

Marital Dissolution and Major Depression in Midlife: A Propensity Score Analysis

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Abstract

Marital dissolution is commonly assumed to cause increased depression among adults, but causality can be questioned based on directionality and third-variable concerns. The present study improves on past research by using a propensity score matching algorithm to identify a subsample of continuously married participants equivalent in divorce risk to participants who actually experienced separation/divorce between two waves of the nationally representative Midlife Development in the United States (MIDUS) study. After correcting for participants' propensity to separate/divorce, we observed increased rates of depression at the second MIDUS assessment only among participants who (a) were depressed at the initial MIDUS assessment and (b) experienced a separation/divorce. Participants who were not depressed at the initial assessment but who experienced a separation/divorce were not at increased risk for a later major depressive disorder. Thus, both social selection and social causation contribute to the increased risk for a major depressive disorder found among separated/divorced adults.

Keywords

Midlife Development in the United States (MIDUS), marital separation, divorce, marital status, major depression, prospective studies

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Stressful life events are associated with an increased risk for a range of mental-health problems, including the first onset and recurrence of clinically significant mood disorders (Kendler, Hettema, Butera, Gardner, & Prescott, 2003; Mazure, 1998; Monroe & Simons, 1991). Within the broad class of potentially negative social upheavals, marital separation and divorce confer many adaptive challenges (Hetherington & Kelly, 2002). Separating from a spouse involves numerous logistical and financial burdens, and many people also face substantial emotional challenges, including grieving the end of the marriage, revising one's self-identity, reforming social networks, and making major changes in parenting practices (Emery, 1994). Although most adults manage the transition of divorce well and can be described as resilient (Amato, 2010; Hetherington & Kelly, 2002; Mancini, Bonanno, & Clark, 2011), a subset of people become stuck on trajectories of long-term stress and strain (Lorenz, Wickrama, Conger, & Elder, 2006; Lucas, 2005). The extent to which this stress and strain translates into risk for a diagnosable mood disorder remains to be determined (e.g., Overbeek et al., 2006).

A central and still unresolved question is whether the association between marital dissolution and mental health is a consequence of ending the marriage or whether the association can be eliminated by accounting for predictors of the divorce (Amato, 2010; Carr & Springer, 2010); that is, do variables that predict divorce (e.g., marital discord, neuroticism, and hostility) also explain the putative consequences of divorce? Disentangling this issue of social selection and social causation is critical for the study of all nonrandom life events (e.g., Saudino, Pedersen, Lichtenstein, McLearn, & Plomin, 1997). In the current study, we implemented a propensity score analysis (Rosenbaum & Rubin, 1983) to investigate risk for a major depressive episode (MDE) following marital separation and divorce using data from the large and representative Midlife Development in the United States (MIDUS) study (Brim et al., 2010). Combining data from

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the first and second waves of the MIDUS study allowed us to examine whether changes in marital status are associated with changes in depression in a sample that is matched across its risk for divorce.

Although it is widely assumed that marital separation and divorce increase risk for diagnosable mood disorders, research on this topic has been mixed. For example, using data from the Epidemiological Catchment Area study, Bruce and Kim (1992) reported that marital disruption was associated with increased risk for major depression and especially first onset depression in men. These findings are consistent with evidence from other epidemiological and large-scale studies of risk for major depression (e.g., Aseltine & Kessler, 1993; Breslau et al., 2011; Keller, Neale, & Kendler, 2007; Kendler, Gardner, & Prescott, 2002; Kendler et al., 1995; Weissman et al., 1996).

Other research, however, has suggested these associations may be spurious. For example, Overbeek et al. (2006) found no association between divorce and subsequent major depressive illness; moreover, this study indicated that the association between divorce and dysthymia was eliminated by accounting for marital quality prior to the separation. This latter finding is consistent with evidence from prospective panel studies that have shown that marital distress and variables that select people out of marriage explain the supposed consequences of divorce (e.g., Blekesaune & Barrett, 2005; Mastekaasa, 1994; Wade & Pevalin, 2004). Also consistent with these results, evidence has demonstrated that heritability of divorce is largely explained by genetic factors contributing to the expression of personality (Jocklin, McGue, & Lykken, 1996).

For the most part, researchers have addressed questions of social selection via statistical control and analysis of covariance (ANCOVA). Although this approach is common, its advisability is debatable, and statistical equating of this nature can yield misleading results (see Miller & Chapman, 2001). An increasingly recognized alternative to studying nonrandom selection into exposure events is to conduct a propensity score analysis, especially propensity score matching (PSM; Shadish, Clark, & Steiner, 2008; Thoemmes & Kim, 2011).

Propensity scores have origins in counterfactual reasoning (see Oakes & Johnson, 2006) and are often used in nonexperimental settings to equate groups of people who cannot be randomized. This approach typically involves predicting group membership from a specified set of variables and then matching people in terms of their propensity, for example, to become divorced. Using matched samples (i.e., an exposure sample and a comparison sample) that are equivalent in terms of their propensity for the exposure, we can then determine whether the exposure is associated with outcomes of interest.

Propensity scores are ideally suited for examining the association between divorce and risk for major depression: Adults cannot be randomly assigned to divorce, the experience of divorce is nonrandom, and there exists no clear answer about the magnitude of the risk—if any—linking divorce and subsequent mental-health problems. Amato (2003) conducted propensity score analyses when examining the effect of parental divorce on children's mental-health outcomes (also see Frisco, Muller, & Frank, 2007), and here we have conducted PSM analyses to study the association between divorce and an MDE in adults.

The Present Study

Given the potential utility of PSM, we implemented this statistical approach to evaluate the mental-health correlates of becoming separated or divorced using two waves of the MIDUS sample. First, we identified all married adults in the MIDUS I (M1) random-digit dialing, twin, and metropolitan oversample subsamples who became separated or divorced prior to the MIDUS II (M2) assessment, which was a 9-year follow-up of the original MIDUS cohort. Using a set of predictor variables described in detail later, we then implemented the PSM algorithm to identify a subset of continuously married participants exhibiting the same propensity to divorce as those who became separated or divorced between the MIDUS assessments. With the matched samples, we conducted a series of regression analyses to determine whether becoming divorced remained a significant predictor of an MDE at the M2 assessment. In addition, we explored the possibility that the propensity to divorce moderates the mood symptom correlates of divorce. Amato and Hohmann-Marriott (2007) found that adults in high-conflict marriages reported an increase in life happiness following divorce, whereas adults in low-conflict marriages reported a decrease. Here, we also sought to conduct a conceptual replication of this finding by determining whether having a low propensity to divorce is associated with worse mood symptom outcomes when marriage comes to an end.

Method

Participants

The overall M1 sample included 7,108 participants (3,395 men and 3,713 women) who were an average age of 46.40 years old ($SD = 13$) when the initial phone interview was conducted in 1995–1996. The MIDUS sample is described in detail elsewhere (Brim, Ryff, & Kessler, 2004), and in the present report, we excluded anyone who was part of the MIDUS sibling subsample ($n = 950$).

to conduct analyses using entirely independent data. In brief, participants were drawn from a nationally representative random-digit dialing sample of noninstitutionalized, English-speaking adults aged 25 to 74 in the United States and asked via telephone survey to provide information on the patterns, predictors, and consequences of midlife development in the areas of physical health, psychological well-being, and social responsibility. For the present study, we included adults in a national random-digit dialing sample ($n = 3,487$) and oversamples from five U.S. metropolitan areas ($n = 757$). In addition, the MIDUS study includes a random sample of twin pairs ($n = 1,914$); to avoid problems associated with nonindependent data, we randomly selected one twin from the pair for the present study. Of the 5,137 people identified from these subsamples, 3,250 (1,779 men and 1,471 women) were married at M1, and this group formed our baseline sample.

Between 2004 and 2006, the M2 longitudinal follow-up was conducted, and every attempt was made to contact all original participants. Data from both M1 and M2 include information derived from a 30-min phone interview with participants, as well as an extensive questionnaire regarding their psychological functioning. Of the participants married at the M1 assessment, 2,346 completed the follow-up assessment, which represents 27% attrition from M1 to M2, a rate that approximates the attrition from the entire MIDUS study. Analyses of selective attrition revealed that women were significantly less likely to remain in the study, $\chi^2(1, N = 2,346) = 23.90, p < .001$. A total of 341 participants were experiencing an MDE at M1, but there was no selective attrition between M1 and M2 as a function of mood disturbance, $\chi^2(1, N = 2,346) = 0.61, p < .43$. Participants who were not retained in M2 reported significantly less total household income at M1 ($d = 0.16$) and significantly less overall education at M1 ($d = 0.21$), but no differences were observed between participants completing and not completing the M2 assessment on any of the other variables examined. At M1, participants reported having been married for an average of 23.42 years ($SD = 13.18$); thus, this sample is unique in that we have studied divorce in the context of long-term marriages.

The PSM algorithm used in this study requires complete data on all covariates from all participants at M1. We identified adults who met this criterion, were married at M1, and were separated or divorced at M2 ($n = 136$; 58 men and 78 women). The M2 interview asked participants to report the year and month they last lived with their former partner. Using the M1 and M2 interview dates, we computed two variables for the separated/divorced sample: the number of days from M1 until the month of physical separation ($M = 858, SD = 1,224$) and the number of days from the separation to M2 ($M = 2,432,$

$SD = 1,512$). On average, participants reported separating from their former spouse 2.5 years after the M1 interview, which was 6.8 years prior to their M2 interview. Thus, any unique effects of becoming separated/divorced on mood symptom changes are those that persist, on average, 6.5 years after the date of physical separation. The number of adults who provided complete data and remained married (without having divorced and remarried) from M1 to M2 was substantially larger ($n = 1,864$; 993 men and 871 women). Table 1 shows descriptive statistics for the separated/divorced and continuously married subgroups on the variables examined in this study.

Measures

Demographic and psychosocial covariates. The MIDUS study assessed participants' age, gender, total household income, education, and length of marriage (see Table 1). Several variables, all assessed at M1, were included as covariates for the PSM algorithm (see Thoemmes, 2012). Perceived marital risk (see Rossi, 2001) at M1 was calculated as the mean of five Likert-type items on a scale from 1 (*never*) to 5 (*all the time*) that assessed the degree to which participants thought their marriage might be at risk of ending in divorce (e.g., "During the past year, how often have you thought your relationship might be in trouble?"). This scale had adequate internal reliability ($\alpha = .69$). Participants were asked how much each of 30 self-descriptive adjectives described them, and we included assessments of neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness (Chapman, Fiscella, Kawachi, & Duberstein, 2010; Lachman & Weaver, 1997). The personality scales had internal consistency scores ranging from .58 (for conscientiousness) to .80 (for agreeableness).

Perceived control ($\alpha = .80$) was measured by combining four items assessing personal mastery (e.g., "I can do just about anything I set my mind to") and eight items assessing perceived constraints (e.g., "I often feel helpless in dealing with the problems of life"; see Lachman & Weaver, 1998); scores on the master and constraint scales were standardized, then the perceived control scale was calculated as the mean of these composites. Social integration ($\alpha = .73$) was assessed using three items, scored on a 7-point Likert-type scale, assessing participants' perceptions of social integration ("I don't feel I belong to anything I'd call a community"; "I feel close to many people in my community"; and "My community is a source of comfort"). The social integration scale is part of a larger social well-being inventory (Keyes & Shapiro, 2004). Family strain ($\alpha = .80$) was assessed using four items tapping the degree to which participants perceive that family members make demands on them, are critical of them, get on their nerves, and let them down (Grzywacz

Table 1. Demographic and Psychological Characteristics of the Midlife Development in the United States (MIDUS) Sample by Marital Status

Characteristic	Continuously married ($n = 1,864$)	Became separated/divorced ($n = 136$) ^a
Demographic		
Gender (% female)	44	59***
M1 years married	24.17 ± 13.11	16.07 ± 10.63***
M1 age (years)	46.77 ± 12.09	39.40 ± 9.33**
M1 household income (\$)	88,115 ± 63,559	83,890 ± 59,386
Education level (years in school)	7.17 ± 2.43	6.66 ± 2.50**
Psychological		
M1 psychological well-being	16.95 ± 2.21	16.56 ± 2.65
M1 depression (% with MDD diagnosis)	9.81	14.70*
M2 depression (% with MDD diagnosis)	8.40	22.05***
M1 perceived marital risk	1.86 ± 0.61	2.23 ± 0.70***
M1 neuroticism	2.20 ± 0.65	2.33 ± 0.66**
M1 extraversion	3.19 ± 0.55	3.17 ± 0.52
M1 openness	3.01 ± 0.50	3.03 ± 0.47
M1 conscientiousness	3.43 ± 0.42	3.39 ± 0.42
M1 agreeableness	3.45 ± 0.49	3.39 ± 0.51
M1 perceived control	-0.02 ± 0.50	0.06 ± 0.53**
M1 social integration	14.53 ± 4.14	12.85 ± 4.77***
M1 family strain	2.09 ± 0.59	2.13 ± 0.61
M1 alcohol problems	0.17 ± 0.56	0.28 ± 0.76**

Note: Data are means ± standard deviations unless otherwise noted. M1 = MIDUS I sample; M2 = MIDUS II sample; MDD = major depressive disorder.

^aAll of these participants were married at the time of the M1 assessment.

* $p < .10$. ** $p < .05$. *** $p < .001$.

& Marks, 1999; Walen & Lachman, 2000). Finally, an index of problem drinking ($\alpha = .69$) was calculated by taking the sum of five items asking participants if they experienced problems associated with excessive drinking and if they experienced withdrawal or tolerance symptoms (see Selzer, 1971).

Primary outcome variable. Major depression was the primary outcome in this study. MIDUS used the World Health Organization Composite International Diagnostic Interview–Short Form (CITI-SF; Kessler, Andrews, Mroczek, Ustun, & Wittchen, 1998), which assesses the presence of an MDE in the prior 12 months as defined by the *Diagnostic and Statistical Manual for Mental Disorders* (3rd ed., rev.; *DSM-III-R*; American Psychiatric Association, 1987; see Kessler, DuPont, Berglund, & Wittchen, 1999). The CITI-SF has a stem-branch structure. During a telephone interview, participants were first asked about the presence of sad/depressed affect that was particularly intense and was experienced every day or nearly every day for at least a 2-week period. Participants were also asked a stem question about the presence of anhedonia, defined as the near complete loss of interest in activities almost every day or every day for a

2-week period. The diagnosis of an MDE requires a period of at least 2 weeks of either depressed mood or anhedonia most of the day, nearly every day, and a series of at least four other associated symptoms typically found to accompany depression (e.g., loss of appetite, sleep problems, and irritability). The CITI-SF has demonstrated strong sensitivity and specificity (Kessler et al., 1998). The same items were assessed in both M1 and M2, thus allowing for the diagnosis of a past-year MDE at both points.

PSM

We implemented the PSM algorithm outlined in Thoemmes (2012). With the exception of the MDE variable, we selected all M1 variables reported in Table 1 as covariates for the creation of the propensity score.¹ The predicted scores from this analysis represent the propensity for anyone in the larger sample to experience a marital separation or divorce between M1 and M2. We then used a nearest neighbor matching algorithm to match each person in the separated/divorced group to a person in the continuously married group who had the closest propensity score. To increase the power to detect moderated effects in the final sample, we used a 4:1 matching ratio that resulted in

4 married participants to every separated/divorced participant. The PSM analyses were conducted using the custom SPSS 20.0 custom psmatching dialog created by Thoemmes, which opens the SPSS R-Plugin and executes R computer code for the analyses. Once the PSM was complete, all of the significant mean differences between groups (reported in Table 1) were eliminated.

Results

Table 1 presents the descriptive statistics for the married and divorced subsamples on all covariate, predictor, and outcome variables prior to the PSM. Relative to adults who remained married between the M1 and M2 assessments, those who became separated or divorced were significantly more likely to be female, younger, and married for fewer years. They reported significantly greater neuroticism, alcohol problems, and marital dissatisfaction, lower levels of psychological well-being, lower overall education, and less social integration but greater perceived control at M1. Participants who became divorced also showed a trend toward greater rates of depression at M1 (prior to their separation). After accounting for rates of depression at M1 but without adjusting for any of the other covariates, we found that becoming separated/divorced was associated with a significant increase in the likelihood of being diagnosed with an MDE at M2, $b = 1.09$, $SE = .23$, $p < .001$, odds ratio (OR) = 2.97, 95% confidence interval (CI) = [1.89, 4.69]. After accounting for depression at M1 as well as the 17 other covariates reported in Table 1, we found that becoming separated/divorced remained significantly associated with an increase in the likelihood of being diagnosed with an MDE at M2, $b = 0.81$, $SE = .25$, $p = .001$, $OR = 2.29$, 95% $CI = [1.41, 3.75]$.

Having established a basic association between changes in marital status and increases in the likelihood of being depressed in the M2 assessment in the overall sample, we then conducted the PSM process described earlier. The PSM process yielded a reduced data set ($n = 680$) in which the married and divorced groups have an equal propensity to experience divorce. Among people with an equal propensity to divorce, the effect of becoming divorced on depression at M2 (after accounting for depression at M1 and participants' propensity score) was significant, $b = 0.78$, $SE = .26$, $p = .003$, $OR = 2.18$, 95% $CI = [1.31, 3.63]$. In the same model, participants' continuous propensity score also was significantly associated with risk of being depressed at M2, $b = 3.07$, $SE = .35$, $p = .02$, $OR = 21.58$, 95% $CI = [1.62, 287.83]$.

We found no evidence for a Propensity Score \times Marital Status interaction, $b = -1.06$, $SE = 2.56$, $p = .67$, $OR = .34$, 95% $CI = [.002, 52.57]$. We then explored the possibility that becoming divorced interacted with depression at M1

to predict depression at M2. After controlling for participants' sex, the propensity to divorce score, and the main effects of depression at M1 and marital status, we observed that the M1-MDE \times Marital Status interaction was significant, $b = -1.27$, $SE = .65$, $p = .048$, $OR = .27$, 95% $CI = [.08, .69]$. In this model, the main effect of marital status was qualified by the interaction: The effect of separation/divorce on depression at M2 varied as a function of depression at M1. The simple-slopes deconstruction of this interaction is illustrated in Figure 1. For participants without a history of depression at M1, rates of depression did not differ at M2 as a function of change in marital status, $z = 1.63$, $p = .10$. In contrast, for participants with a history of depression at M1, rates of depression differed substantially at M2 as a function of change in marital status, $z = 3.16$, $p = .002$.

When the pairwise comparisons were reversed, among participants who became divorced, those who experienced a prior MDE at M1 were significantly more likely to experience an MDE at M2 relative to divorced/separated adults who were not depressed at M1, $z = 3.86$, $p = .0001$. As shown in Figure 1, nearly 6 of 10 people who were depressed at M1 and then experienced a divorce between M1 and M2 were again depressed at M2. For all other participants (including people with a history of depression at M1 but no divorce and people without a history of depression at M1 who then divorced), the risk for an MDE at M2 was equivalent—approximately 1 to 2 of 10 participants.

Finally, to examine the potential utility of the propensity score analyses over and above ANCOVA, we retested the M1-MDE \times Marital Status interaction using the full sample of participants who were unmatched in terms of

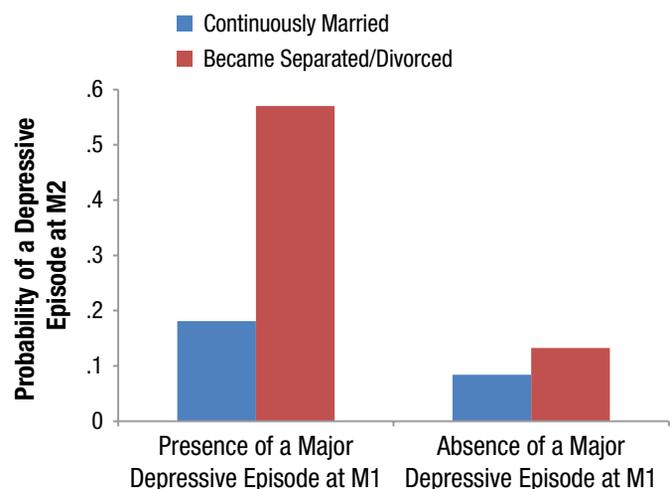


Fig. 1. Probability of a major depressive episode at the second assessment of the Midlife Development in the United States (MIDUS) study (M2) as a function of participants' marital status and depression at the first MIDUS assessment (M1).

their propensity to divorce. After controlling for all of the M1 covariates listed in Table 1, the main effects of depression at M1 and marital status, we found that the M1-MDE \times Marital Status interaction was not significant, $b = -0.89$, $SE = .60$, $p = .14$, $OR = .41$, 95% CI = [.13, 1.62]. Thus, the PSM approach used here provides an account of the interaction between depression and changes in marital status in the MIDUS sample that is different from that derived from ANCOVA alone.

Discussion

Using data from the nationally representative MIDUS study, we replicated prior findings showing that the end of marriage through divorce is associated with a significant increase in the probability of a future depressive episode (see Bruce & Kim, 1992; Keller et al., 2007). After implementing a PSM algorithm (Thoemmes, 2012) that identified a group of married adults who have an equivalent likelihood to experience marital separation, divorce, or both in the future, we observed that the end of marriage was associated only with an increased likelihood of a future depressive episode among adults who experienced an MDE at M1. This interaction was revealed using PSM but was not observed when we conducted an ANCOVA with the full sample; thus, the PSM approach provides an alternative—and perhaps less biased by third variables—account of the association between separation/divorce and subsequent mood disturbance than the picture emerging from more commonly used data analytic approaches in this area.

Although we expected to provide a conceptual replication of Amato and Hohmann-Marriott's (2007) findings by showing that people with less of a propensity to divorce have a greater risk for depression when they divorced, we found no evidence for this process with respect to depression. Amato and Hohmann-Marriott investigated happiness as their primary outcome, and it may well be that the end of higher quality marriages predicts lower levels of happiness but not the onset of clinically significant depression. Our results paint a picture that is entirely consistent with both diathesis-stress (Monroe & Simons, 1991) and stress-generation (Hammen, 1991) models of mood disturbance. The propensity analyses indicated that a number of the covariates listed in Table 1, including, for example, neuroticism, social integration, and psychological well-being at M1, contributed to the propensity to divorce; in the full sample, both participants' propensity score and becoming separated/divorced were uniquely associated with increased risk for an MDE at M2.

When we conducted additional analyses using the subsample ($n = 680$) matched for their propensity to divorce, the main effect of becoming separated/divorce

was qualified by a significant interaction with depression at M1. (This interaction was not significant in the full sample using participants unmatched in their propensity to separate/divorce.) Elevated risk for an MDE at M2 was observed only among people who were depressed at M1 and who experienced a separation/divorce between the two MIDUS waves. People without a history of depression at M1 and who experienced this life event thus may have the emotional and social wherewithal to cope well with the upheaval of divorce. In contrast, when adults with a history of depression faced this stressful life event, they may have done so with a limited capacity to cope with the demands of the transition out of marriage. This perspective raises the possibility that the separation itself does not give rise to depression; instead, it is the chronic difficulties that typically follow a marital separation (e.g., Lorenz et al., 2006) that play a causal role in episode recurrence among people with a history of depression. Consistent with this reasoning, results obtained by Monroe, Slavich, Torres, and Gotlib (2007) showed that major chronic difficulties, not major life events themselves, were most highly associated with depression recurrence.

Given these findings, our position is that the duality between social-selection and social-causation explanations is misplaced (also see Blekesaune, 2008). As shown in Figure 1, adults with a history of depression at M1 who do not ultimately separate/divorce show no difference in rates of depression when compared to adults without a history of depression at M1.² In this case, it is the divorce that potentiates the underlying risk, but in and of itself, this life event does not appear associated with increased rates of depression (i.e., separated or divorced adults without a history of depression are not at significantly increased risk for depression at M2).³ A critical next step in this line of work is to evaluate the mediational processes that explain why only divorcing adults with a history of depression are at particular risk for an MDE postdivorce. Do the processes that give rise to the propensity to divorce (e.g., lack of social support as one of many possibilities) also explain why this event correlates with a risk for future depression? This question remains open for investigation, and the key contribution of this article is demarcating who is at greatest risk for subsequent psychopathology when marriage comes to an end.

The rates of depression observed in this sample are nontrivial, and the findings have clear clinical implications. We suggest that clinicians working with divorcing adults carefully assess depression history; although we did not include all prior MDEs for every participant in our study, we did observe that as little as a single prior MDE can increase risk substantially for a subsequent episode following divorce. If an adult in midlife experiences a separation/divorce and does not also report a history of

prior MDEs, our findings suggest that the risk of an MDE in the years following the separation/divorce is fairly minimal.

The findings reported here should be interpreted in light of the study's limitations. First, the group of separated/divorced adults was relatively small. Furthermore, to increase the size of this group, we combined separated and divorced adults into one group. Although doing so is an accepted approach to studying marital transitions (e.g., Sbarra, Law, Lee, & Mason, 2009), collapsing across marital status in this way may blur potentially interesting differences between those adults separated from their spouse relative to those adults who have experienced legal divorce. Second, although the MIDUS data provide a rich resource for asking prospective research questions, the gap between the assessments is too long to capture short-term change or any anticipation effects (i.e., distress predating the separation experience). For example, using 15 waves of data from the British Household Panel Study, Blekesaune (2008) found that the emotional distress associated with the end of marriage was relatively short-lived. The present study focuses on clinical distress, and it is likely that the processes leading to diagnosable mood disturbance are different from those that unfold as part of a normative grief response. Furthermore, as noted earlier, it is possible that the high rates of depression observed among people who separated/divorced with a history of depression follow from the stressors and major difficulties associated with divorce, not the life event itself (cf. Monroe et al., 2007). Nevertheless, it is important to recognize that the present study is limited in its assessment of the temporal dynamics of the findings.

Third, although the MIDUS study includes a representative sample of community-dwelling adults, participants, on average, were in their late forties. Thus, this article focuses on divorce within relatively stable marriages. As married adults age, they are less likely to become divorced (Heaton, 2002), and the extent to which these results apply to younger cohorts remains to be determined. Finally, although we used a large set of covariates to conduct our PSM analyses, this approach cannot account for all of the variables contributing to the selection out of marriage. Thus, it is possible that the inclusion of other variables in the PSM algorithm would alter the results of the current study.

Conclusion

Using data from the nationally representative MIDUS study, we investigated whether accounting for the propensity to experience marital separation/divorce altered the association between marital dissolution and risk for major depression. Although the prospective association between separation/divorce and major depression at M2

was significant in both unadjusted analyses and ANCOVAs, after implementing a PSM algorithm, we observed the main effect of separation/divorce to be qualified by a significant interaction with depression at the start of the study. Elevated risk for an MDE at M2 was observed only among people who were depressed at M1 and who also experienced a separation/divorce between the two MIDUS waves. Adults with a history of depression at M1 who did not ultimately divorce showed no difference in rates of depression compared to adults without a history of depression at M1. In this case, it is the divorce that potentiates the underlying risk; the life event itself does not appear associated with increased rates of depression (i.e., separated or divorced adults without a history of depression do not have a significantly increased risk for depression at M2). Our findings are consistent with both diathesis-stress and stress-generation models of mood disturbance and provide a more nuanced account of how social-selection and social-causation processes may work in combination to increase risk for major depression following marital separation and divorce.

Author Contributions

D. A. Sbarra planned and conducted the data analysis and drafted the manuscript. R. E. Emery, C. R. Beam, and B. L. Ocker contributed to the drafting of and critically revised the manuscript.

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Declaration of Conflicting Interests

The authors declared that they had no conflicts of interest with respect to their authorship or the publication of this article.

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Notes

1. Given that our ultimate goal was to predict variation in MDEs at M2 as a function of the propensity score, using the MDE item at M1 to compute the propensity would introduce bias in these

analyses. Because the residualized regression (predicting MDEs at M2) includes depression at M1, including this variable in the PSM algorithm prevents a clear examination of whether separation/divorce interacts primarily with prior depression or with the other factors examined on the propensity score index. Thus, we accounted for MDE at M1 in the final logistic regression model but did not use this item to create the propensity score.

2. Depression at M1 is very highly associated with depression at M2. Therefore, even though the M1-MDE \times Marital Status interaction is significant, the main effect of M1-MDE remains highly significant as well.

3. Consistent with the points raised in Footnote 2, results showed that when we rerun this analysis with the entire sample (i.e., not just those participants identified as having an equivalent propensity to separation/divorce), the probability for depression among people with an MDE at M1 who do not divorce increases to 2.0 of 10 people. The probability of depression at M2 among the high-risk group experiencing an MDE at M1 and subsequent separation/divorce is slightly reduced to 5.0 of 10 people.

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