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Marital Dissolution and Work Disability

A Longitudinal Study of Administrative Data

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This study uses Norwegian administrative data in an analysis of sick leaves and receipt of health-related benefits over a period of five years surrounding marital dissolution. Expanding the literature on the poorer health of divorced compared with married individuals, it examines previously unexplored indicators of poor health and employs data collected at more frequent intervals than most prior studies. Results indicate that the selection of the less healthy into the divorced status is more important than health problems that result from marital dissolution itself; moreover, the latter effect is relatively short-lived. These results vary, however, by age, gender, and the presence of children, with stronger, negative effects of divorce found among parents and young men. Our findings are compared with the results from studies utilizing more conventional measures of health from survey data.

Research consistently finds that married individuals enjoy better mental and physical health than their divorced peers. This pattern is observed across a range of measures, including psychological distress (Gove *et al*., 1983; Pearlin and Johnson, 1977; Simon, 2002), self-rated health (Idler and Angel, 1990), morbidity (Feinstein, 1993), chronic health conditions (Wyke and Ford, 1992), and mortality (Hu and Goldman, 1990). The explanations focus on two processes, selection and causation.

The social causation perspective posits that one's marital status influences health. Regarding the worse health of the divorced, there are two relevant causation arguments. First, divorce is a stressful event that may lead to declines in health, particularly among those for whom the event was unexpected or undesired. Divorce could lead to adverse health outcomes in the short-term with limited effects in the long-term (i.e. the crisis model of divorce), or it could have persistent negative effects on health (i.e. the chronic strain model of divorce). A second causation argument centers on the health-protective effect of being married, rather than the negative effects of divorce. Marriage appears to confer health benefits on individuals through a variety of mechanisms, including the early detection of illness and assistance in recovery (Reifman, 1995), the encouragement of healthy behaviors (Umberson, 1992), the enhancement of both social integration (Trovato and Lauris, 1989) and perceived social support (Turner and Marino, 1994), and the reduction of economic strains (Pearlin and Johnson, 1977).

The social selection hypothesis argues the reverse direction of causality: health influences one's marital status. According to this perspective, divorced individuals have worse health than the married because they had mental or physical health problems that led to the dissolution of their marriages. Support for this perspective is found in research indicating that poor physical (Joung *et al*., 1998; Waldron *et al*., 1996) as well as mental health

(Hope *et al.*, 1999; Johnson and Wu, 2002; Simon, 2002) increases the risk of marital dissolution. Declines in the health of one or both spouses may elevate the risk of divorce through any of several mechanisms, including reductions in income (either a result of diminished work effort or increased medical expenses), shifts in the negotiated division of paid and unpaid labor, diminished time spent in shared activities, or increases in emotional problems (Booth and Johnson, 1994).

Is poor health among the divorced more likely to be an effect of divorce or a reason the marriages dissolved in the first place? Apparently, this question could be settled by investigating what comes first in most cases: marital dissolution or poor health. However, determining this is complicated by the nature of the marital dissolution process which begins some time before the legal separation or divorce actually occurs. Similarly, the precise timing of the onset of health declines can be difficult to pinpoint. Further complicating the determination of causal order is our limited understanding of the timing of the effects of health declines on dissolution, as well as the impact of dissolution on health. Thinking about this issue from the social selection perspective, how long does it take for poor health in one or both spouses to adversely impact the marriage and, perhaps, set in motion the dissolution process? Further, how does this vary across types of health problems? From the social causation perspective, for how long prior to the legal separation or divorce does the disintegration of the relationship exert negative effects on spouses' health, and does this vary across dimensions of health? Clearly, these processes may overlap and may be hard to distinguish even for the individuals involved.

Assessing the role of each of these processes (health selection, marriage protection, and divorce as a crisis or chronic strain) requires longitudinal data collected over a length of time adequate to capture measures of health prior to separation and divorce and measures of marital status prior to health declines. Ideally, the measurement intervals are narrow allowing the timing of events to be better identified. Unfortunately, studies employing such data are rare. This paper reviews previous studies that come close to meeting these requirements and presents an empirical approach to the study of marital disruption and health that differs from that of prior work. In contrast with previous research that has tended to examine self-reported health collected at intervals of several years, this study utilizes administrative data on both marital disruption and the receipt of health-related benefits of nearly continuous time observations.

Prior Research on Marital Dissolution and Health

Because the selection and causation issues can only be sorted out through the use of longitudinal data, this review is limited to such studies. In short, the existing literature suggests that both social selection and causation play roles in producing the observed worse health of the divorced; however, studies vary in their conclusions regarding the relative importance of each process. This inconsistency is generated, in part, by study designs that differ in the number of waves of data and the intervals at which they are collected. Further, some studies are primarily designed to test only one of the hypotheses. The inconsistency may also reflect the use of a range of health measures (e.g. mental distress, self-rated health, chronic health conditions).

Social Selection

Support for the selection hypothesis is found across indicators of physical and mental health. In an examination of three waves of data collected over 10 years, Waldron and colleagues (1996) report that having more functional disabilities and psychosomatic symptoms increases the risk of divorce between the first two waves; however, this relationship is not observed in the later waves, nor does it hold among women who are employed full-time. Using a sample of over 10,000 individuals collected in the Netherlands over a period of approximately 4½ years, Joung and associates (1998) examine the effect of self-rated health, subjective health complaints, and chronic conditions on the risk of divorce. They find that, particularly for men, chronic conditions increase the probability of divorce, but the impact of subjective health is less clear. In contrast with these studies, Fu and Goldman (2000), using the National Longitudinal Survey of Youth (1979–1993), report that health conditions that limit work do not elevate the risk of separation and divorce.

Studies examining mental health, most commonly measured by psychological distress, also provide evidence of the selection of the less healthy out of marriage. Examining a nationally representative sample of Americans followed over five years, Simon (2002) finds that higher levels of depressive symptoms, as well as alcohol problems, increase the risk of separation and divorce. In a study reporting similar results, but focusing on mothers, Wade and Cairney (2000) report that mothers becoming divorced over the two years of the study had higher levels of depression than those who did not become

single-parents. The authors interpret this as evidence of selection into divorce; however, given the narrow timeframe of the study, it is plausible that the results also reflect the negative effect of the dissolution process on one's mental health.

Other studies further illuminate the timing of selection processes. Using four waves of data covering a longer span of time than most studies (i.e. 12 years), Johnson and Wu (2002) find some evidence of selection effects; psychological distress was somewhat elevated five years prior to marital disruption. Mastekaasa (1994) finds stronger support for selection; using administrative data collected on a sample of over 39,000 Norwegians, he observes a clear relationship between poor psychological well-being, as indicated by a scale of overall life satisfaction and happiness, and risk of marital dissolution over a two to four year period. The relationship is particularly strong in the short-term; however, the author notes that this could reflect the stress of the marital dissolution process, rather than social selection. Similarly, Hope and associates (1999) note that their observation that women divorcing between the ages of 23 and 33 had higher levels of distress than women remaining married, may reflect anticipation of dissolution rather than true selection, as the difference was largely confined to those who were soon to separate.

Social Causation

Considerable evidence also is garnered for social causation arguments, with some studies supporting the crisis model of divorce and others revealing longer-term effects. In a study that also provides some evidence of selection, Hope and associates (1999) find detrimental impacts of the divorce process, particularly shortly after dissolution. Divorce is associated with elevated levels of psychological distress, especially for mothers who experience downward social mobility. Also lending support to the crisis model, a study by Gähler (1999) using two waves of Swedish data that spanned 10 years reports high levels of distress among recently divorced women, but not among women divorced for several years. Among men, on the other hand, no similar reduction in distress is found in the years after divorce. Booth and Amato (1991) also report short-term effects of divorce on distress. Using three waves of data collected between 1980 and 1988, they find evidence of increased psychological distress for a period of two years after divorce; after this period, psychological distress of the divorced was comparable to that of the continuously married.

In an extension of the Booth and Amato (1991) study, Johnson and Wu (2002) use four waves of data spanning 12 years and report that the effect of divorce on psychological distress does not appear to diminish with time, thus supporting the chronic strain rather than the crisis model of divorce. However, some support for the latter is found for persons with relatively high levels of pre-disruption marital quality; psychological distress declined over time in this group but not among those leaving troubled relationships. In work using three waves of data collected in Norway, Mastekaasa (1995) also reports stronger support for the chronic strain than crisis model of divorce; the effects of divorce were similar in the short and long-term (i.e. 0–4 years, compared with 4–8 years after divorce). In addition, this study finds an increase in psychological distress shortly before marital dissolution, but no evidence of health selection when measuring distress years before the divorce process.

Determining whether any long-term, negative health effects of divorce result from lingering negative consequences of divorce or the absence of marriage protection is difficult given the relatively short spans of time that typically are examined following divorce and the limited attention given to remarriage. The studies incorporating a consideration of remarriage provide mixed results. Lending some support to the marriage protection argument, Simon (2002) finds that individuals transitioning from the divorced to married status over the five years of the study report fewer depressive symptoms than the stable unmarried. Although remarriage may improve one's mental health, re-entering the married status does not appear to return individuals to the levels of well-being enjoyed by the continuously married (Kitson and Holmes, 1992; Spanier and Furstenburg, 1982). A similar conclusion is drawn from the work of Hemström (1996) which finds excess mortality among divorced persons, including those who had remarried. Much of the literature focusing on causation processes examines mental health; however, some research also indicates that divorce increases the risk of physical health declines and receipt of health-related benefits. For example, in an examination of the 1994–1997 National Population Health Survey collected in Canada, Wu and Hart (2002) observe that marital dissolution is associated with worse functional health and self-rated health. Leigh (1986) studied self-reported sick leaves from the Panel Study of Income Dynamics for the years 1968 to 1979. Divorced and widowed individuals reported more sick leaves than did the married or never-married, particularly during the first year following marital loss. Similarly, Hallberg and Mattsson (1992) find increased use of sick leaves

during two years following marital dissolution in a sample of 32 middle-aged Swedish men. They find no indications of health selection into divorce, as the divorced sample took fewer sick leaves during the two years prior to separation and divorce compared with those who remained married. Eriksen and colleagues (1999) report an association between divorce and receipt of disability benefits over their four-year study in Norway. Because the relationship held after controlling for initial health, the authors argue that it probably reflects health consequences of marital disruption or reduced ability to cope with health problems.

Gender and Age

Gender differences have been a focus of this literature, particularly in studies of social causation. Beginning with the work of Gove (1972) and Bernard (1972), it has been argued that marriage enhances men's mental health but is damaging to women's well-being given the devalued, unrewarding, and stressful nature of women's family and work roles. Applied to the divorce – health association, if men gain more from marriage than do women, then they also stand to lose more if it dissolves. This argument leads to the prediction that divorce has stronger negative effects and remarriage has stronger positive effects on the health of men than women. However, the findings are inconsistent. Research examining internalized expressions of distress (e.g. depression) tends to provide evidence that women's mental health is more adversely affected by divorce than men's (Aseltine and Kessler, 1993; Gähler, 1999; Horwitz *et al.*, 1996; Simon, 2002). Although it has been anticipated that examinations of other measures of health, namely externalizing manifestations of distress that are more prevalent among men (e.g. substance use problems), will yield the opposite pattern, these examinations often fail to find significant gender differences (Horwitz *et al.*, 1996; Simon, 2002). Less attention has been given to physical health; however, consistent with the assumption that men gain more from marriage than do women, Hemström (1996) finds a higher risk of mortality among divorced men compared with their female counterparts.

Regarding selection processes, the social expectation that men's primary role in the family centers on breadwinning, combined with gender inequity in paid work, raises the possibility that health declines among men that limit one's ability to work will more rapidly lead to marital dissolution than comparable changes in women's functional ability. Moreover, the receipt of caregiving from one's spouse is more congruent with the expected behavior of women (e.g. dependence) than men (e.g. independence). Providing support for these arguments, Joung and colleagues (1998) find that the effect of chronic conditions on risk of divorce is particularly strong for men. In contrast, work by Simon (2002) reveals no gender differences in the effect of depressive symptoms and alcohol problems on the risk of divorce.

The gendered construction of parenthood may produce different health effects of divorce among mothers and fathers. For mothers, divorce tends to be associated with both economic decline and child custody, which may generate more stress for them than for fathers. Indeed, there is evidence that parental responsibility has a detrimental effect on mothers' health after divorce (Hope *et al.*, 1999). Research by Bratberg and associates (2002) indicates that combining work and child care could lead to more sick leaves among mothers. It is plausible that parenthood also adversely affects men's health following divorce because of the limited contact that many divorced fathers have with their children, including those with joint legal custody (Maccoby and Mnookin, 1992). Further, both mothers and fathers face higher housing expenses and the potential stress of negotiating care and supervision of their children after divorce, both of which may impair health. Hemström (1996) finds that having children at home is associated with a reduced risk of mortality among women and men; moreover, the high risk of mortality observed among divorced men is partially explained by their lower likelihood of having children in the home.

There is little research on age variation in health changes following divorce; however, several streams of research suggest that divorce may have stronger negative effects on well-being in later life and among older cohorts. Socioemotional selectivity theory argues that one's social networks become narrower and more focused on ties providing the greatest emotional rewards as individuals get older (Carstensen, 1992). Similarly, age norm theory argues that deviating from social clocks may generate unfavorable comparisons of the self with others and may also be more stressful because less social support is available (Neugarten, 1979). Further, greater specialization of roles among older married couples may also make divorce, and the resulting acquisition of new roles by both genders, more stressful for old people. A recent study by Williams and Umberson (2004) provides some support for these arguments in that divorce diminishes self-assessments of health among older men. In contrast, it enhances health among women and young men. The authors argue that the negative effect among old men is at least partially associated with the stress of

learning and performing housework in a cohort of men that traditionally has done few such tasks themselves.

In sum, the existing literature suggests that both selection and causation processes play a role in explaining the worse physical and mental health of the currently divorced; however, conclusions about the relative importance of each process vary considerably. Because prior studies tend to rely on two waves of data (e.g. Aseltine and Kessler, 1993; Hope *et al*., 1999; Horwitz *et al*., 1996; Simon, 2002; Wade and Cairney, 2000) and/or data collected at intervals of several years (e.g. Aseltine and Kessler, 1993; Booth and Amato, 1991; Horwitz *et al*., 1996; Johnson and Wu, 2002; Mastekaasa, 1995; Simon, 2002; Wade and Cairney, 2000; Williams and Umberson, 2004), relatively little is known about the precise timing of the effects of health on divorce and the effects of divorce on health. In addition, potential gender differences in the magnitude or nature of the effects (e.g. internalizing versus externalizing expressions of distress) have received considerably more attention than gender differences in the timing or relative importance of selection and causation processes. The existing literature also has tended to rely on self-reported indicators of health. The possibility that the stress of divorce may lead to more negative perceptions of one's health highlights the need for research employing more objective indicators of health and functional ability. The measures of health used in prior work typically have not indexed the extent to which health problems affect one's ability to perform expected social roles (e.g. work), a noteworthy limitation given the implicit assumption that consequences of divorce and poor health for social functioning underlie the divorce – health association.

Methods

This paper addresses some of the limitations of the existing literature by using administrative data on the receipt of health-related benefits, in particular sick leaves and work disability, collected at three-month intervals over a five-year period. We argue that these data permit a more fine-grained analysis of causal processes underlying the association between divorce and health, as indicated by receipt of health-related benefits near the time of separation. However, the relatively short duration of our study still limits the conclusions that can be drawn, particularly regarding the long-term effects of divorce or remarriage on health and vice versa. The causal relationship between marital dissolution and health is studied by combining Norwegian administrative data on separation and divorce with administrative data on sickness and disability benefits. Norway is a good case for such studies because its National Social Insurance is a major source of sickness benefit and it operates several disability benefits that cover the entire population. Twelve per cent of the population between 20 and 67 years (labeled 'occupationally active age') receives a benefit for work disability, and six per cent of the working population receives sickness benefit. Further, like other Scandinavian countries divorce rates are relatively high; nearly half of all marriages will end in divorce if present trends should continue (Statistics Norway, 2002).

Data and Variables

The data are based on a 20 per cent random sample of the Norwegian population between 25 and 67 years of age from the FD-Trygd database in Statistics Norway. Data were made available by Norwegian Social Science Data Service. NSD is not responsible for the use of the data material. FD-Trygd was established for event history analyses of social insurance and social security benefits by linking administrative information from the National Social Insurance Administration, Statistics Norway, and the Directorate of Labor. The data studied span the years 1992 to 1999. From the main sample, two sub-samples were selected, one comprised of those who separated and divorced during the eight-year observation period and another that included those who remained married throughout this period (1992–1999).

Two dichotomous dependent variables are examined. The first indicates receipt of sickness benefit (for one's own illness) from the National Social Insurance. This benefit normally follows a two-week period of sick pay by the employer (exceptions made for repeated sick leaves or chronic diseases) and can be received for no more than one year. The sickness benefit covers both mental and physical health problems. Unfortunately, because diagnoses typically cannot be identified for sick leaves shorter than 12 weeks, benefits resulting from mental and physical health conditions are not examined separately. The second dependent variable, receipt of any health-related benefit, indicates the receipt of either the sickness benefit or any of three disability benefits also provided by National Social Insurance that may follow a year of receiving sickness benefits. These include rehabilitation benefits (for cases that require more than one year of medical treatment and rehabilitation), occupational rehabilitation benefits (for those undergoing occupational rehabilitation evaluation or implementation including re-education), and disability pension. In

Norway, more people are entitled to disability than sickness benefits, as the former make no requirements for participation in paid work. The analysis of sickness benefits is limited to the working population, defined as those receiving incomes from work corresponding to US$12,500 in 1999 and somewhat less in the previous years due to inflation. Those working for the government (10 per cent) are excluded from the analysis of sickness benefits as their sick leaves were unknown. The analysis of any health-related benefit also includes those not working; hence, this analysis includes more people (10,261 men and 10,454 women who divorced) than the analysis of sickness benefits (8,343 men and 7,419 women, or 81 per cent and 70 per cent of the divorced samples, respectively). The married samples (used only for statistical control) are much larger (104,839 men and 113,149 women).

The primary explanatory variable is marital status, and its attributes were being married or separated/divorced, where the separated include only those leading to a divorce. In Norway, most people who divorce do so after one year of separation. Exceptions are those who have lived apart for two or more years without a legal separation, and cases of abuse or threats of abuse (which totals 5 per cent of the divorces). Either party may seek a separation and file for divorce after one year of separation. For those having multiple separations preceding a divorce, the latest separation is studied. In the analyses, marital status is treated as a time-dependent variable measured as time before and after legal separation (or divorce when no legal separation had not been made) in three-month intervals.

The following factors that could affect health and the risk of divorce are examined: education, gender, age, and the number of children in the family. Education, which is associated with better health (Williams and Collins, 1995) and a lower risk of divorce (Lyngstad, 2004), is measured as the typical number of years it takes to acquire each level. Age is included because the risk of divorce is higher in younger than older ages and cohorts (Kravdal, 1994), whereas poor health and the receipt of health-related benefits increase with age. Children are expected to make a divorce more difficult for both parents. Consistent with prior work (Hope *et al.*, 1999), dependent children, but not custody of children, is examined as an explanatory variable. In Norway, mothers hold the vast majority of custodies; cases of paternal custody are likely to reflect situations where the mother is unable to care for or support her child/children (i.e. situations that are likely to be confounded with the dependent variables in these analyses). The parenthood variable is measured as (the square root of) the number of children below 18 years living in the household ranging from 0 to 3 (i.e. 0, 1, 1.41, 1.73). For those who divorced, the child variable is held constant from before separation through the end of the observation period (i.e. three years later).

Statistical Analysis

The life-path of each person is studied through an observation window of up to five years, from two years before separation to three years after separation (which is up to two years after divorce) with observation intervals of three months. The observation interval is a compromise between the desire to provide a detailed description of the data and the limitations imposed by the number of observations a personal computer can handle. The five-year window allows for some of the divorced samples to be observed at both the beginning and the end of the observation window,[1] a proportion which varies from 28 per cent (sick leaves among women) to 43 per cent (health-related benefits among men). Some observations are treated as censored. Obviously, this is the case for individuals who died or entered or left the country on a more permanent basis. Individuals younger than 25 and older than 67 are treated as left and right censored, respectively, as we had limited information for those under 25 (due to the sampling procedure), and at 67 most of the benefits studied could no longer be received as old age pension would be granted instead. Calendar years of little or no work-related income, or working for the state, also are treated as censored observations in the analysis of sickness benefit.

Using logistic regression, the first analysis investigates changes in the receipt of sickness benefits within the five-year observation window from two years prior to three years following separation. Parallel analyses are conducted for receipt of any health-related benefit. Because changes in the receipt of these benefits could also reflect aging within the life paths of the individuals studied or historical changes in the use of these benefits in the observation period (1992–1999), statistical controls are added for age and historical changes in the use of the benefits as observed among those remaining married throughout the observation period. This involves statistical control for two overlapping time dimensions, the aging of the individuals (i.e. $\text{age} + \text{age}^2 + \text{age}^3$ in continuous time with 10 year scale) and historical changes in the use of the benefits studied among those who remained married (i.e. dummy variables for each three-month interval). Changes in the probability of receipt of

health-related benefits among those who divorced (expected to be higher than among the married) are estimated by interaction terms calculated using the dummy variable indicating divorce and 20 dummy variables for time, measured at three-month intervals covering two years before and three years after separation.

The second analysis investigates which groups (defined by age, gender, and the number of children in the family) are at particularly high risk of receipt of health-related benefits at each of three stages of the dissolution process. The first stage consists of three observations early in the process (i.e. 1½–2 years before separation); the second stage is the single observation at time of separation; the third stage includes the three last observations (i.e. 2½–3 years after separation). Comparisons are made across the stages. Because the individuals are studied with multiple observations (i.e. one observation/record for each three-month interval), sandwich (Huber/White) estimators of the standard errors are applied in place of classical statistical test theory. This estimator assumes that the individuals, but not necessarily the observations for each individual, are statistically independent.

Results

Figure 1 is based on the logistic regression analyses of sick leaves with statistical control for age, education level, and historical changes in the married sample. Those who remained married throughout the observation period are indicated by the 0-line on the *y*-axis in the figures, thus the figure indicates the difference between those who divorced compared with those who remained married. Figure 1 illustrates that those who divorced had more sick leaves both before and after separation than the continuously married. However, both men and women increase their use of sick leaves around separation, marked by time 0 on the *x*-axis. The difference between the separated and continuously married is particularly large in the period immediately before separation through approximately half a year post-separation. Clearly, separation is a stressful event leaving some individuals unable to carry out their ordinary duties at work.

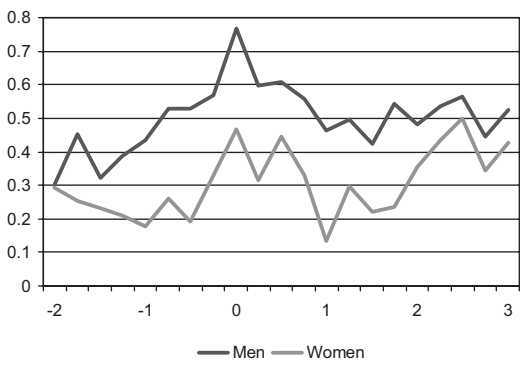

Figure 1 Receipt of sickness benefit before and after separation among those who divorced (8,343 men and 7,419 women) compared with the continuously married (indicated with 0 on the *y*-scale), logit coefficients with statistical control for age and education. FD-trygd data. Pseudo $R^2 = 0.030$ (men) and 0.012 (women)

Divorced men are in a particularly vulnerable position around the time of separation as their likelihood of sick leave is far higher than that of married men; the difference is larger than for the similar comparison made between separated and married women. Among men and women, sick leaves decrease from separation to approximately one year afterwards. One year after separation, the use of sick leaves is at the same level as one year before separation for both women and men. This may reflect the fact that the sickness benefit, unlike other health-related benefits, can only be received for one year. If this feature of the benefits is influencing the results, we would expect to find a much smaller drop in the models analyzing the receipt of any health-related benefit, compared with the sickness benefit alone. An alternative explanation hinges on psychosocial adjustment to marital dissolution. One year after separation is normally the time of divorce, the final legal arrangement ending the marriage. With the legal aspects of the divorce process over, it is plausible that some individuals are better able to carry on with their lives and resume work.

Interestingly, among women sick leaves appear to rise again at the end of the observation period. This could reflect greater vulnerability that follows the loss of marriage protection. Alternatively, it may reflect the possibility that more women enter the paid labor force after divorce when they face higher expenses and the loss of their partner's income. If so, more women would be eligible for sickness benefits.

Figure 2 describes the receipt of any health-related benefit (for work disability). This includes the sickness benefit (in Figure 1) plus any of three disability benefits. Both men and women who divorced were much more likely than their married peers to receive a benefit for work disability both before and after marital dissolution. Work disability, measured with health-related benefits, peaks at the time of separation which clearly reflects the

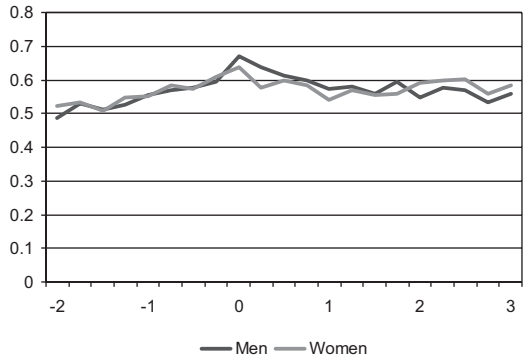

Figure 2 Receipt of any health-related benefit before and after separation among those who divorced (10,261 men and 10,454 women) compared with the continuously married (indicated with 0 on the *y*-scale), logit coefficients with statistical control for age and education. FD-trygd data. Pseudo $R^2 = 0.097$ (men) and 0.077 (women)

high incidence of sick leaves at this period of the dissolution process. At about one year post-separation, the receipt of health-related benefits decreases to approximately the same level as that observed one year before separation. No major changes in the receipt of health-related benefits can be observed beyond one year post-separation. In contrast with the analyses of sick leaves only (Figure 1), the models predicting any health-related benefit indicate similar results for men and women.

Also in contrast with the findings for sickness benefits, a strong increase in receipt of any health-related benefit is not observed at the end of the observation window. The difference reflects a decrease in the receipt of disability benefits in this phase following divorce. This pattern could indicate that some women who are no longer able to support themselves (and their families, if they are parents) solely on disability benefits after divorce must enter the paid labor force, with the associated eligibility for (the higher) sickness benefit. This possible change in paid work status does not increase the receipt of health-related benefits more generally (as illustrated in Figure 2); it merely changes the composition of these benefits from disability benefits to sick leaves.

The most striking finding in Figure 2 is the substantially higher receipt of any health-related benefits as early as two years before separation. This may reflect the selection of the less healthy into the divorced status. Changes in work disability throughout the observation window are relatively small compared with the marked difference in work disability between those who divorced and the continuously married.

Approximately 18 per cent of divorced men and 14 per cent of divorced women remarried during the observation period of three years after separation. In similar analyses conducted on a sub-sample including only the remarried, we find no peak in sick leaves at the time of separation, contrary to the results for the full sample. Apparently, separation itself is less stressful for those who eventually will remarry than for those who will not. Those who remarried, however, were doing no better than those who did not remarry, in terms of sick leaves one year or more after separation (figure not shown). Figure 3 describes the receipt of any health-related benefit for the remarried sample (compared with the continuously married). Neither before nor after separation did women who remarried distinguish themselves from other divorced women (Figure 2) in terms of receipt of any health-related benefit, apart from the lower level of sick leaves at separation. Men who remarried had a slightly lower receipt of health-related benefits both before and after separation than men who did not remarry, but not nearly as low as men who stayed married throughout the observation period. Taken together, the results suggest that even if those who eventually will remarry are indeed doing better at the time of separation (compared with their peers who will remain divorced) there is no indication that remarrying eases the health-related impact of experiencing marital dissolution, at least in the short-term.

Tables 1 and 2 present numerical estimates of the higher probability of the divorced to receive health-related benefits at the time of separation (i.e. year 0 in

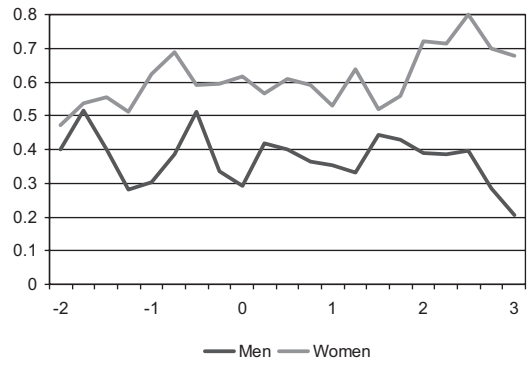

Figure 3 Receipt of any health-related benefit before and after separation among those who remarried (1,848 men and 1,478 women) compared with the continuously married (indicated with 0 on the *y*-scale), logit coefficients with statistical control for age and education. FD-trygd data. Pseudo $R^2 = 0.098$ (men) and 0.078 (women)

Table 1 Changes in the receipt of sickness benefit before and after separation, with statistical control for age, education and children. Separate models for each gender and interaction estimated. FD-trygd data

	Men		Women		Gender difference	
	Coeff.	s.e.	Coeff.	s.e.	Coeff.	s.e.
At separation vs. before	0.388**	(0.091)	0.215**	(0.086)	0.173	(0.125)
At separation* age	−0.157*	(0.073)	0.165*	(0.071)	−0.322**	(0.102)
At separation* children	0.217**	(0.094)	0.258**	(0.100)	−0.041	(0.138)
After divorce vs. before	0.096	(0.088)	0.185*	(0.079)	−0.088	(0.118)
After divorce × age	−0.132*	(0.071)	0.132*	(0.065)	−0.264**	(0.096)
After divorce × children	0.108	(0.089)	0.118	(0.081)	0.009	(0.120)
No. of individuals who divorced	8258		7253			

*$P < 0.05$ and **$P < 0.01$ in one-tailed tests*

Table 2 Changes in the receipt of any health-related benefit before and after separation, with statistical control for age, education and children. Separate models for each gender and interaction estimated. FD-trygd data

	Men		Women		Gender difference	
	Coeff.	s.e.	Coeff.	s.e.	Coeff.	s.e.
At separation vs. before	0.152**	(0.039)	0.118**	(0.032)	0.035	(0.051)
At separation × age	−0.076*	(0.041)	−0.014	(0.039)	−0.062	(0.057)
At separation × children	0.078	(0.056)	0.163**	(0.048)	−0.086	(0.074)
After divorce vs. before	0.036	(0.046)	0.065*	(0.037)	−0.029	(0.059)
After divorce × age	−0.148**	(0.052)	0.035	(0.038)	−0.184**	(0.056)
After divorce × children	0.115*	(0.055)	0.103*	(0.046)	0.012	(0.072)
No. of individuals who divorced	10,242		10,412			

*$P < 0.05$ and **$P < 0.01$ in one-tailed tests*

the figures) and in the subsequent years (i.e. 2½–3 years after separation) compared with (1½–2 years) before separation, still using the married sample for statistical control. Potential variation by age (10 year scale), gender, and number of children also is examined. The first line in Table 1 indicates that sick leaves increase from the beginning of the observation period until separation (as illustrated in Figure 1). This rise in sick leaves at separation is particularly high among young men and older women, as indicated by the interactions between age and the separation stage (second line in Table 1). Children also increase sick leaves at separation for both men and women.

As indicated in the fourth line of Table 1, only women increase their receipt of sickness benefits significantly from the beginning until the end of the observation period (see Figure 1). Again, increased sick leaves during the entire observation period (in this case, nearly five years) are particularly high among young men and older women. Although the interaction with age is not significant in the sample of men, the difference in this age effect between men and women is clearly significant. The higher probability of sick leaves among divorced parents, compared with non-parents, is weaker and no longer significant at the end of the observation period (in contrast with the earlier stage of dissolution described at the top of Table 1).

The analysis of receipt of any health-related benefit in Table 2 reproduces the results of sick leaves in Table 1 with regard to comparisons before and after marital dissolution for the full sample. The interaction terms, however, vary between the two dependent variables. The analysis of sick leaves in Table 1 indicates that marital dissolution has particularly strong health effects for young men and older women. The analysis of the receipt of any health-related benefit in Table 2 reproduces this result regarding young men, but not older women. As indicated in the fifth line of Table 2, the different age effect for men and women remains significant, however, at the end of the observation period compared with the beginning. The apparently weaker negative health effects of divorce among older women in the analysis of any health-related benefits, compared with

sickness benefits, could stem from the economic strain faced by many women after divorce which may require that they join the paid labor force instead of receiving disability benefits.

The analysis of sick leaves indicates that marital dissolution is particularly distressing for parents, at least at the time of separation. This is also the case when studying the receipt of any health-related benefit in Table 2, although it is significant only for women. The deleterious effects for parents continue, however, through the end of the observation period. The absence of any gender difference after divorce suggests that this result can be interpreted for parents jointly: compared with non-parents, parents increase their receipt of health-related benefits during the years surrounding marital dissolution. One possible explanation centers on the stress of organizing custody and visitation arrangements that typically follow a marital dissolution in families with children, as this may involve difficult negotiations between the parents.

Discussion

Numerous studies demonstrate that the divorced experience worse health than the married. The explanations hinge on two processes, selection and causation. With prior studies finding support for each mechanism, there is considerable debate regarding their relative importance. We argue that this stems, in part, from the tendency to use long measurement intervals (typically years) that make it difficult to distinguish among these processes. Our empirical analysis addresses this issue by focusing on the receipt of health-related benefits within a five-year period surrounding marital disruption, measured at intervals of three months. Within this relatively short timeframe, it remains difficult to test the marriage protection argument. However, a comparison of those who remarried within the three years following separation with those who did not revealed no differences between these two groups in the receipt of health-related benefits after marital dissolution; both groups face considerably higher odds of receiving benefits compared with those who remained married. Hence, to the extent that it can be examined in these data, the marriage protection argument as applied to remarriage is not supported. This finding is consistent with prior studies on both mental health and mortality. Not only does remarriage fail to return individuals to the levels of well-being enjoyed by the continuously married (Kitson and Holmes, 1992; Spanier and Furstenburg, 1982) but it also does not reduce the risk of mortality observed among the divorced (Hemström, 1996).

The other social causation argument, that divorce is a stressful event negatively affecting health, receives support in this study. Sick leaves increase in the months prior to separation and peak at separation. In short, separation appears to be the stressful event in a process of marital dissolution. Both sick leaves and the receipt of any health-related benefit decline to pre-separation levels following this event. Thus, the crisis rather than chronic strain model of divorce is supported. As noted, prior work has revealed inconsistent findings, with some reporting greater evidence of short-term effects (Booth and Amato, 1991; Hope *et al.*, 1999; Gahler, 1999; Leigh, 1986) and other supporting the chronic strain model (Johnson and Wu, 2002; Mastekaasa, 1995). While most of these examine indicators of psychological distress, we note that our findings are consistent with a prior study examining sick leaves (Leigh, 1986). These findings may suggest that, although separations that lead to a divorce are stressful events with negative health consequences, including mental health effects that may linger for some time, eventually most learn to live with their new situations and return to paid work, perhaps motivated by the absence of a spouse with whom to pool resources. Facing these higher expenses, some individuals may not be able to support themselves on public benefits available to the disabled and may, therefore, seek paid work. Divorced parents may have particularly strong incentives to avoid health-related benefits because poor health, work incapability, and uncertain income streams could influence child custody decisions. In addition, the stronger evidence of the negative impact of divorce on psychological distress than receipt of health-related benefits could, in fact, reflect the potentially new and stressful requirement of economic self-sufficiency experienced by many divorced individuals.

The higher receipt of health-related benefits among the divorced, compared with those remaining married, is already well-established at the beginning of our observation window, two years before separation. Further, the changes in these rates over the years surrounding the marital separation are comparatively minor. Taken together, the results suggest that, when health is measured as receipt of health-related benefits, health selection is more important than social causation in explaining the worse health of the divorced. Moreover, the social causation effects found (i.e. increased sick leaves around separation) are relatively short-lived.

In contrast with much prior work that relies on self-reports, the health benefits examined in this study

require medical examinations and certificates issued by physicians. Results from this study could thus reflect physicians' role as gatekeepers. It is possible that physicians may deem the typical level of distress associated with separation and divorce not sufficiently severe to justify long sick leaves. Further, physicians could be more reluctant to accept problems of social origin (i.e. strains following marital dissolution) as justifications for writing sick notes. As a result, they may write sick notes in the stressful event of a marital dissolution, but are reluctant to permit such sick leaves to become long-lasting or lead to disability benefits.

This study also explores gender differences in the association between divorce and health. In the period surrounding separation and divorce, the increase in sick leaves is steeper for men than for women. Overall, there are few gender differences in receipt of any health-related benefit in this period. These findings may indicate possible gender differences in the impact of health problems on withdrawal from the paid labor force. It is possible, for example, that men facing health problems attempt to fulfil the breadwinner role as long as possible, whereas women with disabling health conditions may be more likely to replace paid work with caring for the family while receiving a disability benefit. However, further work is needed to illuminate gender differences in the causation and selection processes, with attention given to divisions of labor (paid and unpaid) within couples, gender role orientations of husbands and wives, and the influence of gender on both the nature of illnesses experienced and likelihood of withdrawal from the paid labor force.

In addition to gender differences, there is evidence of variation by age and parental status. Drawing on several lines of theory and research, including socioemotional selectivity theory (Carstensen, 1992) and age norms (Neugarten, 1979), we anticipated that the effects of divorce would be stronger among older adults, but this was only found among women. We find, in contrast, a higher likelihood of receiving sickness or disability benefits among younger men. Further, the associations between age and receipt of health-related benefits following divorce are very different for men and women. Reconciling these findings with the recent study of Williams and Umberson (2004) is indeed difficult. It is possible that different processes are involved in assessing one's health versus receiving health-related benefits. Research focusing, for example, on national differences in welfare policies, and their intersection with age and gender, may help to illuminate inconsistent findings.

Regarding children, parents increase their receipt of health-related benefits over the entire observation window. A similar result is reported by Hope and associates (1999) in that parental responsibility appears to have a detrimental effect on the mother's health after divorce; however, the difference between men and women appear for the most part to be non-significant in their analysis as well. Future research should also examine other factors influencing the parent role, such as the age of children. It is possible, for example, that younger children who require more parental oversight may increase the likelihood of receiving health-related benefits and forgoing paid work.

This study contributes to the extensive literature on marital status and health by employing measures of health which require medical examinations and providing narrower measurement intervals than has typically been the case. However, it is limited in several ways, raising many questions for future examinations of the divorce – health association. For example, our measures of poor health are influenced by the behavior and attitudes of not only the individuals who seek health-related benefits, but also the physicians themselves. Further, we were unable to distinguish between sickness or disability benefits stemming from various types of illness (e.g. mental versus physical; acute versus chronic; stable versus progressive). The divergence of our results from the findings of prior studies underscores the importance of examining multiple dimensions of health.

Notes

1. The numerical analysis compares the same people at the beginning and the end of the observation window. Hence, the observation window must allow for a reasonable number of individuals to be studied at both margins. Further, the figures would be less accurate if the observation window was expanded to more than five years.

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