

ASPE RESEARCH BRIEF

OFFICE OF THE ASSISTANT SECRETARY FOR PLANNING AND EVALUATION
OFFICE OF HUMAN SERVICES POLICY - U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

A SYNTHESIS OF RECENT RESEARCH EVIDENCE

The Effects of Marriage on Health

Marriage has become an increasingly important topic in academic and policy research. A burgeoning literature suggests that marriage may have a wide range of benefits, including improvements in individuals' economic well-being, mental and physical health, and the well-being of their children. This brief focuses on recent research evidence concerning one of these potential benefits of marriage—its effects on health. The brief provides an overview of what is currently known about the relationship between marriage and health; it also suggests directions for future research.

Married people are generally healthier than unmarried people, as measured by numerous health outcomes.¹ To investigate the complex relationship between marriage and health, this review scrutinizes recent research, focusing on studies that use rigorous statistical methods to examine whether marriage is a cause of these better health outcomes.

A focus on the most rigorous recent evidence reveals that marriage has positive effects on certain health-related outcomes. These studies find, for example, that marriage improves certain mental health outcomes, reduces the use of some high-cost health services (such as nursing home care), and increases the likelihood of having health insurance coverage. In addition, an emerging literature suggests that growing up with married parents is associated with better health as an adult. Marriage has mixed effects on health behaviors—leading to healthier behaviors in some cases (reduced heavy drinking) and less healthy behaviors in others (weight gain). For other key health outcomes—in particular, measures of specific physical health conditions—the effects of marriage remain largely unaddressed by rigorous research.

ABOUT THIS BRIEF

This brief was prepared by Robert G. Wood, Brian Goesling, and Sarah Avellar of Mathematica Policy Research, Inc. under contract to ASPE. The brief summarizes the findings of a synthesis of the literature on the effects of marital status on health outcomes in the U.S. The full report is available on ASPE's website: <http://aspe.hhs.gov>.

A review of international studies, "How Does Marriage Affect Physical and Psychological Health? A Survey of the Longitudinal Evidence," is available at: <http://www2.warwick.ac.uk/fac/soc/economics/research/papers/twerp728.pdf>

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Understanding the Marriage-Health Connection

The relationship between marriage and health is complex. Marital status can both affect health outcomes and be affected by them. Healthier people may have a better chance of marrying and staying married because they may be viewed as more desirable marriage partners based on their physical attractiveness, earnings potential, mental well-being, degree of self-sufficiency, or likely longevity. Social scientists describe this pattern as the “selection” of healthy people into marriage. If this is the only reason for the correlation between marriage and health, then marriage is not causing better health. Instead, the observed health differences between married and unmarried people are the result of healthier people being more likely to marry.

Alternatively, there may be a true causal link between marriage and better health. Marriage could improve health outcomes in a variety of ways. It may result in two incomes, as well as economies of scale, improving economic well-being.² Having more income could, in turn, improve health outcomes by enhancing access to health care or lowering stress. In addition, a spouse may play an important role in monitoring and encouraging healthy behaviors (such as good eating habits and regular exercise), as well as in discouraging unhealthy ones (such as smoking or heavy drinking).³ Marriage may also provide an emotionally fulfilling, intimate relationship, satisfying the need for social connection, which could have implications for both physical and mental health.⁴ Most researchers conclude that the association between marriage and health represents a combination of the selection of healthier people into marriage and true health benefits from marriage.^{5,6,7}

Health Outcomes Examined

This review highlights the recent literature on the effects of marriage on health-related measures from five broad areas:

- **Health Behaviors.** This review focuses on behaviors that have well-documented connections with physical health outcomes: alcohol and drug use, smoking, body weight, and exercise.
- **Health Care Access, Use, and Costs.** This review examines the links between marriage and three main health care outcomes: (1) health insurance status; (2) health care use (in particular, hospital and nursing home care); and (3) total health care costs.
- **Mental Health.** This review focuses on the effects of marital status on one common form of psychological distress: the presence of depressive symptoms.
- **Physical Health and Longevity.** This review examines the effect of marriage on self-rated health and longevity, as well as a small set of chronic health conditions.
- **Intergenerational Health Effects.** This review focuses on a growing body of research linking a child’s parent’s marital status with that child’s health outcomes as an adult.

Measuring the Effects of Marriage

Because marriage is likely to be both a cause and a consequence of health outcomes, research must disentangle the influence of selection from the true causal influence of marriage. Distinguishing between these two factors requires careful analysis and advanced statistical

methods that have been absent from many studies. This review focuses on studies that provide the most reliable evidence on whether marriage has a causal influence on health outcomes.

The studies providing the strongest evidence use longitudinal data and examine the association between changes in health outcomes and transitions into and out of marriage. Studies of this type provide more convincing evidence of a causal relationship between marriage and health because sample members serve as their own control group, and the effect of marriage is measured by comparing their outcomes before and after marriage. This method avoids comparing two groups that may have different background characteristics—in particular, people who marry and people who do not—which may lead to misleading and inaccurate results.

Some health outcomes are not well suited for this type of analysis, however. For example, many physical health outcomes cannot be examined in this way, because changes can unfold over a long time and may not be apparent immediately after a marital transition. For this reason, the evidence on the effects of marriage on physical health is more limited and somewhat more speculative than evidence on the effects of marriage on other health outcomes examined in this review.

What Is Currently Known?

Effects on Health Behaviors. Marriage may influence health through its effect on behaviors such as alcohol consumption, drug use, cigarette smoking, diet, and exercise. Recent research suggests that marriage has significant effects on the health behaviors of both men and women, but the pattern is mixed—marriage is associated with healthier behaviors in some cases and less healthy behaviors in others. Studies consistently indicate that marriage reduces heavy drinking and overall alcohol consumption, and that effects are similar for young men and young women, and for both African Americans and whites.^{8,9,10,11} Although the research is less extensive, marriage is also associated with reduced marijuana use for young men, but less so for women.^{8,11} Less is known about the effects of marriage on the substance use of older adults. Studies of marriage and smoking reveal no consistent pattern of results, suggesting that marriage may have little or no influence on this behavior.^{8,11,12,13}

In contrast to studies of alcohol and drug use, studies of the effect of marriage on weight and physical activity suggest that marriage may have negative effects on healthy behaviors and may encourage a more sedentary lifestyle. Several rigorous studies find that marriage leads to modest weight increases for both men and women—typically averaging less than five pounds.^{14,15,16,17,13,12} The research on the effects of marriage on physical activity is less conclusive because it is not based on longitudinal analysis and does not fully adjust for differences between those who marry and those who do not. The evidence that is available suggests marriage may lead to reductions in physical activity, particularly for men.¹⁸

For certain health behaviors—in particular, substance use among younger adults and weight gain among all adults—the influence of marriage has been well studied and is well understood. For other behaviors, less is known and additional research is needed before stronger conclusions can be drawn. One useful area for future research is to examine the effects of marriage on the alcohol use of older adults to determine whether the effects observed for young adults exist in older populations. Additional research using longitudinal data is also needed to examine the

effects of marriage on physical activity to determine whether the relationship between marriage and physical activity observed in cross-sectional analyses remains when more rigorous estimation techniques are used.

Effects on Health Care Access, Use, and Costs. Marriage may influence physical health through its effects on health care access and use. Studies of the link between marriage and health insurance suggest that—by offering access to coverage through a spouse’s policy—marriage increases the likelihood of having insurance and reduces the likelihood of becoming uninsured after a job loss or other major life event.¹⁹ This effect is larger for women. Recent research also finds a link between marriage and health care use. Marriage is associated with shorter average hospital stays, fewer doctor visits, and reduced risk of nursing home admission.^{20,21,22} Limited evidence also suggests that marriage may increase the use of preventive care such as cancer screenings.¹²

Because of its effects on health care use, marriage is also associated with lower health care costs among older adults. For example, studies show that, because marriage reduces the risk of nursing home admission, marriage may also lead to reduced nursing home costs.²² The effect of marriage in shortening hospital stays may also lead to reductions in health care costs. Research indicates that the effect of marriage on health care costs exists independent of the effect of marriage on physical health.²² Specifically, many married people rely on their spouses for informal care, and thus require fewer long hospital stays and nursing home admissions, resulting in lower health care costs—even if married and unmarried older adults are equally likely to get sick.^{20,21} These studies find that wives are especially likely to provide informal care for their husbands at home, so the effect of marriage on health care costs may be larger for men.

The link between marriage and health care costs needs further study, because most previous research provides only indirect evidence based on examination of effects on high-cost health services, such as nursing home care. Other outcomes ripe for future research include quality of care, use of prescription medications, receipt of high-tech exams and treatments, patient adherence to prescribed treatment regimens, and use of preventive health services other than cancer screenings.

Effects on Mental Health. Marriage may affect many aspects of mental health. This review focuses on the prevalence of depressive symptoms. The most recent rigorous research suggests that marriage reduces depressive symptoms for both men and women.^{23,24,25,26} In particular, these studies find that getting married decreases depressive symptoms, while getting divorced increases them. Research has also documented that increases in depressive symptoms after divorce are long-lasting and that the prevalence of these symptoms remains elevated years after the marital breakup.^{27,28} In addition, studies comparing the mental health of stably married adults to those who remain unmarried find that those who are stably married have fewer depressive symptoms (and smaller increases in these symptoms as they grow older), even after controlling for baseline mental health.^{23, 25,26}

Although research consistently shows that being married reduces depression, the existing evidence has limitations that future research should address. In particular, the most rigorous research typically estimates the effect of marriage and marital transitions by comparing the prevalence of depressive symptoms in the period just before a marital transition to the prevalence

in the period just after the transition. This method adjusts for background differences between those who marry and those who do not. However, it may introduce other sources of bias into the estimates, and the direction of this bias is uncertain.

For example, people may experience fewer depressive symptoms in the period leading up to marriage in anticipation of this transition. Similarly, people may experience more depressive symptoms in the period leading up to a divorce, as the quality of their marriage declines. If so, comparing someone's depressive symptoms during the period just before a marital transition to the period immediately after may underestimate the effect of this transition. Conversely, if depressive symptoms are reduced for only a short time after marriage or are elevated for only a short time after a marital dissolution before returning to their pre-transition levels, comparisons of depressive symptoms just before and just after the transition would overestimate the long-term effect. To address these limitations and to obtain a more precise understanding of the relationship between marriage and depression, longitudinal data sets are needed that offer more detailed mental health histories and more information on changes in mental health status than are currently available.

Effects on Physical Health and Longevity. Many studies have documented that people who marry live longer and enjoy better physical health than those who do not marry.^{29,30} However, methodological issues require caution in interpreting this pattern, because most of the research in this area relies on descriptive methods that do not adequately control for the possible selection of healthier people into marriage. Although central to the overall assessment of the link between marriage and health, rigorous research evidence concerning the effect of marriage on specific physical health outcomes is limited, and few solid conclusions can be drawn.

The rigorous research currently available provides limited evidence of an effect of marriage on physical health. Recent research finds a significant positive effect of marriage on how men rate their overall physical health status; however, it finds no such effect for women.³⁰ Researchers find a positive effect on women's physical health, as measured by the prevalence of specific health conditions and illnesses.³¹ However, no recent rigorous studies based on U.S. samples have examined whether a similar marriage effect on the frequency of health conditions or illnesses exists among men. Similarly, little evidence exists on the links between marriage and specific health conditions or diseases. One exception is a recent study that suggests a possible link between marriage and the risk of cardiovascular disease for women; however, the study finds no such effect for men.³² Overall, the existing research evidence on the links between marriage and physical health is limited to a narrow range of health measures and does not offer a complete picture of the influence of marriage on physical health.

Many studies have pointed to a strong relationship between marriage and longevity,^{33,29, 34} but this research also has limitations. In particular, these studies are typically limited to simple descriptive comparisons of married and unmarried adults that do not adequately distinguish the effect of marriage from the possible effects of healthier people selecting into marriage. As noted, the most reliable studies of links between marriage and health examine measures directly before and after marital transitions. However, because longevity is determined only at the end of life, it is not possible to observe how a marital transition changes longevity. Some researchers have attempted to address selection using other statistical techniques,⁵ but these studies provide less convincing evidence than do studies of marital transitions. For this reason, the strongest

evidence of a positive effect of marriage on longevity comes more from the robustness of this relationship across many studies than from the particular strengths of any single study.

A more definitive test of the effect of marriage on physical health and longevity will require very long-term longitudinal data that afford the opportunity to control for differences in initial health status measured before sample members begin to marry. With data of this type, researchers can examine how differing marital histories affect physical health, controlling for any initial health differences that exist between those who marry and remain married and those who do not.

Intergenerational Health Effects. An emerging literature on the possible intergenerational health effects of marriage suggests that marriage also has potential long-term consequences for the physical health of a couple's children. In particular, studies show that growing up with married parents is associated with better physical health in adulthood and increased longevity.^{35,36,37} Research suggests that such intergenerational health effects are especially strong for men and operate equally for African American and white men.^{38,39,40} There is less evidence examining possible differences in this relationship for African American and white women.

There are many possible reasons why parental marital status may have long-term health consequences for children. However, existing research provides limited evidence on the pathways by which childhood family structure affects adult physical health and longevity. Several studies suggest that the effects work mostly through the role of childhood family structure in shaping children's future socioeconomic attainment, and through adult health risk behaviors, such as smoking and heavy drinking.^{35, 39} On average, children raised in two-parent families obtain more education and exhibit healthier adult behaviors than children from other types of families. These differences, in turn, have consequences for adult health and longevity.

Research on intergenerational health effects has focused on trends for people born in the late 19th and early 20th centuries, a period when patterns of marriage, divorce, and single parenthood were much different from today. It is possible that the apparent benefits of marriage for children's health have weakened as single parenthood and divorce have become more common and less stigmatizing. In addition, much of the research is limited to data for small nonrepresentative samples. The available nationally representative evidence is based on data sets that began tracking sample members as adults, which limits the ability to control for differences in the background characteristics of those who grew up in a two-parent family and those who did not.

Future research is needed to (1) replicate the results of existing research with nationally representative data following sample members from childhood into adulthood, (2) distinguish more clearly the effect of parental marital status from the effects of other related family characteristics, (3) identify more precise mechanisms by which childhood family structure might influence adult physical health, and (4) examine whether the relationships observed in earlier generations also apply to a younger cohort of children coming of age in a period when divorce and single parenthood are increasingly common.

Marriage, Health, and Policy

Recent research suggests that marriage improves certain health outcomes. However, the picture of marriage's overall effect on health is not yet complete. Future research could more fully explore the effects of marriage on health care costs; the health effects of marriage for different racial, ethnic, and socio-economic groups; the role that marital quality might play; and the intergenerational health effects of marriage. Moreover, little rigorous research has been conducted concerning the central question of whether marriage affects physical health. Additional research in these and other areas could help clarify the breadth of the health effects of marriage. Better information about how marriage affects health can contribute to discussions about the role and purposes of public policy in supporting marriage—and possibly give a new meaning to the phrase “healthy marriage.”

REFERENCES

- ¹ Schoenborn, Charlotte A. “Marital Status and Health: United States, 1999-2002.” *Advance Data*, no. 351, December 2004.
- ² Lerman, Robert. “Marriage and the Economic Well-Being of Families with Children: A Review of the Literature.” Washington, DC: The Urban Institute and American University, July 2002.
- ³ Umberson, Debra. “Family Status and Health Behaviors: Social Control as a Dimension of Social Integration.” *Journal of Health and Social Behavior*, vol. 28, no. 3, 1987, pp. 306-319.
- ⁴ House J.S., D. Umberson, and K.R. Landis. “Structures and Processes of Social Support.” *Annual Review of Sociology*, vol. 14, 1988, pp. 293-318.
- ⁵ Lillard, Lee A., and Constantijn W.A. Panis. “Marital Status and Mortality: The Role of Health.” *Demography*, vol. 33, no. 3, August 1996, pp. 313-327.
- ⁶ Murray, John E. “Marital Protection and Marital Selection: Evidence from a Historical-Pro prospective Sample of American Men.” *Demography*, vol. 37, no. 4, November 2000, pp. 511-521.
- ⁷ Waite, Linda J. “Does Marriage Matter?” *Demography*, vol. 32, no. 4, Nov. 1995, pp. 483-507.
- ⁸ Duncan, Greg, Bessie Wilkerson, and Paula England. “Cleaning Up Their Act: The Effects of Marriage and Cohabitation on Licit and Illicit Drug Use.” *Demography*, vol. 43, no. 4, Nov. 2006, pp. 691-710.
- ⁹ Curran, Patrick J., Bengt O. Muthen, and Thomas C. Harford. “The Influence of Changes in Marital Status on Developmental Trajectories of Alcohol Use in Young Adults.” *Journal of Studies on Alcohol*, November 1998.
- ¹⁰ Miller-Tutzauer, C; K.E. Leonard, and M. Windle. “Marriage and Alcohol Use: A Longitudinal Study of “Maturing Out”. *J Stud Alcohol.*, vol. 52, no. 5, September 1991, pp. 434-40.
- ¹¹ Bachman, J.G., K.N. Wadsworth, P.M. O’Malley, L.D. Johnston, and J.E. Schulenberg. *Smoking, Drinking, and Drug use in Young Adulthood: The Impacts of New Freedoms and New Responsibilities*. Mahwah, NJ: Lawrence Erlbaum Assoc., 1997.
- ¹² Lee, Sunmin, Eunyoung Cho, Francine Grodstein, Ichiro Kawachi, Frank B. Hu, and Graham A. Colditz. “Effects of Marital Transitions on Changes in Dietary and Other Health Behaviours in U.S. Women.” *International Journal of Epidemiology*, vol. 34, 2005, pp. 69-78.
- ¹³ Eng, P.M., Ichiro Kawachi, Garrett Fitzmaurice, and Eric B. Rimm. “Effects of Marital Transitions on Changes in Dietary and Other Health Behaviours in U.S. Male Health Professionals.” *Journal of Epidemiology and Community Health*, vol. 59, 2005, pp. 56-62.
- ¹⁴ Kahn, Henry S., and David F. Williamson. “The Contributions of Income, Education and Changing Marital Status to Weight Change Among U.S. Men.” *International Journal of Obesity*, vol. 14, 1990, pp. 1057-1068.
- ¹⁵ Kahn, H.S., D.F. Williamson, and J.A. Stevens. “Race and Weight Change in US Women: The Roles of Socioeconomic and Marital Status.” *American Journal of Public Health*, vol. 81, no. 3, March 1991, pp. 319-323.
- ¹⁶ Sobal, J., B. Rauschenbach, and E. Frongillo. “Marital Status Changes and Body Weight Changes: A U.S. Longitudinal Analysis.” *Social Science & Medicine*, vol. 56, no. 7, 2003, pp. 1543-1546.
- ¹⁷ Jeffery, R.W., and A.M. Rick. “Cross-Sectional and Longitudinal Associations Between Body Mass Index and Marriage-Related Factors.” *Obes Res*, vol. 10, 2002, pp. 809-815.

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- ¹⁸ Nomaguchi, Kei M., and Suzanne M. Bianchi. "Exercise Time: Gender Differences in the Effects of Marriage, Parenthood, and Employment." *Journal of Marriage and Family*, vol. 66, May 2004, pp. 413-129.
- ¹⁹ Short, Pamela Farley. "Gaps and Transitions in Health Insurance: What Are the Concerns of Women?" *Journal of Women's Health*, vol. 7, no. 6, 1998, pp. 725-737.
- ²⁰ Freedman, Vicki A. "Family Structure and the Risk of Nursing Home Admission." *Journal of Gerontology, Social Sciences*, vol. 51B, 1996, pp. S61-S69.
- ²¹ Iwashyna, Theodore J., and Nicholas A. Christakis. "Marriage, Widowhood, and Health-Care Use." *Social Science & Medicine*, vol. 57, no. 11, 2003, pp. 2137-2147.
- ²² Prigerson, Holly G., Paul K. Maciejewski, and Robert A. Rosenheck. "Preliminary Explorations of the Harmful Interactive Effects of Widowhood and Marital Harmony on Health, Health Service Use, and Health Care Costs." *The Gerontologist*, vol. 40, no. 3, 2000, pp. 349-57.
- ²³ Kim, Hyoun K., and Patrick McKenry. "The Relationship Between Marriage and Psychological Well-Being." *Journal of Family Issues*, vol. 23, no. 8, 2002, pp. 885-911.
- ²⁴ Lamb, Kathleen A., Gary R. Lee, and Alfred DeMaris. "Union Formation and Depression: Selection and Relationship Effects." *Journal of Marriage and Family*, vol. 65, 2003, pp. 953-962.
- ²⁵ Marks, Nadine F., and James David Lambert. "Marital Status Continuity and Change among Young and Midlife Adults." *Journal of Family Issues*, vol. 19, no. 6, 1998, pp. 652-686.
- ²⁶ Simon, Robin W. "Revisiting the Relationships Among Gender, Marital Status, and Mental Health." *American Journal of Sociology*, vol. 4, 2002, pp. 1065-1096.
- ²⁷ Aseltine Jr., Robert H., and Ronald C. Kessler. "Marital Disruption and Depression in a Community Sample." *Journal of Health and Social Behavior*, vol. 34, 1993, pp. 237-251.
- ²⁸ Johnson, David R., and Jian Wu. "An Empirical Test of Crisis, Social Selection, and Role Explanations of the Relationship Between Marital Disruption and Psychological Distress: A Pooled Time-Series Analysis of Four-Wave Panel Data." *Journal of Marriage and Family*, vol. 64, 2002, pp. 211-224.
- ²⁹ Manzoli, Lamberto, Paolo Villari, Giovanni M. Pirone, and Antonio Boccia. "Marital Status and Mortality in the Elderly: A Systematic Review and Meta-Analysis." *Social Science & Medicine*, vol. 64, 2007, pp. 77-94.
- ³⁰ Williams, Kristi and Debra Umberson. "Marital Status, Marital Transitions, and Health: A Gendered Life Course Perspective." *Journal of Health and Social Behavior*, vol. 45, 2004, pp. 81-98.
- ³¹ Lorenz, Frederick O., K.A.S. Wickrama, Rand D. Conger, and Glen H. Elder, Jr. "The Short-Term and Decade-Long Effects of Divorce on Women's Midlife Health." *Journal of Health and Social Behavior*, vol. 47, 2006, pp. 111-125.
- ³² Zhang, Zhenmei and Mark D. Hayward. "Gender, the Marital Life Course, and Cardiovascular Health in Late Midlife." *Journal of Marriage and Family*, vol. 68, no. 3, 2006, pp. 639-657.
- ³³ Kaplan, Robert M. and Richard G. Kronick. "Marital Status and Longevity in the United States Population." *Journal of Epidemiology and Community Health*, vol. 60, 2006; pp. 760-765.
- ³⁴ Sorlie, P.D., E. Backlund, and J.B. Keller. "U.S. Mortality by Economic, Demographic, and Social Characteristics: the National Longitudinal Mortality Study." *American Journal of Public Health*, vol. 85, no. 7, 1995, pp. 949-956.
- ³⁵ Hayward, Mark D., and Bridget K. Gorman. "The Long Arm of Childhood: The Influence of Early-Life Social Conditions on Men's Mortality." *Demography*, vol. 41, no. 1, 2004, pp. 87-107.
- ³⁶ Maier, E. Hailey, and Margie E. Lachman. "Consequences of Early Parental Loss and Separation for Health and Well-Being in Midlife." *International Journal of Behavioral Development*, vol. 24, no. 2, 2000, pp. 183-89.
- ³⁷ Schwartz, Joseph, Howard S. Friedman, Joan S. Tucker, Carol Tomlinson-Keasey, Deborah L. Wingard, and Michael H. Criqui. "Sociodemographic and Psychosocial Factors in Childhood as Predictors of Adult Mortality." *American Journal of Public Health*, vol. 85, no. 9, 1995, pp. 1237-1245.
- ³⁸ Preston, Samuel H., Mark E. Hill, and Greg L. Drevestedt. "Childhood Conditions that Predict Survival to Advanced Ages Among African-Americans." *Social Science & Medicine*, vol. 47, no. 9, 1998, pp. 1231-1246.
- ³⁹ Tucker, Joan S., Howard S. Friedman, Joseph E. Schwartz, Michael H. Criqui, Carol Tomlinson-Keasey, Deborah L. Wingard, and Leslie R. Martin. "Parental Divorce: Effects on Individual Behavior and Longevity." *Journal of Personality and Social Psychology*, vol. 73, no. 2, 1997, pp. 381-391.
- ⁴⁰ Warner, David F. and Mark D. Hayward. "Early-Life Origins of the Race Gap in Men's Mortality." *Journal of Health and Social Behavior*, vol. 47, 2006, pp. 209-226.

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