniformly between two discordant observations. We model the period prior to and following entrance into a partnership in an effort to use real data to replicate figure 4.1 above, in an extension of Ashenfelter & Card (1985) who conceptually compare this method to an observed natural experiment. For those who were partnered or single throughout, curves were generated using time centered at random in the observation period. The health curves that we generate are smoothed using

³⁴ Researchers involved in the early years of the PSID have suggested that this problem does not significantly affect findings relating to partnership Lillard, Lee and Linda Waite. 1990. "Panel Versus Retrospective Data on Marital Histories: Lessons from the PSID. ." in *Individuals and Families in Transition: Understanding Change Through Longitudinal Data.*, edited by H. Beaton, D. Ganni, and D. Frankel: US Bureau of the Census..

a non-linear kernel weighted local polynomial smoother, which effectively takes the adjusted means over time and smoothes out the yearly fluctuations. Analyses are stratified by country and gender.

Controls are included implicitly by adjusting the dependent variable for mean differences in scores for each group using the following formula: $\dot{H} = H' - \bar{H}_k + \bar{H}_{gender}$, where H refers to an individual's self-rated health score, k refers to their specific sub-group, noting that all adjustments are made separately by gender.³⁵ In more practical terms, this adjustment cuts the field of 'k' possible categories defined by the independent variables and standardizes them to the overall means originally found for each gender. Put simply, this adjusts the health of poor black females to equal that of all other females. This maintains the separation of scores within each country by each gender, and allows us to control for the non-linear impact of income on one gender differently from that of the other. The following section discusses the measures used here.

MEASURES

Partnership Status

Both the SLID and PSID are household surveys. Thus, a cohabiting partnership was defined as a partnership where both persons were residing in the same household and responded as a couple. While cohabitation should not be equated with marriage indiscriminately, many of the proposed benefits of partnership argued for in the literature are similarly available to those who are in cohabiting partnerships, including economies of scale and availability of caretaking within the household. Thus, our definition of partnership as a cohabiting union is in line with current research on the benefits to

³⁵ When separating terms by Race, we use the same routine but rather than maintaining gender we maintain gender and race differences in post-control averages.

couple-hood, which tends to focus more on the negative impact of being single, or indeed of separating, rather than the difference between partnership types (Joutsenniemi et al. 2006; Stolzenberg and Waite 2005; Waite and Gallagher 2000). Notably, while we acknowledge that the distinction between marriage and cohabitation may meaningfully impact on selective and beneficial processes in both countries, it is also clear that they are carry different meanings in Canada than the U.S. We therefore used the measure harmonized by the CNEF, which records whether an individual was in a cohabiting partnership (marital or otherwise).

Gender

Gender was measured by self report in both surveys. Gender may define differential selective and causal relationships between partnership and health. All analyses were separated by gender.

Health

Self Rated Health (SRH) was used for three reasons. First, its ability to work as a yearly measure of health, unlike height, mortality, disease onset, etc. Second it provides a comparable and consistent measure that correlates to a number of other more objective measures of health such as mortality, morbidity, and functional limitation (DeSalvo et al. 2006; Idler and Benyamini 1997; Miilunpalo et al. 1997; Mossey and Shapiro 1982). Third, it was the only comparable indicator of health available on both surveys. SRH can be criticized for its reliance on subjective assessments (Bound 1991); however, as is well documented, this measure has excellent predictive validity for mortality in Canada, the U.S. and other countries (Miilunpalo et al. 1997; Mossey and Shapiro 1982; Quesnel-

Vallée 2007; Subramanian, Subramanyam, Selvaraj, and Kawachi 2009). SRH was reverse coded from excellent (5) to poor (1) for the purposes of this study.

Controls

Race & Immigrant Status The U.S. maintains a clear racial ordering along with continued segregation structures in cities and occupations (Massey 1990; Massey 2007). In Canada, immigrants are increasingly also visible minorities and often also experience discrimination, having reduced access to social provisions, more linguistic difficulties, worse employment and social outcomes, and greater residential segregation (Fong and Chan 2010; Kazemipur and Halli 2001; Li 1997; Reitz 2007; Warman 2007). Race cannot be excluded in the U.S. any more than immigrant status can be ignored in Canada. Race was included in a dichotomous score of Black and White.³⁶ Immigrant status was measured as native-born and immigrant Canadian. Both measures represent some form of disadvantage at the group level, though individuals are highly variable within groups.

Age was included in two ways: First, age was measured in years since birth to adjust for the fact that health decreases with age. Second, it was also measured by age cohort in the first wave of data to control for the possibility that different cohorts have different health over time.

Education was included here as a temporally invariant measure of highest level attained during the period. This was to help to control for selective differences in health that may accompany the understanding of higher education in the coming years.

Income was included here using post-taxation individual income. In Canada, income was extracted directly from the tax files records for the 80% of respondents who consented to this, and self-reported for the remainder of the sample. Data for the U.S.

³⁶ Other was included into the White category.

were self-reported. Income was adjusted to dollars in 1999. In both files, missing data was imputed by the agency in charge of data collection and cleaning (Statistics Canada or the Institute for Social Research) and collated by the CNEF.

Employment Status was self-reported, and distinguishes those who reported being employed at least part-time during the year from those who were not (those unemployed and out of the labour force). *Hours Worked for Pay* was also included. This includes a self-reported number of hours worked for pay during the year. In the SLID, this is done monthly as unemployment spells and sick leaves are also measured. This does not include household work, which may undercount the number of hours that women spend working.

Household Size is a measure of the number of people who are living in a household. *Number of children* in the household has also been included, using the count for the number of people in the household who are less than 18 years of age.

RESULTS

Table 4.1 shows the descriptive characteristics for the sample after weighting. Some differences between the samples are immediately evident. There were more people in the SLID who remained single throughout. The proportion of respondents who were employed is higher in the PSID as compared to the SLID. There are more males in the SLID. Finally, self rated health is slightly, if not significantly higher, in the SLID as compared to the PSID.

Figure 4.2 shows the resultant health curves after adjustment for important indirect selectors and spurious causal variables: age, education, income, household income, hours worked, race, immigrant status, employment status, household size, and

the number of children in the household. These curves have been stratified by gender and country. Each cell shows similar figures, each including: two control groups, those who

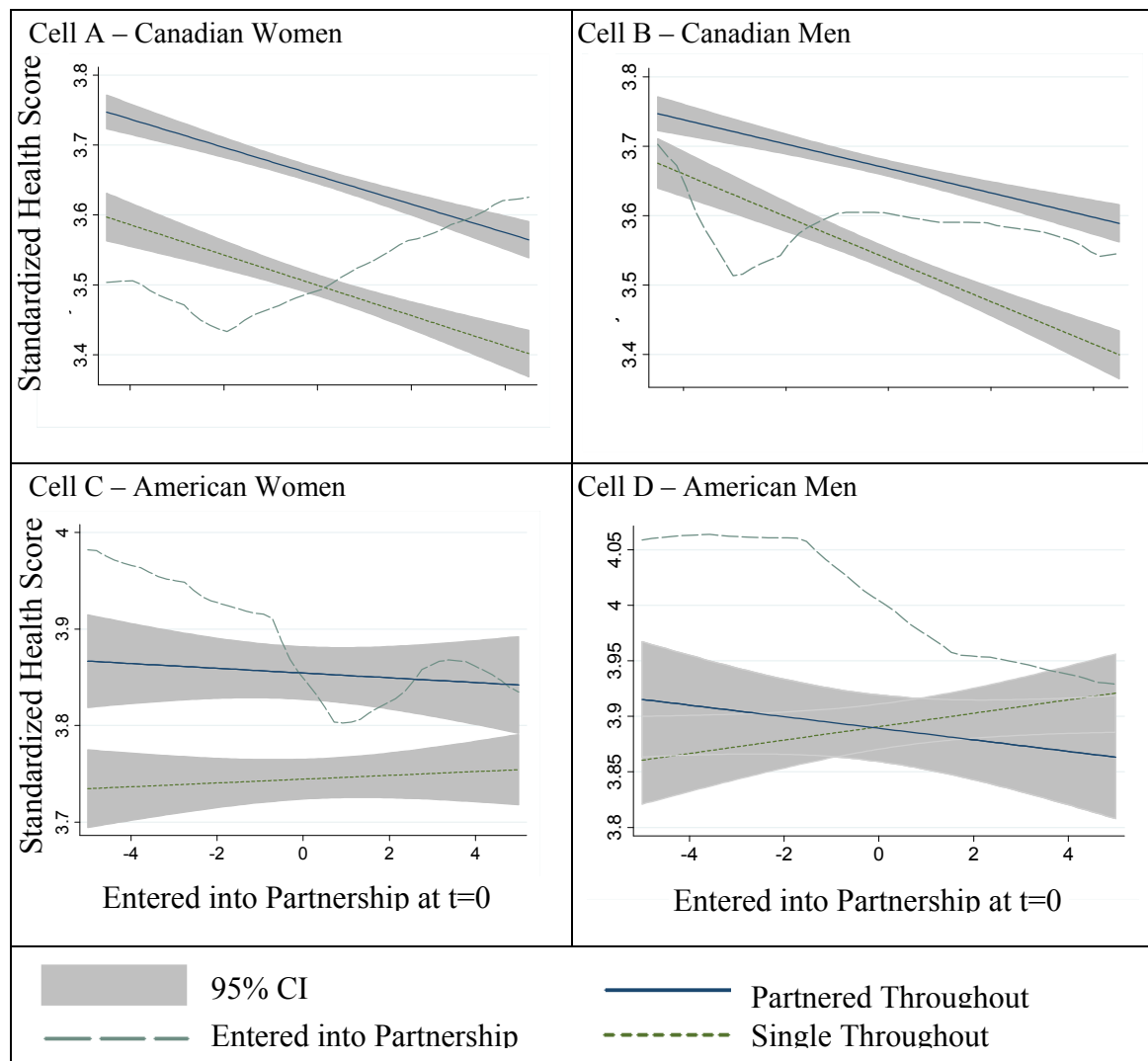
TABLE 4.1: *Descriptive Statistics*

	Percent		Dfference		
	Canada		U.S.		Canada-US sig.
Single Throughout	36.27		28.23		8.04 ***
Partnered Throughout	50.04		44.42		5.62 ***
Entered Partnership	13.69		27.35		-13.66 ***
Female	49.99		52.8		-2.81 ***
Race/Immigrant	15.21		13.65		1.56 **
Employed	78.82		85.64		-6.82 ***
	Mean	SE	Mean	SE	
Age	35.29	9.15	35.59	8.77	-0.30
Age Cohort	32.81	9.28	30.26	8.37	2.56
Household Size	3.28	1.36	3.08	1.49	0.20
Number of Children	1.17	1.12	1.29	1.23	-0.12
Hours Worked for Pay	1538.30	889.11	1489.33	1018.52	48.97
Income Groups	131.12	103.59	253.30	457.93	-122.18
Self-Rated Health	3.90	0.97	3.81	0.95	0.09
Imputed Health	3.86	0.94	3.80	0.90	0.06

were single throughout and those who were partnered throughout; and those who entered partnership at time 0.

In Canada, women (Cell A) were negatively selected on health supporting the Negative Selection Hypothesis. These same women then gained in health after partnership to match and even slightly exceed those who were partnered throughout supporting the Partnership Benefits Hypothesis. This pattern was similar among men in Canada (Cell B). However, among men there was some evidence of limited negative selection followed by a ‘cleaning up’ period in the 2 years before partnership. All partnership benefits for men were limited to a protection from deterioration rather than a clear gain in self-rated health.

FIGURE 4.2: *Health Curves after Adjustment by gender and Country*



In the US, patterns were starkly different. Evidence for the Positive Selection hypothesis was very strong, with both women (Cell C) and men (Cell D) showing much better health before the partnership than either comparison group. However, both men and women showed rapid deterioration during the transition into partnership.

Table 4.2 summarizes these findings for both the preceding and following populations. This table highlights the important differences between those in Canada,

who were more likely to exhibit beneficial changes to self-rated health due to partnership, and those in the U.S., who were more likely to be selected positively on health.

TABLE 4.2: *Hypotheses Summary Table*

		Partnership Benefits	Positive Selection	Cleaning Up	Negative Selection
Canadian	Males	Yes (Protective)	No	Yes	Yes
	Females	Yes	No	No	Yes
American	Males	No	Yes	No	No
	Females	No	Yes	No	No

DISCUSSION

In this study, we used cross-nationally harmonized data to argue that the impact of the transition into partnership was determined by the gender and social policy contexts. Specifically, we suggest that the defamilialisation of public policy changes the incentives related to selecting a partner, while also defining who gains from partnership.

One of the fundamental questions is not necessarily what does partnership entail, but rather who gets partnered and why? In Canada, we showed that it is not only the healthiest who find partners. Indeed, if anything negative selection (originally hypothesized by Lillard & Panis (1996)) was the most obvious pattern of selection, suggesting both that the benefits to partnership were sought out and that less healthy partners did not pose sufficient risk to individuals during partnership. Moreover, upon entrance into a partnership individuals showed significant increases to self rated health supporting the partnership benefits approach.

In contrast, in the U.S. we showed that those who partnered were much healthier than those who remained single. In the U.S. a lack of state protections may make it riskier to partner with someone who is ill – indeed, we know for instance that health problems

burden individuals and families more in the U.S. than in Canada (Clouston 2009; Himmelstein, Thorne, Warren, and Woolhandler 2009; Himmelstein, Warren, Thorne, and Woolhandler 2005). Thus, people are more likely to choose healthy partner. It is therefore not surprising that positive selection does not play nearly so significant a role in Canada that it does in the US.

While these results were significant, they were not qualitatively ‘large’; however, given the youthful nature of our sample and the fact that the difference in those who are partnered throughout and those who are single has been suggested to explain any life expectancy gap, we believe that these results may in fact mark the start of a cumulative advantage that others have hypothesized matter over a life course (Kuh and Ben-Shlomo 2004).

Our results imply that the reasons that women enter into partnerships may differ depending on what benefits they stand to receive from partnership, supporting Garrison’s (2007) thesis regarding the importance of public policy in generating the context in which people act. This is not a new hypothesis, and is indeed easily inferred from any incentives-based research such as that popularized by Levitt & Dubner (2005). In this case, the stakes to partnership are much higher in the US, where health problems, childcare, and the employment market are risky, whereas in Canada childcare and illness are less likely to lead to catastrophic losses and social systems exist that protect individuals regardless of their partnership status.

POLICY IMPLICATIONS

There were starkly different Health Selection processes defining entrance into a partnership in the U.S. when compared to Canada. In Canada, partnership benefits were

clear in Canada, though they were not in the US. Further, negative selection seemed the most important in Canada, whereas in the U.S. positive selection was most evident. Furthermore, in Canada only men seemed to clean up for partnership. Using our comparative data, we cannot say exactly to what extent any particular policy explored herein decisively explained the difference in Health Selection and Social Causation processes observed across the two countries. We believe that these differences underline the important effects that the risk/reward structure set up by the state has on the structure of the family, implying that greater protections for women may result in more beneficial, if less institutionalized, partnerships.

In Canada, risk associated to poorer health and illness are limited, as healthcare, employment insurance, disability insurance, and maternity leave provide at least minimum benefits to a large proportion of those in formal employment. Perhaps due to these benefits, good health appeared to play less of a selective role in partnerships. In fact, those in poor health were able to enter partnerships, and experienced marked health benefits as a result. In contrast, those who remained single emerged as the least healthy and remained so over time. Of course, an important consideration to keep in mind here is that the higher level of “singles” in the Canadian context may be masking other underlying processes that put these individuals at greater risk of ill-health, for instance the fact that this group includes single parents who have not partnered during the observation period.

In the U.S., health risks tend to be borne by individuals and their families. This was more pronounced role for positive selection, suggesting that individuals protect themselves from the health risks of a potential partner. Policy makers in the U.S. may

want to consider that those who are not healthy enough to attract a mate may be left without either state or family support. Moreover, those who are themselves assured of their continuing health may choose to remain single rather than to enter partnership, a case that is particularly likely among males. This has the potential to skew incentives and discourage marriage.

CONCLUSION

In this study, we modeled health trajectories around the entrance into partnerships in two countries. In Canada, we found evidence of both causal and selective factors, while in the U.S. selective factors were most prominent. However, the form of selection at play differed in both countries, indicating indirect policy incentives play a differentiating role. Policy makers create the context within which people act. We believe that leaving social protections to the family will create greater inequality in two ways: first by leaving those with sufficient family protection well behind, and second by highlighting the importance selecting healthy partners. Partnerships are risky, and the level of risk that an unhealthy partner brings to the family depends on whether health has the potential to define the family's well-being.

5. Discussion

In this dissertation, I consider the relationships between partnership and health outside of the normal argument pitting ‘causal’ against ‘selective’ theories. I considered a range of potential selective and causal reasons that social life and health would interact. This focus led to an interesting discussion and a fruitful theoretical backing for an important set of findings. The studies above discussed the importance of the partnership transition in understanding who, why and how people enter into marital and cohabiting partnerships. While in the past, ‘selective’ versus ‘causal’ factors have largely been seen as at odds, we found that the amount and types of both Health Selection and Social Causation were highly contextually specific and amenable to social and policy differences. In particular, we argued that social policy defined whether or not health was risky to individuals’ and their partnerships’ well-being, thereby defining the incentives involved in finding healthy partners. The following discussion deals with the most interesting findings, the methods, a consideration regarding comparative research within different policy contexts, and thoughts on the importance of each major variable considered, along with a commentary on the study as a whole.

FINDINGS

In this study I discussed the variety of selective and causal forces that could occur during the life course transition into partnership. In this, I argued that social forces work together to change the context in which Health Selection and Social Causation exist. Below, I underline what my dissertation suggests for the four major hypotheses outlined in chapter 1: Partnership Benefits (PB), Positive Selection (PS), Cleaning Up for Partnership (CU), and Negative Selection (NS).

Partnership Benefits

This forms the crux of the ‘causal’ argument regarding partnership and health. Due to limitations in the data, I cannot talk to the overall mechanisms at play in generating benefits to health; however, due to the repeated measurements and detailed information within the data, I can say that partnership benefits did play a role in determining how healthy individuals were in Canada. However, the importance of partnership benefits was directly related to other social correlates. Partnership type (marriage or cohabitation) defined different benefits trajectories in the data for both men and women in Canada. Both partnership types saw benefits; however marriage seemed to exhibit larger benefits than did cohabitation. However, in the U.S. these benefits were much less evident and there seemed even to be a detrimental aspect to partnership in the immediate period after partnering.

The comparisons shown in the third and fourth chapters support the idea that benefits are more evident in some policy contexts than in others. It seems as though partnership benefits are more evident when partners and partnerships are less risky. This was also true with regard to partnership type, which mattered more when partnerships were more risky. Together this suggests that conclusions about how the family affects health may be non-generalizable, but rather specific to the context in which the family functions. Put simply, ‘marriage matters’ only when being ‘not married’ (i.e. single or cohabiting) is risky.

Positive Selection

Selection was very important in our sample. Indeed, most of the results shown here suggest that both indirect and then direct selection are extremely important to understanding why partnership matters to health. Williams & Umberson (2004) argue

that this is entirely able to account for the relationship between partnership and health. In some ways this dissertation supports their account, but largely I believe that the results shown in these studies suggest the necessity of having a more nuanced view of both selection and causation. Firstly, it was obvious that there was significant selection in the entrance into partnership. In the U.S., positive selection accounted for the majority of the relationship between partnership and health. In Canada and Québec there were important and evident benefits to partnership among women.

Thus, positive selection was evident throughout, but was more evident in places with fewer social supports. People are strategic and likely make choices that are in their best interests; however what is ‘in their best interests’ may change significantly. Social protections do two things. First, they provide benefits to people who are faced with uncertain employment and family-related situations including single parenthood, unemployment, health problems, etc. Second, they structure the incentives and the supports that people understand and can rely upon when deciding whether to move in, whether to formalize their relationships, and whether their current potential mate is ‘risky’ as a partner to their own financial security in the future (Garrison 2007). In a context where health matters to financial security, people have an incentive to consider both their own health as well as the health of potential partners.

Cleaning Up

What cleaning up for partnership suggests is that positive selection is important enough that individuals *know* that they must change in order to seem a suitable partner and/or parent. Cleaning up theory suggested that those entering into more formalized partnerships change their health behaviours in order to sell themselves as potential,

suitable, or committed mates. We saw this to play a role only for males getting married. Indeed, while we see no evidence for this in the U.S., we find this with regards to marriage in Canada. Cleaning up for partnership was not a dominant factor with regards to partnership and health; however it does play a small role for certain sub-populations.

Negative Selection

Negative health selection may help us to understand why healthy people may choose to ‘settle’ with their partners at a particular time. Our evidence suggests that in Canada where healthcare and social assistance are universal, that people choose to commit to their partnerships in part because of reductions in health. Negative selection was important mostly to Canadian women in our sample. While we are unable to explain why the benefits work, it does highlight the importance of time when considering assortative mating and partnership selection.

Summation

This study found that the U.S. data supported hypotheses surrounding *Positive Selection*, while in Canada the results supported the concept that there were *Partnership Benefits*, though selection also played a role in Canada. What also became obvious was that these results depended in part on partnership type and gender. To generalize, partnership type (married versus cohabiting partnerships) mattered to some degree, but largely only modified the overall findings. Those who married were usually healthier than those who cohabited: if there was positive selection, those who cohabited were still positively selected, though they were less healthy than were those who married, when we saw health benefits, those who married sometimes saw more than those who cohabited.

Gender played an important role in determining the health trajectories. However, how this played out depended significantly on both partnership type and on region of residence. Women were less positively selected and saw more partnership health benefits than did men. This suggests that which explanation is important depends in part on gender, so it is not enough to say ‘it is all positive selection’ or ‘partnership benefits explain this relationship’ but rather that how health relates to partnership is context specific, may define (and be defined by) the level of partnership formalization (dating versus cohabitation versus marriage), and does differ by gender.

Perhaps the most convincing argument explored here was that risk defined how partnership related to health, and the role that marriage played in that relationship. What we argued was that risk mattered to how selection was used, and that in places/situations where risk was high, marriage was also more important. The role of risk is one that has yet to be explored in the marriage literature in any but the most abstract terms (Becker (1991) for instance claims that healthier (more energetic) partners are better because they can take on the multiple tasks inherent to family life). This is a topic that must be explored further to understand how, why, to whom, and when ‘marriage matters’ to health.

COMPARATIVE POLICY CONTEXT

Countries differ significantly in their welfare policy contexts (Esping-Andersen 1990). However, more than decommodification, defamilialisation and gendered health policy defines what risks that people must consider when creating a family (Bambra 2004; Bernard and Boucher 2007). The family stands in for the state when individuals have problems and the state does not offer protection. These risks are known, evident,

and discussed and as Garrison (2007) points out, they define incentives that shape selecting partners and forming partnerships. The strength of the policy comparisons used in this dissertation is that they have allowed us to consider the *unintended impact* of policy structures on the everyday life a country's citizens. Specifically, we argued here that due to defamilialisation and increased social protections evident in Québec over Canada, and Canada over the US, the health-related risk that partners impose on partnerships was amenable to change, thus impacting both on family formation and eventually on the benefits received from the partnership. Comprehensive and universal healthcare available in Canada but not the U.S. provides protection external to the family for potentially devastating health problems, currently the leading reason for bankruptcy in the U.S. This difference generates different incentives when finding a partner in the U.S. as compared to Canada. While it is important to an individual's financial well-being that their partner is healthy in the U.S., this is much less important in Canada where the state can be relied upon both to provide disability and illness benefits while also guaranteeing healthcare costs do not cripple the finances in the partnership.

This may also have implications for partnership type. Cohabitation is more used in Canada than in the U.S., though this is almost entirely due to Québec and not the rest of Canada (Beaujot and Wang 2009). People may use marriage as a way to offset or partially guarantee commitment of another employable person in the face of an unsure future. However, as individuals are empowered to guarantee their own support, the importance of selecting healthy individuals for marriage is reduced while the incentive to choose partnerships when they are beneficial is raised.

This study relied heavily on both within-country and between-country analysis. Comparative studies are difficult in part because research is necessarily limited in the extent that it can guarantee comparability between two contexts. Comparability is a significant problem, with a variety of potential limitations. Here we tried to maximize the comparability in the data by using comparable datasets through the CNEF and a comparable measure in SRH. We also used a set of countries, Canada and the U.S., that are geographically proximate and culturally similar. Differences and limitations in this research are obvious; however Canada and the U.S. are some of the best cases for comparison available worldwide.

GENDER AND PARTNERSHIP TYPE

Throughout the study, I analyzed gender separately. Women and men get into relationships for different reasons, and they stand to gain differently from them. We know that while the benefits of partnership can be comprehensive, there are a lot of risks to partnership. Insofar as health is risky, then we should expect that those who are finding partners try to defer any risk that a partnership entails. The results shown herein suggest that genders are selected into partnership differently and that they benefit differently from them. However, while it was true that differences by gender existed in each country, it was also clear that the form that these gender differences took depended on their nation of residence.

Women

The literature asserts that women benefit less from partnership than do men (Dempsey 2002). Waite (1995) estimates that partnership gains are only 40% as large for women as for men. We showed here that women who enter into partnerships were

selected by health in the US, but were more likely to select negatively into marriage in Canada. Extending Dempsey's (2002) argument, this may suggest that women in Canada have more power to choose partners than they do in the U.S. where positive selection was the norm. Positive selection on health suggests that health matters to people selecting partners, an issue that seems to matter more to those who are partnered in places with fewer social supports. Partnership is one way that is often used to help guarantee an individual's, a mother's, and a child's well-being; however, as partnerships can dissolve, the impact of this dissolution may depend on the nature of the policy context and partnership type. Maternity and parental leave, disability insurance, sick leave, and health insurance all work towards guaranteeing that women and their children are not left behind if their partners leave, become ill, are disabled, or die. As such, women in nations with more generous social policies can guarantee that they will be cared for even when on their own, while those in less protective societies must offset risks by selecting the healthiest partners available. Women are often seen as being disadvantaged both in society and in the family; however, this dissertation suggests that the extent of disadvantage depends in part on the policy context.

Men

We expected men to see the largest gains from partnership, but this hypothesis was not substantiated by the data. Instead we saw that men were largely positively selected by partners on health. In both countries, positive selection was evident, and in Canada it played a stronger role with marriage than with cohabitation. This selection was both direct and indirect. Together, these suggest that men are not gaining much from the social resources often attributed to partnership and marriage, but rather are likely being

excluded from partnership depending on various economic, employment, educational and health attributes. Healthy men were more likely to find partners. This was especially obvious in the U.S. This suggests that support for the arguments relating partnership to health may rely on the differences between people deemed ‘partnerable’ or ‘marriageable’ versus those who remain single. The importance of these selectors in men mirrors the impact that these statuses have on the overall well-being of families in times of difficulty. In the U.S., this is substantially more important than in Canada, and as such selection was much more important in the U.S. than in Canada. The findings presented here suggest then that in creating inequality in households’ financial well-being, we have generated levels of exclusion that include the ability to find partnerships and to benefit from them.

Partnership Type

What we have shown here supports the theory (see e.g. Waite 1995; Waite and Gallagher 2000) that marriages can be more beneficial to health than are cohabiting partnerships. However, this was only shown in places where cohabitation was less accepted and provided fewer benefits. For example, while in the US, cohabitation provided few gains and worse overall health among. In Canada cohabiters gained on average as much as did those who married (though this gain took longer to manifest in full). Thus, partnership type mattered in Canada and the U.S. differently.

Throughout this discussion I have focused in part on partnership type: specifically, marriage versus cohabiting partnerships. Marriage does not need to differ substantially from cohabitation, though the commitment that exists in marriage differs substantially from that expected in cohabiting partnerships. Here, we argue that policy

works in part to define how marriage differs in its effect from cohabitation. There are lots of things that differ between these definitions both in Canada and the U.S., however only in the U.S. are health insurance benefits both sourced at and determined by marital certificates. It is thus our assertion here that these, and other formalized benefits, form the bulk of the importance of partnership type to health.

METHODOLOGY

The methods used in this dissertation were new, and developed in order to illustrate issues that have, until now, largely escaped inquiry. The first, and perhaps most important strength, was in the organization of time. This is in many ways intuitive and can be seen in a variety of other studies. What we did was to organize time by watching those who entered partnership. This allowed us to consider the selective processes that underlie the causal claims in a particularly intuitive way. In particular, it allows us to organize time in the same way that people experience it themselves: as a series of life course stages and meaningful events (Elder 1985; Elder 1983; Elder Jr 1977; Elder Jr, Johnson, and Crosnoe 2003). This does require significant data resources, as we can never know when respondents will cohabit or marry a partner, but rather can only observe a random set of individuals and watch as they do partner with others.

The second strength lies in our use of a non-linear, intersectional adjustment routine. In doing this, we were not required to assume linearity and we effectively managed to reduce variability due to measured biases in an efficient and effective way. One limitation of this approach is that we cannot provide a table that shows what effect each of these measures has on the outcome. Moreover, the points at which continuous measures are cut into categories may be important to this adjustment. However, because

the dependent variable and the temporal variables can be maintained as continuous as desired, the reliance on categories for adjustment is not significant enough a detriment to cause us to ignore the outcomes shown here. Indeed, sensitivity analyses adjusting the cut-points did not meaningfully change the results or the conclusions made here.

Finally, our reliance on graphical methods to analyze this information was a significant aid. The graphical representations used here allowed us to focus on adequately investigating each part of these patterns with respect to partnership. Moreover, it allowed us to consider the various changing relationships between health and time that could bias our conclusions if we were to make an assumption. The graphical representation was an important strength, allowing for greater depth of analysis as well as more intuitive and interesting theoretical consideration.

LIMITATIONS

A number of limitations exist to this study. First and foremost, we cannot explicitly measure why individuals chose their partners. However, we did show whether individuals entering partnerships were healthier, and to what extent they gained in health after partnership.

Secondly, in removing observations for those in the process of dissolving a relationship, we have selected in those with the best relationships, especially over time. This was necessary, as it reduced any bias arising from the ill effects of partnership dissolution, while also giving us a good baseline comparison with those who are actually in the marital market at any moment.

Third, other pathways exist that may affect the relationship between partnership and health. We may for instance argue that it is not policy that differs, but culture. While

it is easy to suggest other factors that differ between the regions that were studied here, it is much harder to engender a reason that selective forces might differ between these places.

Fourth, cohabitation has increased in popularity both in Canada and the U.S. during the time that is covered here: this is a problem with any longitudinal analysis of this type and may cause issues with the analysis shown here; however, this is true of any long-term study and is not limited to partnership type alone. If the impact of cohabitation is important, it is likely that it has changed the nature of selection towards including more people, thus increasing positive selection while also increasing any likely benefits. However, the analysis of this temporal-specificity of this problem is well beyond the scope of this analysis.

Though the SLID and the PSID were deemed to be comparable by many research and data harmonization initiatives, many differences remain. First, they do not measure income data in the same way. In this study, our methods effectively reduced this problem by agglomerating the data into within-country percentiles and adjusting directly, and since income was not substantively central to our analysis, this was sufficient to maintain comparability. However, this underlies the larger problem that forces us to question the comparability claims. In particular, the samples have different periods of data collection, have vastly different response rates, included fundamentally different ways of measuring income and employment information, and are different in structure.

Finally, I wrote above that what we were interested in doing here was to “organize time in the same way that people experience it themselves: as a series of life course stages and meaningful events” (pp. 130). This field, including this study,

effectively ignores the sequential portion of life course research. Specifically, many life course researchers make important claims regarding the impact of *first* marriage as opposed to higher order marriages. I have agglomerated all those entering into partnerships and ignored the question of ‘order’ of partnership. I have done this for two reasons. First, marital markets are currently described without attention to order. Second, I did not have sufficient sample size to differentiate higher order partnerships (including cohabiting partnerships) and their relationship to health. A huge body of literature exists regarding the existence and function of ‘marriage markets’ in determining how people select partners and who it is that they select. This body of literature has largely focused on the impact that education, region, and employment play in determining partnership outcomes and in particular homophily/homogamy. This literature includes all unmarried persons to be a potential mate and does not distinguish between persons who have been married or cohabited before and those who have not. There is little on how previous marriage changes the selective and causal patterning regarding partnership. This question and all the nuances that it implies are extremely interesting, but also clearly beyond the scope of this analysis.

Future Analysis

Together the limitations delineated above suggest directions for future analysis. Firstly, we should critically analyze the notion that there is only one marriage market and that all singles participate in it. We must consider the sociological importance of ethnic, age-based, regional, and linguistic systems to marriage markets. With special regards to health, we must consider that some of these marital markets are differently related to selective and causal partnership outcomes.

Along those lines, research should seek to understand how partnership type has changed and how this change has affected the selective and causal processes over time. Finally, while this analysis relies exclusively on quantitative methodology, it would benefit from in-depth analysis of the ways in which people select healthy partners. Greater knowledge of the role that different forms of both physical and mental health, health behaviours, health knowledge, and healthy attitudes play in finding a partner is necessary, questions that could be explored at length using qualitative studies.

CONCLUSIONS

In this dissertation, I examined the health processes involved first in finding a partner and then in living with them. In studying the literature, we found that four hypotheses related directly to the selection and causal arguments with regards to health that we termed: Partnership Benefits, Positive Selection, Cleaning Up, and Negative Selection. The literature favours the first and second of these. Largely we agree with this, finding that partnership benefits were most important in Canada and that positive selection was most important in the U.S. Moreover, we showed limited results with regards to cleaning up (only among men who married in Canada) and negative selection (evident among women who married in Canada).

Our findings suggest that the debate pitting causal arguments against selective ones is artificial. Instead, we would argue that the amount of causation clearly depends on the amount of selection. If only the healthiest people are selected to partner, there is little gain from partnership and much to lose if partnerships are unhealthy. In contrast, when marital markets include the unhealthy and healthy alike, there remains more to be gained – as those who are less healthy are able to gain from those things that they lacked without

a partner (e.g. social support, social interaction, increased financial resources). Thus, this dissertation supports both the argument that positive selection dominates in the U.S. while supporting the idea that partnerships can be beneficial with the simple caveat that the extent of these benefits depends on public policy makers.

POLICY IMPLICATIONS

Public policy is health policy, whether those policies refer to finances or to social supports. What we showed here is that public policy has two roles in family life, only one of which can be considered ‘intended’. The intended impact of social supports for mothers is that they will return to the workforce sooner after bearing children, that they are not financially hurt by illness, and that they will be faced with financial ruin in cases of disability or disease. However, these policies have an unintended impact as well: if health is risky, then it is extremely important to make sure that a chosen partner does not increase an individual’s risk of financial ruin due to illness. The role that policy has in modifying risk is important because it also defines the ability for people to identify suitable partners without regard to their health status.

A.1 Technical Appendix

The method used here incorporates a standard way of organizing the data and adjusts the measure for known similarities between individuals based on social determinants of health such as education, employment, and race. The problem that we pose in this study is how people change their health in relation to the transition into partnership, and how selection plays into this change: are people on average likely to be healthier or less healthy *before* partnership, and do they *become healthier* afterward.³⁷

This question implies a particular view of time that is focused not on year or age but rather on the life course transition. The way we viewed this, a non-linear change just following partnership or just preceding it constitutes evidence that there may be a causal effect of partnership. However, many methods fail because they ignore non-linear changes in time, which are to be expected around these transitions. This gives rise to some interesting problems. The first is a theoretical one – what if people are more likely to partner if they have a job or are (likely to be) educated? This is something we know to be true; moreover we know that those who are educated and employed are also tend to be healthier. As such, we sought to generate a responsive and analyzable, indeed hopefully intuitive, way of representing the findings that also allows us to incorporate multivariate controls so that we know that our findings are related to health and not simply to health-related observable variables (e.g. education, employment, income).

Representation is fairly simply put together. Given the graphical representation of the theories was possible, we endeavoured to replicate this representation in the analyses.

³⁷ This effectively reduces the usability of change-point models for our purposes, which rely on a particular point τ_i to be predetermined as seen here: $Y = \alpha + \beta_1(t_{i,j} - \tau_i)^- + \beta_2(t_{i,j} - \tau_i)^+ + \dots + \varepsilon_{i,j}$. These models are also somewhat hampered because they assume linear change leading up to and away from the ‘change point’.

This was particularly helpful in the theory and in the analyses due to the non-linear nature of the theoretical positions. Transitions mark the only point at which selection into and benefits from a life course stage can be studied simultaneously. Our approach needed to delineate the observation period accordingly. In our study, partnership forms the base of this transition.

What emerges is a situation where we have three kinds of people available to us in any yearly longitudinal study (and a fourth that we were not expressly interested in for the purposes of this study – those that dissolve partnerships): those who are partnered throughout, those who are single throughout, and those who make the transition from single to partnered life. These people experience time slightly differently: while those who are single or partnered throughout experience stability in their partnership domain, those who become partnered experience a significant life event that could be marked by both selection and a potentially beneficial change in their health afterwards (and over time).³⁸ Thus, in focusing on the transition we have created a non-linear problem that does not lend itself to testing using a standard regression framework.

Using individuals who do not experience a change in partnership as potential comparison groups allows us to consider the direct health selectivity. If those who are unhealthy are staying single while those who are already healthy are entering partnerships, then we can say that some selective process is occurring; however, data in general are ordered either by period of observation or by year (often both). Therefore, it is important to consider this change in time explicitly. The easiest way to do this is to

³⁸ We may also argue that those who partner their fourth time are different from those partnering their first time. Unfortunately, here our methods are limited by the small number of people partnering (and thus the number of different attributes we could in good faith consider), and in the definition of marital markets. There is only one marital market, and it includes those who have been partnered before. Indeed, for men these people seem to be particularly desirable as they find new partners relatively quickly.

center time on the transition for those who partnered, which allows us to focus explicitly on the shared changes prior to and immediately following partnership. Organizing time this way is not new (see e.g. Averett, Sikora, and Argys 2008), can be extremely helpful in understanding life course processes (Sliwinski 2010), but this approach has not yet been used widely.

Centering the data on a substantively interesting transition (here marriage/moving in together) effectively reorients the analysis to fit with the life course perspective in a way that allows us to theorize about the transition and important impacts therein. Clearly, only those experiencing a transition have an unambiguous centre point, so the comparison groups can be dealt with in two ways. First, they can be organized arbitrarily to match the same years of survey observation as those transitioning. Second, they can be ordered to replicate the year of observation. Since there is little reason to expect that those who are partnered throughout should *on average* change non-linearly, either orientation in time is defensible.

The transitional line is non-linear and many different outcomes may work together to show effects of substantive interest. In this study I used a locally-weighted polynomial smoother to give the curves a continuous characteristic: others have used similar curves but have kept them step-wise continuous functions though there is little substantive reason to believe that one is better (see e.g. Zimmermann and Easterlin 2006), so we assumed that our information represented a process that was continuous with time.

The desired output was known to be a non-linear, non-parametric, curve that we expected to lead to significant biases in any OLS regression analysis. Moreover, much of our analysis relied on considering selection explicitly, thereby reducing the usability of

more complicated regression analysis like fixed effects (often used for longitudinal panel analysis). However, important confounders exist that may help to explain some of the selection (indirect selectors) or some of the differential outcomes. These were therefore included using an adjustment routine that is best characterized as a within-group fixed effects adjustment. We noted that adjustment suggests that important factors affect the means of the groups of individuals, and that in adjusting the means of these groups, we are eliminating the ‘effects’ that these factors may have on the outcome. This is not unusual in the public health or demographic literatures when standardizing rates for the population. Rather than standardize rates, we adjusted the scores so that relationships disappeared in their effects on the dependent.

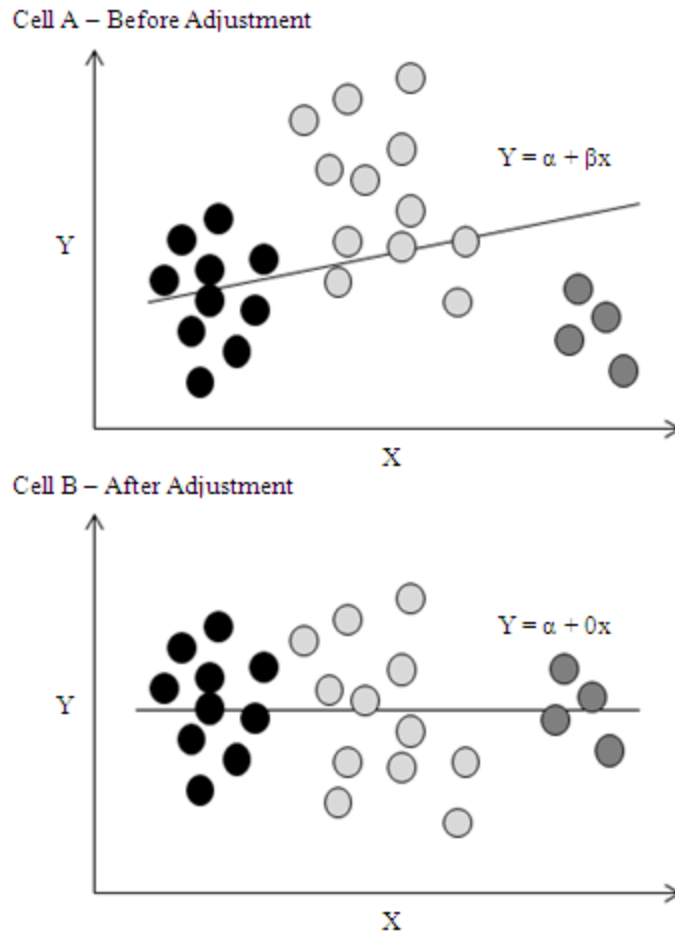
Figure A.1 shows what adjustment might look like in the bivariate case. As we see, removing the mean from each group results in an overall slope after adjustment of $\beta = 0$, while the intercept is dependent on what arbitrary number we add (α below). In this dissertation we have used two possible α ’s: 0 and the original gender-specific average $\bar{Y}$. Either can be used, and can be determined due to aesthetic concerns relating to whether you want 0 as the center or the original (and thus comparable or perhaps more tractable) scale.

This control process can be further simplified into the following equation (1):

$$(1) \quad \dot{H} = H' - \bar{H}_k + \bar{H}_{gender}$$

Here, the new health score ($\dot{H}$) is generated by taking the original score on H (Self-Rated Health) and subtracting off the ‘k’ group specific means and adding the arbitrary constant (here the original gender-specific mean, though by standardizing in chapter 3 above, we effectively replaced the gender specific mean with 0). Here, we must

FIGURE A.1: *Graphical Representation of Adjustment Process*



note that ‘k’ is determined by the number of groups evident in the measures used – so that if two measures are used they are in essence intersected or interacted against each other.³⁹ Thus, two dichotomous measures cut the set into 4 quadrants and remove the means for this group. Indeed, this cuts the dataset into k groups where $k = n_{x_1} * n_{x_2} ... * n_{x_j}$ where n is the number of categories extant in each variable x_i .⁴⁰

³⁹ If we were to then put these adjusted variables in a regression model, we would find that the correlation (effect) of the adjusted variable (age for instance) is reduced to naught while the effect of the important analytic variable remains while the effects of a correlated but unadjusted variable also remains.

⁴⁰ NB: Due to large sample size this remained possible for some time. However, it was necessary to keep the number of individuals in all k groups above 30 to maintain the statistical properties of the mean.

The question raised in the thesis above required a consideration of time in a specific way that required a view on the ways that ‘time’ worked towards generating effects. The literature was clear that adjustment was necessary, and that these adjustments should account for differences in intersecting social statuses. These conditions lead to the above consideration and the method outlined in this technical appendix.

A.2 References

- Adams, PF, JW Lucas, and PM Barnes. 2008. "Summary health statistics for the US population: National Health Interview Survey, 2006." *Vital and health statistics. Series 10, Data from the National Health Survey*:1.
- Ahmad, M, RI Gilbert, and AUN Naqui. 2008. "Assortative mating for height in Pakistani arranged marriages." *Journal of Biosocial Science* 17:211-214.
- Ahmed, Syed, Jeanne Lemkau, Nichol Nealeigh, and Barbara Mann. 2001. "Barriers to Healthcare Access in a Non-Elderly Urban Poor American Population." *Health and Social Care in the Community* 9:445 - 453.
- Ai, I, I Hiroyasu, T Hideaki, F Yoshihisa, M Tetsuya, Y Takesumi, I Yutaka, and T Akiko. "Marital status and mortality among Japanese men and women: the Japan Collaborative Cohort Study." *BMC Public Health* 7.
- . 2007. "Marital status and mortality among Japanese men and women: the Japan Collaborative Cohort Study." *BMC Public Health* 7.
- Anglewicz, PA, S Bignami-Van Assche, S Clark, and J Mkandawire. 2010. "HIV Risk Among Currently Married Couples in Rural Malawi: What Do Spouses Know About Each Other?" *AIDS and behavior* 14:103-112.
- Ashenfelter, O. and D. Card. 1985. "Using the Longitudinal Structure of Earnings to Estimate the Effect of Training."
- Averett, Susan L., Asia Sikora, and Laura M. Argys. 2008. "For better or worse: Relationship status and body mass index." *Economics & Human Biology* 6:330-349.
- Baker, M and K Milligan. 2008. "How Does Job Protected Maternity Leave Affect Mothers' Employment?" *Journal of Labor Economics* 26.
- Bambra, Clare. 2004. "The worlds of welfare: illusory and gender blind?" *Social Policy and Society* 3:201-211.
- Beaujot, R and J Wang. 2009. "Low fertility lite in Canada: The Nordic model in Quebec And the US model in Alberta." *PSC Discussion Papers Series* 23:1.
- Becker, GS. 1991. *A Treatise on the Family*: Harvard University Press.
- Bernard, P and G Boucher. 2007. "Institutional competitiveness, social investment, and welfare regimes." *Regulation & Governance* 1:213-229.
- Black, D., J. N. Morris, C. Smith, P. Townsend, and M. Whitehead. 1982. "Inequalities in health: the Black report; the health divide." *Harmonsworth (UK): Penguin*.
- Blair, Steven N., James B. Kampert, Harold W. Kohl, III, Carolyn E. Barlow, Caroline A. Macera, Ralph S. Paffenbarger, Jr, and Larry W. Gibbons. 1996. "Influences of Cardiorespiratory Fitness and Other Precursors on Cardiovascular Disease and All-Cause Mortality in Men and Women." *JAMA* 276:205-210.
- Blane, D., M. E. L. Bartley, and G. D. Smith. 1997. "Disease aetiology and materialist explanations of socioeconomic mortality differentials." Pp. 385-391, vol. 7: Oxford Univ Press.
- Blau, DM and DB Gilleskie. 2006. "Health insurance and retirement of married couples." *Journal of Applied Econometrics* 21:935-953.

- Bloor, M., M. Samphier, and L. Prior. 1987. "Artefact explanations of inequalities in health: an assessment of the evidence." *Sociology of Health and Illness* 9:231-264.
- BLS. 2006. "National Compensation Survey: Employee Benefits in Private Industry in the United States, March 2006." edited by U. B. o. L. Statistics. Washington, DC: US Bureau of Labor Statistics.
- Bound, John. 1991. "Self-Reported Versus Objective Measures of Health in Retirement Models." *the Journal of Human Resources* 26:106-138.
- Brah, A and A Phoenix. 2004. "Ain't IA Woman? Revisiting Intersectionality." *Journal of International Women's Studies* 5:75-86.
- Brien, MJ, LA Lillard, and SN Stern. 2006. "Cohabitation, marriage, and divorce in a model of match quality." *International Economic Review* 47:451-494.
- Bumpass, Larry L., James A. Sweet, and Andrew Cherlin. 1991. "The Role of Cohabitation in Declining Rates of Marriage." *Journal of Marriage and Family* 53:913-927.
- Burström, B and P Fredlund. 2001. "Self rated health: Is it as good a predictor of subsequent mortality among adults in lower as well as in higher social classes?" *Journal of Epidemiology and Community Health* 55::836-840.
- Burstrom, B. and P. Fredlund. 2001. "Self rated health: Is it as good a predictor of subsequent mortality among adults in lower as well as in higher social classes?" Pp. 836-840, vol. 55: BMJ.
- Callaghan, P and J Morrissey. 2008. "Social support and health: a review." *Journal of Advanced Nursing* 18:203-210.
- Campolieti, M and J Goldenberg. 2007. "Disability Insurance Denial Rates and the Labor Force Participation of Older Men and Women in Canada." *Atlantic Economic Journal* 35:59-75.
- Canada, Statistics. 2009. "Survey of Labour and Income Dynamics (SLID)." in *Definitions, Data Sources and Methods*, vol. 2009, edited by S. Canada. Ottawa, ON: Statistics Canada.
- Cherlin, Andrew, PL Chase-Lansdale, and C McRae. 1997. "Effects of Divorce on Mental Health through the Life Course." in *Hopkins Population Center Papers on Population*. Baltimore: Johns Hopkins University.
- Cheung, Y. B. and A. Sloggett. 1998. "Health and adverse selection into marriage evidence from a study of the 1958 British Birth Cohort." *Public Health* 112:309-311.
- Cheung, Yin Bun. 2000. "Marital status and mortality in British women: a longitudinal study." *Int. J. Epidemiol.* 29:93-99.
- Chiappori, PA, M Iyigun, and Y Weiss. 2009. "Investment in schooling and the marriage market." *The American Economic Review* 99:1689-1713.
- Clark, S, J Bruce, and A Dude. 2006. "Protecting young women from HIV/AIDS: the case against child and adolescent marriage." *International Family Planning Perspectives* 32:79-88.
- Clouston, Sean. 2009. "Health Selection in Income: Considering the Social Effects of Insurance Inequality." in *American Sociological Association Annual Meeting*, edited by M. Casper. San Francisco, CA: American Sociological Association.

- Clouston, Sean and Amélie Quesnel-Vallée. 2006. "Income, Health and Health Insurance: Longitudinal Health Selection in Logged Income by Health Insurance Status in Canada." in *McGill Social Statistics Master's Working Paper Series*, edited by J. Sandberg. Montreal, QC: McGill University.
- Crenshaw, K. 1990. "Mapping the margins: Intersectionality, identity politics, and violence against women of color." *Stan. L. Rev.* 43:1241.
- Dahl, Espen. 1993. "Social Inequality in Health - The Role of the Healthy Worker Effect." *Social Science and Medicine* 36:1077 - 1086.
- . 1996. "Social mobility and health: cause or effect?" *BMJ* 313:435-436.
- Dempsey, Ken. 2002. "Who Gets the Best Deal from Marriage: Women or Men?" *Journal of Sociology* 38:91 - 110.
- Denton, Margaret, Steven Prus, and Vivienne Walters. 2004. "Gender Differences in Health: A Canadian Study of the Psychosocial, Structural and Behavioural Determinants of Health." *Social Science and Medicine* 58:2585 - 2600.
- DeSalvo, Karen, Nicole Bloser, Kristi Reynolds, Jiang He, and Paul Muntner. 2006. "Mortality prediction with a single general self-rated health question." *Journal of General Internal Medicine* 21:267-275.
- Duddek, Christopher. 2007. "Data Quality in the 2005 Survey of Labour and Income Dynamics (SLID)." *Income Research Paper Series*, edited by S. Canada. Ottawa, ON: Statistics Canada.
- Duncan, Greg, Bessie Wilkerson, and Paula England. 2006. "Cleaning up their Act: The Effects of Marriage and Cohabitation on Licit and Illicit Drug Use." *Demography* 43:691 - 710.
- Dupre, Matthew E., Audrey N. Beck, and Sarah O. Meadows. 2009. "Marital Trajectories and Mortality Among US Adults." *Am. J. Epidemiol.* :kwp194.
- Dupre, ME and SO Meadows. 2007. "Disaggregating the effects of marital trajectories on health." *Journal of Family Issues* 28:623.
- Eikemo, T. A., C. Bambra, K. Joyce, and Espen Dahl. 2008. "Welfare state regimes and income-related health inequalities: a comparison of 23 European countries." *Eur J Public Health* 18:593-599.
- Elder, GH. 1985. *Life course dynamics: Trajectories and transitions, 1968-1980*: Cornell University Press Ithaca.
- Elder, Glen Jr. 1983. "The Life-Course Perspective." Pp. 54 - 60 in *The American Family in Social-Historical Perspective*, vol. 3rd, edited by M. Gordon. New York: St. Martin's Press.
- Elder Jr, GH. 1977. "Family history and the life course." *Journal of Family History* 2:279.
- Elder Jr, GH, MK Johnson, and R Crosnoe. 2003. "The emergence and development of life course theory." *Handbook of the life course*:3-19.
- Engels, F. 2009. *The condition of the working-class in England in 1844*: Cosimo Classics.
- Engels, Friedrich 1886. *The Conditions of the Working Class in England*. New York: Penguin Books.
- Esping-Andersen, G. 1990. *The three worlds of welfare capitalism*: Polity Press Cambridge.

- Esping-Anderson, Gosta. 1990. *Three Worlds of Welfare Capitalism*. Cambridge: Polity Press.
- Evans, R. G., M. L. Barer, and T. R. Marmor. 1994. *Why are some people healthy and others not?: the determinants of health of populations*: Aldine de Gruyter.
- Farr, W and GW Hastings. 1858. "Influence of marriage on the mortality of the French people." *National Association for the Promotion of Social Science Orientation: Association, Economic, Legal, Social Reform, Utilitarian Date Run: 1858-1885 indexed Publication Place: London Publication Frequency: Annual Periodical Location: British Library* 2:504-513.
- Fong, Eric and Elic Chan. 2010. "The Effect of Economic Standing, Individual Preferences, and Co-ethnic Resources on Immigrant Residential Clustering¹." *International Migration Review* 44:111-141.
- Frick, JR, SP Jenkins, DR Lillard, O Lipps, and M Wooden. 2007. "The Cross-National Equivalent File (CNEF) and its Member Country Household Panel Studies." *Schmollers Jahrbuch* 127:627-654.
- Fronstin, Paul, Lawrence G. Goldberg, and Philip K. Robins. 1997. "An Analysis of the Decline in Private Health Insurance Coverage between 1988 and 1992." *Social Science Quarterly* 78:44 - 65.
- Fu, Haishan and Noreen Goldman. 1996. "Incorporating Health into Models of Marriage Choice: Demographic and Sociological Perspectives." *Journal of Marriage and the Family* 58:740 - 758.
- Gahler, M. 2006. "" To Divorce Is to Die a Bit...": A Longitudinal Study of Marital Disruption and Psychological Distress Among Swedish Women and Men." *The Family Journal* 14:372.
- Gardner, Jonathan and Andrew Oswald. 2004. "How is mortality affected by money, marriage, and stress?" *Journal of Health Economics* 23:1181-1207.
- Garrison, M. 2007. "Reviving Marriage: Could We-Should We." *JL & Fam. Stud.* 10:279.
- Goldman, N. 1993. "Marriage Selection and Mortality Patterns: Inferences and Fallacies." *Demography* 30:189-208.
- . 2001. "Social Inequalities in Health: Disentangling the Underlying Mechanisms." *Annals of the New York Academy of Sciences* 954:118.
- Goldscheider, Frances and Linda Waite. 1991. *New Families, No Families? The Transformation of the American Home*. Berkeley, LA: University of California Press.
- Goldsmith, Laurie. 2002. "Canada." in *World Health Systems: Challenges and Perspectives*, edited by B. Fried and L. Gaydos. Chicago: Health Administration Press.
- Goldstein, JR and K Harknett. 2006. "Parenting across racial and class lines: Assortative mating patterns of new parents who are married, cohabiting, dating or no longer romantically involved." *Soc. F.* 85:121.
- Gouskova, Elena and Robert Schoeni. 2005. "Analysis of the Quality of the Health Data in the PSID: 1999-2003." University of Michigan, Institute for Social Research, Ann Arbor, MI.
- Gove, WR. 1973. "Sex, marital status, and mortality." *American Journal of Sociology*:45-67.

- Groot, W. 2000. "Adaptation and scale of reference bias in self-assessments of quality of life." *Journal of Health Economics* 19:403-420.
- Grossman, M. 1972. "On the concept of health capital and the demand for health." *Journal of Political economy* 80:223.
- Haas, Steven. 2007. "The Long-term Effects of Poor Childhood Health: An Assessment and Application of Retrospective Reports." *Demography* 44:113 - 135.
- Halfon, Neal and M Hochstein. 2002. "Life Course Health Development: An Integrated Framework for developing health, policy, and research." *The Milbank Quarterly* 80:433-479.
- Hall, David R. and John Z. Zhao. 1995. "Cohabitation and Divorce in Canada: Testing the Selectivity Hypothesis." *Journal of Marriage and the Family* 57:421 - 427.
- Henderson, V. R., M. Hennessy, D. W. Barrett, B. Curtis, M. McCoy-Roth, N. Trentacoste, and M. Fishbein. 2005. "When risky is attractive: sensation seeking and romantic partner selection." *Personality and Individual Differences* 38:311-325.
- Heymann, J. 2006. *Forgotten families*: Oxford University Press.
- Hill, Martha. 1991. *The Panel Study of Income Dynamics: A User's Guide*, vol. 2. Newbury Park, CA: SAGE Publications Inc.
- Himmelstein, D., D. Thorne, E. Warren, and S. Woolhandler. 2009. "Medical bankruptcy in the United States, 2007: results of a national study." *The American Journal of Medicine*.
- Himmelstein, D. U., E. Warren, D. Thorne, and S. Woolhandler. 2005. "Illness and Injury as Contributors to Bankruptcy." *Health Affairs* 24.
- Hughes, Mary Elizabeth and Linda J. Waite. 2009. "Marital Biography and Health at Mid-Life." *Journal of Health and Social Behavior* 50:344-358.
- Hurley, J and E Guindon. 2008. "Private Health Insurance in Canada." *Private health insurance and medical savings accounts: lessons from International experience*.
- Idler, E. L. and R. J. Angel. 1990. "Age, chronic pain, and subjective assessments of health." *Advances in Medical Sociology* 1:131-152.
- Idler, E. L. and S. V. Kasl. 1995. "Self-ratings of health: do they also predict change in functional ability?" *Journals of Gerontology Series B: Psychological Sciences and Social Sciences* 50:344-353.
- Idler, Ellen and Yael Benyamini. 1997. "Self-Rated Health and Mortality: A Review of Twenty-Seven Community Studies." *Journal of Health and Social Behavior* 38:21 - 37.
- Ikeda, A, H Iso, H Toyoshima, Y Fujino, T Mizoue, T Yoshimura, Y Inaba, and A Tamakoshi. 2007. "Marital status and mortality among Japanese men and women: the Japan Collaborative Cohort Study." *BMC Public Health* 7:73.
- ISR. 2009. "Panel Study of Income Dynamics." vol. 2009. Ann Arbor, MI: Institute for Social Research, University of Michigan.
- Iyigun, M and RP Walsh. 2007. "Building the family nest: Premarital investments, marriage markets, and spousal allocations." *Review of Economic Studies* 74:507-535.
- Joung, IMA, HD van de Mheen, K Stronks, FWA van Poppel, and JP Mackenbach. 1998. "A longitudinal study of health selection in marital transitions." *Social Science & Medicine* 46:425-435.

- Joutsenniemi, Kaisla E., Tuija P. Martelin, Seppo V. Koskinen, Pekka T. Martikainen, Tommi T. Harkanen, Riitta M. Luoto, and Arpo J. Aromaa. 2006. "Official marital status, cohabiting, and self-rated health--time trends in Finland, 1978-2001." *Eur J Public Health* 16:476-483.
- Kalmijn, M and JK Vermunt. 2007. "Homogeneity of social networks by age and marital status: A multilevel analysis of ego-centered networks." *Social networks* 29:25-43.
- Kazemipur, Abdolmohammad and Shiva S. Halli. 2001. "The Changing Colour of Poverty in Canada*." *Canadian Review of Sociology/Revue canadienne de sociologie* 38:217-238.
- Kerr, D, M Moyser, and R Beaujot. 2006. "Marriage and cohabitation: Demographic and socioeconomic differences in Quebec and Canada." *Canadian Studies in Population* 33:83-117.
- Kiecolt-Glaser, JK and TL Newton. 2001. "Marriage and health: His and hers." *Psychological bulletin* 127:472-503.
- Kiernan, Kathleen. 2002. "Cohabitation in Western Europe: Trends, Issues, and Implications." Pp. 3 - 31 in *Just Living Together. Implications of Cohabitation on Families, Children, and Social Policy*, edited by A. Booth and A. C. Crouter. Mahwah, NJ: Lawrence Erlbaum.
- Kim, Yong-Seong and Frank Staffore. 2000. "The Quality of PSID Income Data in the 1990's and Beyond." in *PSID Data Quality Guide*, vol. 2009. Ann Arbor, MI: PSID.
- Kok, Helen S, Diana Kuh, Rachel Cooper, Yvonne T van der Schouw, Diederick E Grobbee, Michael E. J Wadsworth, and Marcus Richards. 2006. "Cognitive function across the life course and the menopausal transition in a British birth cohort." *Menopause* 13:19-27.
- Kuh, D. and Y. Ben-Shlomo. 2004. *A Life Course Approach to Chronic Disease Epidemiology*: Oxford University Press.
- Lamb, KA, GR Lee, and A DeMaris. 2003. "Union formation and depression: Selection and relationship effects." *Journal of Marriage and Family* 65:953-962.
- Lantz, PM, JW Lynch, JS House, JM Lepkowski, RP Mero, MA Musick, and DR Williams. 2001. "Socioeconomic disparities in health change in a longitudinal study of US adults: the role of health-risk behaviors." *Social Science & Medicine* 53:29-40.
- Lazarsfeld, PF and RK Merton. 1954. "Friendship as a social process: A substantive and methodological analysis." *Freedom and control in modern society* 18:66.
- Le Bourdais, Céline and Évelyne Lapierre-Adamcyk. 2004. "Changes in Conjugal Life in Canada: Is Cohabitation Progressively Replacing Marriage?" *Journal of Marriage and Family* 66:929-942.
- Lefebvre, P. 2004. "Quebec's innovative early childhood education and care policy and its weaknesses." *POLICY* 53:52.
- Lefebvre, P and P Merrigan. 2005. "Low-fee (\$5/day/child) regulated childcare policy and the labor supply of mothers with young children: a natural experiment from Canada." in *CIRANO Working Papers: 2005s-08*. Montreal, QC: CIRANO.
- Levitt, SD and SJ Dubner. 2005. *Freakonomics: A rogue economist explores the hidden side of everything*: William Morrow & Co.

- Lewis, MA, CM McBride, KI Pollak, E Puleo, RM Butterfield, and KM Emmons. 2006. "Understanding health behavior change among couples: an interdependence and communal coping approach." *Social Science & Medicine* 62:1369-1380.
- Li, PS. 1997. "Self-Employment among Visible Minority Immigrants, White Immigrants, and Native-Born Persons in Secondary and Tertiary Industries of Canada." *Canadian Journal of Regional Science* 20.
- Lichter, Daniel T., Felicia B. LeClere, and Diane K. McLaughlin. 1991. "Local Marriage Markets and the Marital Behavior of Black and White Women." *The American Journal of Sociology* 96:843-867.
- Lillard, Lee A. and Constantijn W. A. Panis. 1998. "Panel Attrition from the Panel Study of Income Dynamics: Household Income, Marital Status, and Mortality." *the Journal of Human Resources* 33:437-457.
- Lillard, Lee and Constantijn Panis. 1996. "Marital Status and Mortality: The Role of Health." *Demography* 33:313-327.
- Lillard, Lee and Linda Waite. 1990. "Panel Versus Retrospective Data on Marital Histories: Lessons from the PSID. ." in *Individuals and Families in Transition: Understanding Change Through Longitudinal Data.*, edited by H. Beaton, D. Ganni, and D. Frankel: US Bureau of the Census.
- . 1995. "'Til Death Do Us Part: Marital Disruption and Mortality." *American Journal of Sociology* 100:1131-1156.
- Link, BG and J Phelan. 1995. "Social conditions as fundamental causes of disease." *Journal of Health and Social Behavior*:80-94.
- Link, Bruce G. and Jo Phelan. 2009. "The social shaping of health and smoking." *Drug and Alcohol Dependence* 104:S6-S10.
- Link, Bruce G., Jo C. Phelan, Richard Miech, and Emily Leckman Westin. 2008. "The Resources That Matter: Fundamental Social Causes of Health Disparities and the Challenge of Intelligence." *Journal of Health and Social Behavior* 49:72-91.
- Lund, R, P Due, J Modvig, BE Holstein, MT Damsgaard, and PK Andersen. 2002. "Cohabitation and marital status as predictors of mortality--an eight year follow-up study." *Social Science & Medicine* 55:673-679.
- Lundberg, Olle. 2008. "Commentary: Politics and public health--some conceptual considerations concerning welfare state characteristics and public health outcomes." *Int. J. Epidemiol.* 37:1105-1108.
- Lutz, Debbie, Judy Sauvé, and Willo Wallace. 1999. "1999 Preliminary Interview Questions." *Income Research Paper Series*, edited by S. Canada. Ottawa, ON: Statistics Canada.
- Lynch, JW, GA Kaplan, and JT Salonen. 1997. "Why do poor people behave poorly? Variation in adult health behaviours and psychosocial characteristics by stages of the socioeconomic life course." *Social Science & Medicine* 44:809-819.
- Macintyre, S., K. Hunt, and H. Sweeting. 1996. "Gender differences in health: Are things really as simple as they seem?" *Social Science & Medicine* 42:617-624.
- Maddox, George L. and Elizabeth B. Douglass. 1973. "Self-Assessment of Health: A Longitudinal Study of Elderly Subjects." *Journal of Health and Social Behavior* 14:87 - 93.
- Mare, RD. 1991. "Five decades of educational assortative mating." *American Sociological Review* 56:15-32.

- . 2008. "Educational assortative mating in two generations."
- Marmot, MG. 2004. *The status syndrome: How social standing affects our health and longevity*: Times Books.
- Marmot, MG and RG Wilkinson. 2006. *Social determinants of health*: Oxford University Press, USA.
- Masocco, M, M Pompili, M Vichi, N Vanacore, D Lester, and R Tatarelli. 2008. "Suicide and marital status in Italy." *Psychiatric quarterly* 79:275-285.
- Massey, DS. 1990. "American apartheid: Segregation and the making of the underclass." *American Journal of Sociology*:329-357.
- . 2007. "Residential segregation and persistent urban poverty." *Redress for historical injustices in the United States: on reparations for slavery, Jim Crow, and their legacies*:331.
- McCall, L. 2005. "The complexity of intersectionality." *Signs: Journal of Women in Culture and Society* 30:1771-1800.
- McDonald, James Ted and Steven Kennedy. 2004. "Insights into the 'Healthy Immigrant Effect': Health Status and Health Service use of Immigrants to Canada." *Social Science and Medicine* 59:1613 - 1627.
- Meadows, Sarah O., Sara S. McLanahan, and Jeanne Brooks-Gunn. 2008. "Stability and Change in Family Structure and Maternal Health Trajectories." *American Sociological Review* 73:314-334.
- Meadows, SO. 2009. "Family Structure and Fathers' Well-Being: Trajectories of Mental Health and Self-Rated Health." *Journal of Health and Social Behavior* 50:115-131.
- Michaud, P. C. and A. van Soest. 2008. "Health and wealth of elderly couples: Causality tests using dynamic panel data models." *Journal of Health Economics* 27:1312-1325.
- Miilunpalo, S., I. Vuori, P. Oja, M. Pasanen, and H. Urponen. 1997. "Self-rated health status as a health measure: The predictive value of self-reported health status on the use of physician services and on mortality in the working-age population." *Journal of Clinical Epidemiology* 50:517-528.
- Moen, P, D Dempster-McClain, and RM Jr. Williams. 1992. "Successful Aging: A Life-Course Perspective on Women's Multiple Roles and Health." *American Journal of Sociology* 97:1612.
- Mossey, J. M. and E. Shapiro. 1982. "Self-rated health: a predictor of mortality among the elderly." *Am J Public Health* 72:800-808.
- Murphy, M, K Glaser, and E Grundy. 1997. "Marital status and long-term illness in Great Britain." *Journal of Marriage and the Family* 59:156-164.
- Murphy, M, E Grundy, and S Kalogirou. 2007. "The increase in marital status differences in mortality up to the oldest age in seven European countries, 1990-99." *Population Studies* 61:287-298.
- Murray, JE. 2000. "Marital protection and marital selection: Evidence from a historical-prospective sample of American men." *Demography*:511-521.
- Musick, K and L Bumpass. 2006. "Cohabitation, marriage, and trajectories in well-being and relationships."

- Noar, SM and RS Zimmerman. 2005. "Health Behavior Theory and cumulative knowledge regarding health behaviors: are we moving in the right direction?" *Health Education Research* 20:275.
- Noel, Alain. 2006. "The New Global Politics of Poverty." *Global Social Policy* 6:304-333.
- OECD. 2001. "OECD Employment Outlook." Organization for Economic Cooperation and Development, Paris, FR.
- Ogle, William. 1885. "Letter to the Registrar-General on the mortality in the Registration Districts of England and Wales during the Ten Years 1871 - 80." in *Supplement to the 45th Annual Report of the Registrar General of Births, Deaths, and Marriages, in England*, vol. xxiii.
- Olsen, GM. 1994. "Locating the Canadian welfare state: Family policy and health care in Canada, Sweden, and the United States." *Canadian Journal of Sociology/Cahiers canadiens de sociologie*:1-20.
- . 2007. "Toward global welfare state convergence?: Family policy and health care in Sweden, Canada and the United States." *Journal of sociology and social welfare* 34:143-164.
- Oppenheimer, VK. 1994. "Women's rising employment and the future of the family in industrial societies." *Population and Development Review* 20:293-342.
- Pinquart, M and S Sorensen. 2006. "Gender differences in caregiver stressors, social resources, and health: An updated meta-analysis." *Journals of Gerontology Series B: Psychological Sciences and Social Sciences* 61:33-45.
- Preston, Samuel H. and Haidong Wang. 2006. "Sex Mortality Differences in the United States: The Role of Cohort Smoking Patterns." *Demography* 43:631-646.
- Quesnel-Vallee, Amelie. 2004. "Is it Really Worse to Have Public Health Insurance Than to Have No Insurance at All? Health Insurance and Adult Health in the United States." *Journal of Health and Social Behavior* 45:376-392.
- Quesnel-Vallée, Amélie. 2007. "Self-rated health: caught in the crossfire of the quest for 'true' health?" *International Journal of Epidemiology* 36:1161.
- Rahman, O., J. Strauss, P. Gertler, D. Ashley, and K. Fox. 1994. "Gender Differences in Adult Health: An International Comparison." *The Gerontologist* 34:463-469.
- Ratcliff, Caroline, Trina R Williams Shanks, Yunju Nam, Mark Schreiner, Min Zhan, and Michael Sherraden. 2007. "Assessing Asset Data on Low-Income Households: Current Availability and Options for Improvement." The Urban Institute: Center for Social Development, Washington University, St. Louis.
- Reitz, Jeffrey. 2007. "Immigrant Employment Success in Canada, Part I: Individual and Contextual Causes." *Journal of International Migration and Integration* 8:11-36.
- Ren, Xinhua Steve. 1997. "Marital status and quality of relationships: The impact on health perception." *Social Science & Medicine* 44:241-249.
- Rindfuss, Ronald R. 1991. "The Young Adult Years: Diversity, Structural Change, and Fertility." *Demography* 28:493-512.
- Rindfuss, Ronald R. and Audrey Van den Heuvel. 1990. "Cohabitation: A Precursor to Marriage or an Alternative to Being Single?" *Population and Development Review* 16:703-726.
- Rogers, Richard. 1995. "Marriage, Sex, and Mortality." *Journal of Marriage and the Family* 57:515-526.

- Ross, Nancy A, Michael C Wolfson, James R Dunn, Jean-Marie Berthelot, George A Kaplan, and John W Lynch. 2000. "Relation between income inequality and mortality in Canada and in the United States: cross sectional assessment using census data and vital statistics." *BMJ* 320:898-902.
- Sacker, Amanda, Richard D. Wiggins, Mel Bartley, and Peggy McDonough. 2007. "Self-Rated Health Trajectories in the United States and the United Kingdom: A Comparative Study." *Am J Public Health* 97:812-818.
- Scruggs, L and J Allan. 2006. "Welfare-state de commodification in 18 OECD countries: a replication and revision." *Journal of European Social Policy* 16:55.
- Siddiqi, Arjumand and Clyde Hertzman. 2007. "Towards an epidemiological understanding of the effects of long-term institutional changes on population health: A case study of Canada versus the USA." *Social Science & Medicine* 64:589-603.
- Simon, Robin. 2002. "Revisiting the Relationships among Gender, Marital Status, and Mental Health." *American Journal of Sociology* 107:1065 - 1096.
- Sliwinski, Martin. 2010. "Within and Between Person Aging: From Marking time to Measuring Process." in *Integrative Analysis of Longitudinal Studies on Aging*, edited by S. Hofer and A. Piccinin. Victoria, BC.
- Smith, G. D., D. Blane, and M. E. L. Bartley. 1994. "Explanations for socio-economic differentials in mortality Evidence from Britain and elsewhere." *The European Journal of Public Health* 4:131-144.
- Smith, James. 1999. "Healthy Bodies and Thick Wallets: The Dual Relation between Health and Economic Status." *The Journal of Economic Perspectives* 13:145 - 166.
- . 2003. "Consequences and Predictors of New Health Events." National Bureau of Economics, Cambridge.
- . 2004. "Unraveling the SES: Health Connection." *Population and Development Review* 30:108 - 132.
- Smith, KP and NA Christakis. 2008. "Social networks and health."
- Smith, William, Sharon Frazee, and Elizabeth Davidson. 2000. "Furthering the Integration of Routine Activity and Social Disorganization Theories: Small Units of Analysis and the Study of Street Robbery as a Diffusion Process." *Criminology* 38:489 - 523.
- Smock, Pamela J. 2000. "Cohabitation in the United States: An Appraisal of Research Themes, Findings, and Implications." *Annual review of sociology* 26:1-20.
- Snow, John. 1849. "On the pathology and mode of communication of Cholera." *London Medical Gazette* 44:745 - 752.
- Stack, Steven and J. Ross Eshleman. 1998. "Marital Status and Happiness: A 17-Nation Study." *Journal of Marriage and Family* 60:527-536.
- StatsCan. 2009. "Survey of Labour and Income Dynamics (SLID)." in *Definitions, Data Sources and Methods*, vol. 2009, edited by S. Canada. Ottawa, ON: Statistics Canada.
- Stolzenberg, R. M. and Linda Waite. 2005. "Effects of Marriage, Divorce, and Widowhood on Health." Pp. 361-378 in *Work, Family, Health, And Well-Being*, edited by S. M. Bianchi, L. Casper, and R. B. King: Routledge.

- Strohschein, L, P McDonough, G Monette, and Q Shao. 2005. "Marital transitions and mental health: Are there gender differences in the short-term effects of marital status change?" *Social Science & Medicine* 61:2293-2303.
- Stutzer, Alois and Bruno Frey. 2003. "Does Marriage Make People Happy, Or Do Happy People Get Married?" *The Journal of Socio-Economics* 35:326 - 347.
- Subramanian, SV, MA Subramanyam, S Selvaraj, and I Kawachi. 2009. "Are self-reports of health and morbidities in developing countries misleading? Evidence from India." *Social Science & Medicine* 68:260-265.
- TBCS. 2009. "Maternity and Parental Benefits Guide." Treasury Board of Canada Secretariat, Ottawa, ON.
- Townsend, J. M. and G. D. Levy. 1990. "Effects of potential partners' physical attractiveness and socioeconomic status on sexuality and partner selection." *Archives of Sexual Behavior* 19:149-164.
- Townsend, Peter, Nick Davidson, and Margaret Whitehead. 1982. *Inequalities in health: the black report*. London: Pelican Books.
- Trovato, F. 1987. "A longitudinal analysis of divorce and suicide in Canada." *Journal of Marriage and the Family* 49:193-203.
- . 1998. "Nativity, marital status and mortality in Canada." *Canadian Review of Sociology and Anthropology* 35:65-91.
- Trovato, F and G Lauris. 1989. "Marital status and mortality in Canada: 1951-1981." *Journal of Marriage and the Family*:907-922.
- Trovato, Frank. 1991. "Sex, Marital Status, and Suicide in Canada: 1951-1981." *Sociological Perspectives* 34:427-445.
- Tucker, J.S., H.S. Friedman, D.L. Wingard, and J.E. Schwartz. 1996. "Marital History at Midlife as a Predictor of Longevity: Alternative Explanations to the Protective Effect of Marriage. ." *Health Psychology* 15:94-101.
- U.S. Census Bureau. 2009. "Historical Health Insurance Tables." vol. 2009.
- Umberson, D, H Liu, and D Powers. 2009. "Marital Status, Marital Transitions, and Body Weight." *Journal of Health and Social Behavior* 50:327.
- Umberson, D, K Williams, DA Powers, H Liu, and B Needham. 2006. "You make me sick: Marital quality and health over the life course." *Journal of Health and Social Behavior* 47:1.
- van den Berg, A, D Parent, and AC Masi. 2004. "From Unemployment to Employment Insurance: Towards Transitional Labour Markets in Canada." Pp. 25-26.
- Verbrugge, LM. 1983. "Multiple roles and physical health of women and men." *Journal of Health and Social Behavior*:16-30.
- Waite, L. 1995. "Does Marriage Matter?" *Demography* 32:483 - 507.
- Waite, L. and M. Gallagher. 2000. *The case for marriage: why married people are happier, healthier, and better off financially*. Doubleday, New York.
- Waldron, I, ME Hughes, and TL Brooks. 1996. "Marriage protection and marriage selection—prospective evidence for reciprocal effects of marital status and health." *Social Science & Medicine* 43:113-123.
- Waldron, I, CC Weiss, and ME Hughes. 1998. "Interacting effects of multiple roles on women's health." *Journal of Health and Social Behavior* 39:216-236.
- Warman, C. 2007. "Ethnic enclaves and immigrant earnings growth." *Canadian Journal of Economics* 40:401-422.

- Weatherall, Rosamund, Heather Joshi, and Susan Macran. 1994. "Double burden or double blessing? Employment, motherhood and mortality in the longitudinal study of England and Wales." *Social Science & Medicine* 38:285-297.
- Weeden, J. and J. Sabini. 2005. "Physical attractiveness and health in Western societies: a review." *Psychol Bull* 131:635-53.
- Weissman, M. M. and M. Olfson. 1995. "Depression in women: implications for health care research." *Science* 269:799-801.
- Williams, D. R. 1997. "Race and health: Basic questions, emerging directions." *Annals of Epidemiology* 7:322-333.
- Williams, Kristi and Debra Umberson. 2004. "Marital Status, Marital Transitions, and Health: A Gendered Life Course Perspective." *Journal of Health and Social Behavior* 45:81-98.
- Wilson, Chris and Andrew Oswald. 2005. "How Does Marriage Affect Physical and Psychological Health? A Survey of the Longitudinal Evidence." Department of Economics, The University of Warwick.
- Wood, RG, B Goesling, and S Avellar. 2007. "The Effects of Marriage on Health: A Synthesis of Recent Research Evidence." *Princeton, NJ: Mathematica Policy Research, Inc.*
- Wu, Z and R Hart. 2002. "The effects of marital and nonmarital union transition on health." *Journal of Marriage and the Family*:420-432.
- Wu, Z, MJ Penning, MS Pollard, and R Hart. 2003. "" In Sickness and in Health": Does Cohabitation Count?" *Journal of Family Issues* 24:811.
- Zhang, Z. 2006. "Marital history and the burden of cardiovascular disease in midlife." *The Gerontologist* 46:266.
- Zhang, Z and MD Hayward. 2006. "Gender, the marital life course, and cardiovascular disease in late midlife." *Journal of Marriage and Family* 68:639-657.
- Zimmermann, Anke C. and Richard A. Easterlin. 2006. "Happily Ever after? Cohabitation, Marriage, Divorce, and Happiness in Germany." *Population and Development Review* 32:511-528.