



**national
healthy marriage
resource center**

What is the Relationship of Marriage to Physical Health?

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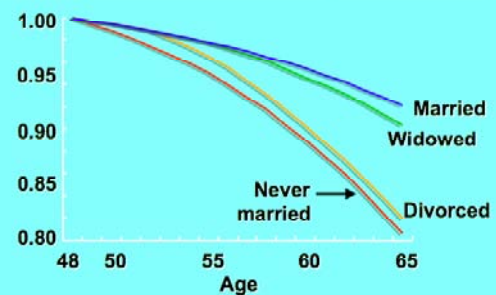
Headlines/Trends

Decades of research suggest that a stable marriage protects adult partners against premature death and illness, and provides children with the best physical health outcomes. The relationship of marriage to better health outcomes continues to be found in the most recent national health surveys and longitudinal studies. These studies indicate married adults live longer and enjoy better physical health than adults who are never married, divorced, separated or widowed. In fact, these benefits seem to persist even when factors that affect health outcomes, such as health status prior to marriage, income levels and race/ethnicity are taken into account (Johnson et al, 2000; Kaplan & Kronick, 2006; Lillard & Waite, 1995; Wilson & Oswald, 2005; Wood, Goesling & Avellar, 2007). Also research suggests that married couples living in poverty have better physical health compared to their low-income peers who are unmarried, divorced, or widowed (Schoenborn, 2004).

Decades of research suggest that a stable marriage protects adult partners against premature death and illness, and provides children with the best physical health outcomes.

Research also indicates a man or woman's marital status at age 48 – that is, whether married, divorced, widowed, or never married -- strongly predicts their chances of either surviving to age 65 or dying prematurely. For example, as depicted in the charts below (Waite, 2005), divorced men have only a 65% chance of living to age 65, compared to a 90% chance for married men, and a never-married woman has an 80% chance of living to age 65, compared to a 95% chance for married women (Lillard & Waite, 1995, Waite, 1995).

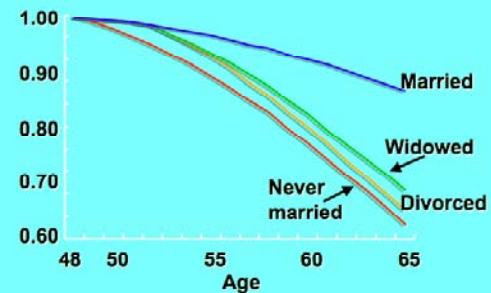
Probability of Survival, Ages 48-65 by Marital Status, Females



Lillard, Lee A., and Linda J. Waite. 1995 "Til Death Do Us Part: Marital Disruption and Mortality." *American Journal of Sociology* 100:1131-1156. Funded by NIA Grant 1-PO1-AG8291-01

Studies reviewed by Wood et al in a recent synthesis article show that marriage also benefits the health of children. Children raised to adulthood by married parents live longer, and have better physical health as children and later in life as adults, compared to children raised in other living arrangements (Wood et al, 2007).

Probability of Survival, Ages 48-65 by Marital Status, Males



Lillard, Lee A., and Linda J. Waite. 1995 "Til Death Do Us Part: Marital Disruption and Mortality." *American Journal of Sociology* 100:1131-1156. Funded by NIA Grant 1-PO1-AC8291-01

In terms of incidence of intimate partner violence, a healthy marriage is also a relatively safe place for women compared with other types of partner relationships. Department of Justice statistics show that couples that are married and living together are much less likely to report domestic violence than couples that are living together and not married, or whose marriages are in process of ending or have already broken up and are divorced (Dept. of Justice, 2007).

Background

It is becoming clearer that it is the quality of the marital relationship, rather than simply being married that affects health. Having a marriage with relatively low levels of negative interactions is what leads to life-long cumulative health benefits. A marriage in which there is violence is unhealthy by definition; physical and/or emotional abuses within a marriage are health risks. A truly healthy marriage is physically and emotionally safe for both partners and for their children

selection and protection effects. Most of the research studies on which this fact sheet relies control for prior health status so that results are not influenced by confounding factors. In fact, studies on the health status of young adults prior to their first marriage demonstrate that selection effects explains only some of their lifelong health benefits and highlight the consideration of protective effects in understanding their better physical health status (Goldman, 2001; Wood et al, 2007).

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(Moore et al, 2004; Stanley et al, 2002). Even without physical conflict, marriages that are high in negative distress and discord carry health hazards by creating a high-stress environment that may increase the likelihood of divorce, which is strongly associated with poorer health outcomes for both men and women (Kiecolt-Glaser & Newton, 2001; Umberson et al, 2006).

riages, especially as adults grow older. To this end, this fact sheet will present research findings on the relationship between marriage and physical health for various populations across the life span.

It is important to understand the causal relationship that may be involved in marriage's impact on physical health. Some believe that marriage itself has a protective effect and those who marry will physically benefit and be protected from illness. Others believe that healthier people (i.e., those that engage in fewer risky behaviors, are not depressed, and experience no incidence of intimate partner violence) are more likely to be selected as marriage partners. The research consensus is that the health benefits of marriage are a combination of

Children of Married Parents; Longer & Healthier Lives

Children living with two biological parents continue to be healthier compared to children growing up in other family arrangements (e.g., step-parent, single mother, grandparents), regardless of income levels (Bramlett, & Bloomberg, 2003). When these children reach adulthood, surveys show that they will have better physical health and a longer lifespan (Wood et al, 2007).

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lead to greater incidence of risky behaviors that will affect their health (Amato, 2001, Doherty & Needle, 1991; Hoffman & Johnson, 1998). If we look specifically at the health outcomes, children whose parents divorced before they were 17 grow up to have shorter a lifespan (for males) and more acute and chronic health conditions (for both males and females), compared to children whose parents remain married (Dawson, D.A., 1991; Maier & Lachman, 2000). For example, a child's chance of being diagnosed with asthma is more likely if parents are unmarried and not living together, after controlling for income levels. The incidence of emergency hospital visits for asthma attacks increases in direct proportion with more tenuous and distant parent relationships, i.e., from married to cohabiting to not living together (Harknett, 2005). Additionally, research supports that marital discord and conflict between parents is a better predictor of illness later in life for children than the marital status of the parents (Troxel & Matthews, 2003). Interestingly, research has found that children of distressed, highly negative couples have higher levels of stress-related hormones in their system, which is a marker for the presence of chronic physiological stress (Gottman & Katz, 1989).

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When Young Adults Marry

Research indicates that marriage encourages reductions in risky behaviors (e.g., substance abuse, reckless driving, unprotected sex, poor nutrition). A large part of the lifetime protective value of marriage for men, especially younger men, comes from this reduction in risky behaviors, particularly alcohol and substance abuse (Bachman et al, 1997; Duncan et al, 2006; Horwitz et al, 1996; Horwitz & White, 1998).

When women marry, they also reduce their risk of alcohol abuse (Horwitz et al, 1996, Wilson & Oswald, 2005). Finally, studies show that when young adults marry, they consistently report immediate reductions in depressive symptoms, which are known risk factors for physical health problems later in life (Wood et al, 2007).

Longevity and Health Benefits of Getting Married

The couple who marries and stays married will increase their longevity and reduce their risk of chronic illness later in life. However, the effects of marriage on health tend to differ for men and women.

Men, in general, physically benefit from the status of being married. Their health status improves, negative physical symptoms decrease, and positive behaviors increase, for the most part, when they get married, compared to their still-unmarried peers. Specifically, one recent study of low-income unmarried parents found that fathers who married their partners in the year following the birth of their child were healthier (based on the global self-assessment of health) than fathers choosing to remain single (Meadows, 2007). The only exception seems to include recent, increasing trends among married men of being overweight and obese (Schoenborn, 2004). Research indicates that

any 'disruption' in marital history shortens the lifespan significantly more for men than for women as the breaking the attachment to their spouse takes more of a physical toll (Lillard & Waite, 1995; Waite, 1995; Umberson et al, 2006). Studies show that men who are divorced experience health risks equal to smoking a pack of cigarettes a day (Moskowitz, 1975).

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Women. While men's health shows immediate benefits from just being married, the health advantages for women increase with the duration of the marriage. For each year of marriage, a woman's risk of dying prematurely decreases (Lillard & Waite, 1995). Women's health, generally, appears to be more susceptible to marital discord than men's health. For women, poor relationship quality seems to be associated with increased risk of premature mortality and an increased risk of heart disease (Umberson & Williams, 2004; Coyne et al, 2001; Gallo, Troxel & Matthews, 2003; Kiecolt & Glaser, 2001).

Ethnicity. Once income levels have been adjusted, the protective benefits of marriage are as significant for African-Americans couples as for White couples (Lillard & Waite, 1995; Schoenborn, 2004;). Research that examines the effects of marital status on health across race finds no differences in health outcomes for African Americans who choose to marry (Johnson et al, 2000). The effects of marriage, divorce, widowhood are the same across major ethnic groups, including African-Americans. Some noteworthy findings include:

- The existing higher mortality risk for African-Americans identified by major health surveys (Kaplan & Kronick, 2005) may be in part due to lower rates of marriage for African-Americans, as approximately only 38% of African Americans are married compared to 60% of Whites (ACF Healthy Marriage Initiative, 2008).
- The higher percentage of African-American men

raised in families without two biological parents may account for at least part of the stark gap in longevity between African American and White men as 35% of African-American

children live with both parents compared 75% White children (75%) (Warner & Haywood, 2006).

Financial. The financial stability that comes with marriage also seems to have a positive impact on health (Waite & Gallagher, 2000). Marriage is well-known to provide financial benefits, and these financial advantages seem to directly influence physical health by providing greater access to health care and other social services. Research suggests that the greater access to health and other services appears to be especially important in explaining marriage's impact on increasing women's health benefits (Waite & Gallagher, 2000). For both men and women, studies show that marriage is associated with increased access to private health insurance, which leads to higher quality of care, reduced average hospital stays, and access to beneficial nursing home care near the end of life (Wood et al, 2007).

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Low-Income Couples. Research indicates that marriage protects health of low-income couples just as it does for those with higher incomes. In a recent national survey, low-income married couples reported to be healthier on all measures such as: health status, reporting of health conditions like back pain, headaches, serious psychological distress, and

reported lower levels of limitations in daily living activities and risk behaviors such as smoking and exercise -- than their never-married or divorced low-income peers (Schoenborn, 2004).

As We Grow Older

As married partners reach middle age, it appears that the effects of marriage on adult health become more powerful. Growing older increases the psychological importance of having and engaging in intimate relationships, and this in turn amplifies the potential stress the elderly may experience from any negative interactions (Umberson et al, 2006).

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Studies show that very elderly persons who are still married are likely to be healthier. That is, 76% report being in good or excellent health, compared to peers who are widowed, divorced and living with a partner, or never married (Schoenborn, 2004). Widowed adults are somewhat more likely to be in fair or poor health (28%) (Schoenborn, 2004). Also, marriage appears to protect the elderly from the onset of physical limitations in carrying out their daily living activities. For example, 3 times as many widowed adults over 65 reported having limitations in daily activities, compared to their married peers (Schoenborn, 2004). Research found that physical limitations for divorced or never-married elderly were somewhere in between the married and widowed rates (Schoenborn, 2004; Prigerson et al, 1999, 2000.)

Two large representative studies of middle-aged and older married adults (50+) found that those who

reported higher levels of negative spousal behaviors, such as experiencing criticism, arguments, demands, had poorer health over time, indicated by their general health status, list of physical symptoms, presence of specific chronic health problems, or report of limitations in activities of daily living (ADLs) (Bookwala, 2005; Umberson et al, 2006). One study using data from the National Survey of Midlife Development in the U.S. (MIDUS) found that the association of negative marital functioning with poorer health outcomes was as strong for older men as it was for older women (Bookwala 2005). Interestingly, the study also found that negative spousal behaviors

were only associated with changes in general health status and no association could be found with the frequency of positive, caring, or helpful behaviors (i.e., "Does your spouse understand the way you

feel, can he/she be relied on for help, etc.") (Bookwala 2005). Studies show that over an 8-year period, the relationship between negative marital quality and health declines was strongest for the oldest subjects aged i.e., 70+ years (Umberson et al , 2006). Younger adults did not report declines in health even when reporting negative marital quality, thus underscoring the importance of marital quality and its impact on physical health in growing older (Umberson et al, 2006).

The effects of negative marital quality on health have been captured in studies of heart disease. The following presents some noteworthy findings from these research studies:

- Overall, married men and women have a lower risk for death from heart attacks (Johnson et al. 2000), compared to other marital status categories, and married couples enjoy a better chance

of returning to health when they receive a diagnosis of cardiovascular disease (Kiecolt-Glaser & Newton, 2001).

- Women over the age of 50 may have a higher risk of developing cardiovascular disease than men if they are divorced, remarried, or widowed. Between the ages 50 and 60, the risk of cardiovascular disease for women was about 60 percent higher for divorced women and 30 percent higher for widows, compared to married women (Zhang & Hayward, 2006).

- A Swedish study showed that marital stress for women increased the risk of having a reoccurrence of a cardiovascular event such as angina, a heart attack, surgery for blocked arteries, or death. Work stress was not associated with an increased reoccurrence for women, unlike the known outcome of work stress on men. The increased risk of reoccurrence persisted after adjusting for other health factors and severity of initial diagnosis (Orth-Gormer et al, 2000).

- Higher marital relationship quality predicted long-term survival (i.e., defined as over 4 years) in a study of 189 heart disease patients, independent of other known risk factors including initial severity of the diagnosis.

The most seriously ill patients in satisfied, low-conflict marriages lived significantly longer than much healthier patients in less-satisfying marriages (Coyne et al, 2001). For these seriously ill patients, the quality of their marital relationships continued to predict prolonged survival for up to 8 years for the women in this study, but not for the men (Rorhbaugh et al, 2006).

One important factor explaining the association of marriage with longevity and better physical health is the high health costs that come with divorce.

The Risks of Ending a Marriage

One important factor explaining the association of marriage with longevity and better physical health is the high health costs that come with divorce. In this manner, divorce is not simply the loss of marital status and its positive health benefits. In most cases, it also involves both acute and chronic emotional and physical stress that comes with a traumatic disruption and the breaking of the primary adult attachment bond (Waite, 1995; Kiecolt-Glaser & Newton, 2001). Research continues to show that divorce carries significant risks of illness and premature death for both partners, but especially for men (Lillard & Waite, 1995; Williams & Umberson, 2004). Men and women who have divorced have a greater likelihood of developing cardiovascular disease than adults who never marry or who remain continuously married with-

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out any disruption (Zhang & Hayward, 2006). While younger men report modest improvements in self-rated health after divorce, men over 50 report poorer health when they divorce (Umberson et al, 2006). Although the focus of this fact sheet is on physical and not mental health, it is important to note the connection between depression and the occurrence of physical health problems later on in life. One study that compared women who divorced with their mar-

ried peers over a ten-year period, found that women who divorced reported more symptoms of depression and did not report any significant changes in physical health in the first 3 years after separating. However, within 10 years after their divorce, the same divorced women reported significantly more physical health symptoms than their married peers (Lorenz & Wickrama, 2006).

Domestic violence experts agree that the process of separating or divorcing when there has been a history of physical or emotional violence is one of the most dangerous situations for a woman to be in.

Domestic violence experts agree that the process of separating or divorcing when there has been a history of physical or emotional violence is one of the most dangerous situations for a woman to be in. (This does not imply that women should stay in an unhealthy marriage to avoid harm, but rather that women who have decided to leave a violent relationship need to take extra precautions to assure their and their children's safety when doing so.) The Department of Justice 2007 data show that non-fatal physical assaults are much higher for separated or divorced women than for those who are either married or unmarried.

Pathways to Health in Marriage

How does a healthy, safe marriage – one which partners rate as high in quality and low in negativity – specifically protect the health of couples? Some answers are obvious. Married persons tend to monitor each other's health and risk behaviors. While men appear to benefit particularly from the health monitoring behaviors and support of their wives, women do not seem to receive the same benefits (Waite & Gallagher, 2000). Research on compliance has long supported the value of involving family members,

particularly spouses, in ensuring compliance with medical regimens. Interestingly, coaching spouses to reduce negative interactions – specifically criticism and nagging—was found to be effective in increasing compliance, while coaching spouses to increase positive, supportive behaviors was not (Campbell, 2003). Many longitudinal studies are documenting the relationship of marital quality and health over time. In a

3-year community study of roughly 400 married couples, reported declines in marital quality (e.g., reported satisfaction, happiness & commitment) were associated with increased symptoms of

physical illness later in life for both men and women. In contrast, increases in marital quality was associated with improvements in physical health later in life, even when other factors influencing health like education, income, income changes, and job difficulties were taken into account (Wickrama et al, 1997).

Clinical and laboratory studies are now beginning to identify some of the biological pathways by which marital interactions impact the physiological systems associated with physical health.

Clinical and laboratory studies are now beginning to identify some of the biological pathways by which marital interactions impact the physiological systems associated with physical health. The following presents some of these findings:

- Healthy women who reported being in highly satisfying relationships developed significantly fewer symptoms of cardiovascular disease over

an 11-year period, compared to women in moderate and low-satisfaction relationships (Gallo et al, 2003).

- Maintaining physical contact with a spouse while under stressful experimental conditions lowered blood pressure and heart rate, and increased the hormone oxytocin, which prevents the body's stress responses from negatively influencing the cardiovascular and endocrine systems (Grewen et al, 2003, 2005a, 2005b; Light et al, 2005).

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- Women holding their husband's hands while undergoing painful electric shocks experienced less pain, and showed decreased activity in areas of their brain responsible for directing the body's stress response versus other women undergoing the same test while holding a stranger's hand or no one's hand (Coan et al, 2006).
- In clinical experiments, when a couple in a healthy, high quality marriage were told to argue about a real-life problem, their supportive and constructive behaviors during the argument seemed to lower both partners' stress hormone levels, especially the wife's. The couples that showed the least negativity when having a marital argument had the best immune system responses (Kiecolt-Glaser et al, 1997; Robles & Kiecolt-Glaser, 2003).

Our immune systems are also sensitive to the amount of discord or conflict in a relationship.

Our immune systems are also sensitive to the amount of discord or conflict in a relationship. Research is documenting direct physiological responses to negative, hostile arguments, responses which in turn are associated with illness (Gottman, 1998; Kiecolt-Glaser & Glaser, 2001; Robles & Kiecolt-Glaser, 2003). Studies show that:

- Older adults (in their 60s and 70s) in long-term marriages with higher levels of conflict and negative behaviors had significantly worse immune system responses, compared to marriages with low negative conflict and behaviors. All of the wives, but not the husbands, showed significant increases in release of stress hormones in response to marital stress (Kiecolt-Glaser et al, 1997);
- Open physiological wounds were fought less aggressively by the body's immune system and healed slower when healthy couples experienced marital conflict, compared to the wound healing when the same couples experienced a positive, supportive situation. Specifically, physical wounds of couples that normally have high levels of hostile interactions healed a day slower compared to couples that typically are not hostile towards each other (Kiecolt-Glaser et al, 2005).

Conclusion

Research findings on marriage are consistent with the extensive literature on the direct health consequences of social support and social isolation (Uchino et al, 1992, 1996). For many, a healthy marriage is the most intimate and enduring social network, providing the strongest and most frequent opportunity for social and emotional support. Also, a healthy

marriage has been found to be the best protection for children's health and well-being. The research shows that marriage can have both negative and positive effects, depending on the quality of marital relationship. A recent national representative survey of adults has demonstrated that an unhappy marriage eliminates the health benefit of marriage (Brim et al, 2003). The research supports that a good-enough, healthy marriage, one that is low in negativity will provide cumulative, lifelong protection against chronic illness and premature death for both men and women as well as greatly increasing the chances that children will grow up healthy. And these benefits seem to only increase as couples grow old together.

Thank you to Jana J. Staton, Ph.D., LCPC for contributing to this tip sheet. Dr. Staton has over 20 years experience as a Certified Marriage and Family Therapist, researcher and educator and currently directs a marriage education program.

For More Information

Many correlations of marriage and health fail to account for other, powerful factors which also influence health outcomes, especially partner selection, income levels and education. This fact sheet has been informed by several comprehensive summaries based on the most reliable and current research:

Waite, L & Gallagher, M. (2000). "In Sickness and In Health: The Medical Powers of Marriage." Chapter 4, *The Case for Marriage*. New York: Doubleday.

Wilson, C.M., & Oswald, A.J. (2005). How does marriage affect physical and psychological health? A survey of the longitudinal evidence.

Bonn, Germany, Institute for the Study of Labor, Discussion Paper #1619 http://www.iza.org/en/web_content/publications/papers?dp_id=1619.

Wood, R.G., Goesling, B., & Avellar, S.(2007). The Ef-

fects of Marriage on Health: Synthesis of Current Research Evidence. Contract # 233-02-0086. Washington, DC: ASPE, HHS. Posted at <http://aspe.hhs.gov/hsp/07/marriageonhealth/index.htm>.

ACF Healthy Marriage Initiative, (2008). Wash DC: Administration for Children & Families, HHS. http://www.acf.hhs.gov/healthymarriage/about/aami_marriage_statistics.htm.

Amato, P.R. (2001). Children of divorce in the 1990s: An update of the Amato and Keith (1991) meta-analysis. *Journal of Family Psychology*, 15, 2001, 355-370.

Bookwala, J. (2005). The role of marital quality in physical health during the mature years. *Journal of Aging and Health*, 17, 85-104.

Brim, O. G., Baltes, P. B., Bumpass, L. L., Cleary, P. D., Featherman, D. L., Hazzard, W. R., et al. (2003). National Survey of Midlife Development in the United States (MIDUS), 1995-1996. Retrieved

April 1, 2008 from <http://midmac.med.harvard.edu/research.html#tchrpt>.

Campbell, T. L., (2003) Effectiveness of family interventions in physical disorders. *Journal of Marriage and Family Therapy, Marriage and Family Therapy*. 29, 263-268.

Coan, J.A., Shaefer, H.S. & Davidson, R. (2006). Lending a hand: Social regulation of the neural response to threat. *Psychological Science*, 17, 12, 1032-1039.

Coyne, J.C., Rohrbaugh, M.J., Shoham, V., Sonnega, J.S., Nicklas, J.M & Cranford, J.A. (2001). Prognostic importance of marital quality for survival of congestive heart failure. *American Journal of Cardiology*. 88, 5, 526-529.

Dept. of Justice. (2007). Intimate Partner Violence in the US 2007. Washington, DC. www.ojp.usdoj.gov/bjs/intimate/victims.htm.

Dawson, D.A. 1991. Family structure and children's

- health and wellbeing: Data from the 1988 Nat'l. Health Interview Survey on Child Health. *Journal of Marriage and the Family*, 53, 573-484.
- Doherty, W. J. & Needle R.H. (1991). Psychological adjustment and substance use among adolescents before and after a parental divorce. *Child Development*, 62, 338-337.
- Gallo, L.C. Troxel, W. M., Kuller, L.H., Sutton-Tyrrell, K., Edmundowicz, D. & Matthews, K.A.. (2003). Marital status, marital quality, and atherosclerotic burden in postmenopausal women. *Psychosomatic Medicine*, 65, 952-962.
- Goldman, N. (2001). Disentangling the underlying mechanisms. *Annals of the New York Academy of Sciences*, 954:118-139.
- Gottman, J. M. (1998) Psychology and the study of marital processes. *Annual Review of Psychology*, 49, 169-197.
- Gottman, J.M. & Katz, L.F. (1989). Effects of marital discord on young children's peer interaction and health. *Developmental Psychology*, 25, 3, 373-81.
- Grewen, K.M, Anderson, B.J., Girdler, S.S., & Light, K.C (2003). Warm partner contact is related to lower cardiovascular reactivity. *Behavioral Medicine*, 29, 3, 123-30.
- Grewen, K.M., Girdler, S.S., & Light, K.C.(2005a). Relationship quality: effects on ambulatory blood pressure and negative affect in a biracial sample of men and women. *Blood Pressure Monitoring*, 10, 117-124.
- Grewen, K.M., Girdler, S.S., Amico, J. & Light, K.C. (2005b). Effects of partner support on resting oxytocin, cortisol, norepinephrine, and blood pressure before and after warm partner contact. *Psychosomatic Medicine* 67, 531-538.
- Harknett, K. 2005. Children's elevated risk of asthma in unmarried families: underlying structural and behavioral mechanisms. Working Paper # 943. Accessed March 1, 2008 at <http://crcw.princeton.edu/publications/publications.asp>.
- Hoffman, J.P. & Johnson, R.A. A national portrait of family structure and adolescent drug use. *Journal of Marriage and the Family*, 60, 3, 633-645.
- Horwitz, A.V., White, H.R., & Howell-White, S. (1996). Becoming married and mental health: A longitudinal study of a cohort of young adults. *Journal of Marriage & the Family*, 58, 895-907.
- Horwitz, A.V., & White, H.R. (1998). The relationship of cohabitation and mental health: A study of a young adult cohort. *Journal of Marriage and the Family*, 60 (2), 505-514.
- Johnson, N., Backlund, E., Sorlie, P. & Loveless, C. (2000). Marital status and mortality: the national longitudinal mortality study. *Annals of Epidemiology* 2000, 10. 224-238.
- Keilcolt-Glaser, J. K. ,Loving, T.J., Stowell, J.R., Malarkey, Lemeshow, S, Dickinson, S.L. Glaser, R. 2005. "Hostile marital interactions, proinflammatory cytokine production, and wound healing. *Archives of General Psychiatry*, 62, 1377-1384. Dec. 2005.
- Kiecolt-Glaser, J.K., Bane, C., Glaser R. & Malarkey, W.B. (2003). Love, marriage, and divorce: Newlyweds' stress hormones foreshadow relationship changes. *Journal of Consulting and Clinical Psychology*, 71, 1, 176-188.
- Kiecolt-Glaser, J. K., & Glaser, R. (2001). Stress and immunity: Age enhances the risks. *Current Directions in Psychological Science*, 10: 18-21.
- Kiecolt-Glaser, J.K. & Newton, T.L. (2001). Marriage and health: His and hers? *Psychological Bulletin*, 127, 4, 472-503.
- Kielcott-Glaser, J.K., Glaser, R., Caccioppo, J.T., Malarkey, W. B. (1998). Marital stress: Immunologic, neuroendocrine, and autonomic correlates. *Annals of the New York Academy of Sciences*. 840, 656-663.
- Kielcott-Glaser, J.K., Glaser, R., Caccioppo, J.T., MacCallum, R.C., Snydersmith, M., Kim, C.,

- Malarkey, W. B. (1997). Marital conflict in older adults: Endocrinological and immunological correlates. *Psychosomatic Medicine*, 59, 339-349.
- Light, K.C., Grewen, K.M., & Amico, J.A. (2005). More frequent partner hugs and higher oxytocin levels are linked to lower blood pressure and heart rate in premenopausal women. *Biological Psychology*, 69, 5-21.
- Lillard, L.A. & Waite, L.J. 1995. 'Till death do us part: Marital disruption and mortality. *American Journal of Sociology*, 100, 1131-1156.
- Lorenz, F.O., Wickrama, K.A.S., Conger, R.D. & Elder, G.H. (2006). The short-term and decade-long effects of divorce on women's midlife health. *Journal of Health & Social Behavior*, 47, 111-25.
- Maier, E.H. & Lachman, M.E. (2000) Consequences of early parental loss and separation for health and well-being in midlife. *International Journal of Behavioral Development*, 24, 2, 183-89 .
- Meadows, S.(2007). Family structure & fathers' well-being: Trajectories of physical & mental health. Working Paper 2007-19-FF. Access Mar. 1 <http://crcw.princeton.edu/publications/publications.asp>
- Moore, K.S., Jekielek, S.M., Bronte-Tinkew, J., Guzman, L, Ryan, S., & Redd, Z. (2004). What is a "healthy marriage"? Defining the concept. Washington, DC: Child Trends Research Brief #2004-16. Access at www.acf.hhs.gov/healthymarriage/pdf/Child_Trends-2004.pdf
- Orth-Gomer, K., Wamala, S.P., Horsten, M., Schenck-Gustafsson, K., Schneiderman, N., Mittleman M.A. (2000). Marital stress worsens prognosis in women with coronary heart disease: the Stockholm female coronary risk study. *Journ. of the American Medical Asso.* 284, 23, 3008-14.
- Prigerson, H.G., Maciejewski, P.K. & Rosenbeck, R.A. (2000). Preliminary explorations of the harmful interactive effects of widowhood and marital harmony on health, health services use and health care costs. *The Gerontologist*, 40, 349-357.
- Prigerson, H.G., Maciejewski, P.K & Rosenheck, R.A., (1999). The effects of marital dissolution and marital quality on health and health service use among women. *Medical Care*, 37, 858-73.
- Robles, T. F. & Keilcolt-Glaser, J.K. (2003). The physiology of marriage: pathways to health. *Physiology & Behavior*, 79, 3, 409-416.
- Rohrbaugh, M.J., Shoham, V & Coyne, J.C. (2006). Effect of marital quality on eight-year survival of patients with heart failure. *American Journal of Cardiology*. 98, 8, 1069-1072
- Schoenborn, C. (2004). Marital status and health. CDC Advance Data from Vital and Health Statistics, 351. Wash. DC: National Ctr. for Health Statistics, U.S. Dept. of Health & Human Services.
- Stanley, S.M., Markman, H.J., & Whitton, S. (2002) Communication, conflict, and commitment: Insights on the foundations of relationship success from a national survey. *Family Process*, 41, 4, 659-675.
- Troxel, W.M. & Matthews K.A. (2004). What are the costs of marital conflict and dissolution to children's physical health, *Clinical Child and Family Psychology Review*. 7, 29-57.
- Uchino, B.N., Cacioppo, J.T., & Kiecolt-Glaser, J. K. (1996). The relationship between social support and physiological processes: A review with emphasis on underlying mechanisms and implications for health. *Psychological Bulletin*, 119, 3, 488-531.
- Uchino, B.N., Cacioppo, J.T. & Kiecolt-Glaser, J.K. (1992). Age-related changes in cardiovascular response as a function of a chronic stressor and social support. *Journal of Personality and Social Psychology*, 63, No. 5, 839-846.
- Umberson, D, Williams, K., Powers, D.A., Liu, H., & Needham, B. (2006). You make me sick: marital quality and health over the life course. *Journal of Health and Social Behavior*. 47, 1-16.
- Umberson, D., & Williams, K. (2005) Marital quality,

- health and aging: gender equity? *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 60, S109-2113.
- Waite, L. (2005). "Marital biography and health." Plenary address, Smart Marriages and Happy Families Conference, Dallas, TX: Coalition for Marriage, Family and Couples Education. Charts used by permission of the author.
- Waite, L & Gallagher, M. (2000). "In Sickness and In Health: The Medical Powers of Marriage." Chapter 4, *The Case for Marriage*. New York: Doubleday.
- Waite, L. (1995). Does Marriage Matter? *Demography*, 32 (4) 483-507.
- Warner, D F., & Haywood, M. (2006). Early-life origins of the race gap in men's mortality. *Journal of Health and Social Behavior*, 47, 2099-226.
- Wickrama, K.A.S., Lorenz, F.O., Conger, R.D., & Elder, G.H. (1997). Marital quality and physical illness: a latent growth curve analysis. *Journal of Marriage and Family*. 59, 143-55.
- Williams, K., & Umberson, D. (2004). Marital status, marital transitions and health: A Gendered Life Course Perspective. *Journal of Health & Social Behavior*, 45., 1, 81-98.
- Wilson, C.M. & Oswald, A.J. (2005). How does marriage affect physical & psychological health? A survey of the longitudinal evidence. Bonn, Germany: Institute for the Study of Labor, Disc. Paper #1619 http://www.iza.org/en/webcontent/publications/papers?dp_id=1619.
- Wood, R.G., Goesling, B., & Avellar, S.(2007). The Effects of Marriage on Health: Synthesis of Current Research Evidence. Contract # 233-02-0086. Washington, DC: ASPE, HHS. Posted at <http://aspe.hhs.gov/hsp/07/marriageonhealth/index.htm>
- Zhang, Zhenmei, and Mark D. Hayward. 2006. Gender, the marital life course & cardiovascular health in late midlife. *Journal of Marriage and Family*, 68, (3), 639-657.