Younger women incur excess risk of uxoricide by stabbing and other hands-on killing methods

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ABSTRACT

Uxoricide is the killing of a woman by her husband. Younger, reproductively valuable women, relative to older women, are at an increased risk of uxoride. The purpose of the current research is to investigate in a sample of over 17,000 uxoricides whether the percentage of uxoricides by stabbing and other hands-on killing methods varies as a function of the wife's reproductive status (as indexed by her age) and the husband's age. The results indicate that, relative to older, post-reproductive age women, reproductive age women are more likely to be killed by hands-on killing methods. Competing explanations for the findings are examined in the discussion.

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1. Introduction

Researchers have offered several explanations for why men kill their intimate partners. Wilson and Daly (1993, 1996) proposed that intimate partner homicides are a byproduct of sexual strategies for reproductive control of women by men. They suggest that there is an inherent conflict between mating partners. Men often desire exclusive sexual access to their partners to reduce the likelihood that they will invest resources in offspring to whom they are genetically unrelated (Shackelford, Buss, & Peters, 2000). Women, in turn, sometimes pursue a strategy of entering into a long-term relationship with one man while seeking "good genes" from another man (Shackelford et al., 2000). Daly and Wilson (1988) suggest that this conflict between men attempting to control sexual access to their partners and women resisting that control may result in a "slip" (p. 205) in which a man kills his wife (uxoricide). We refer to Daly and Wilson's theory of intimate partner homicide as the "slip-up" theory (following Shackelford et al., 2000).

Women's mate value (relative value as a romantic partner; see Buss & Schmitt, 1993) may be related to the risk of intimate partner abuse and uxoricide. Women who are most likely to be able to produce offspring may be more valued by men than are women who are less likely to be able to reproduce. Hence, women's mate value decreases with their age (Buss & Schmitt, 1993; Wilson & Daly, 1996), as women who are younger are more likely to be able

to reproduce. This higher mate value of reproductive age women may put them at an increased risk for male sexual jealousy and "mate guarding" tactics that raise their risk of uxoricide. In the current research, we use women's age as a proxy for their reproductive status and, hence, younger, reproductive-age women (less than 45 years of age; after Shackelford et al., 2000) are considered to be of higher mate value than older, post-reproductive age women (over 45 years of age; after Shackelford et al., 2000).

Consistent with the research indicating women's mate value decreases with age, researchers (e.g., Wilson, Johnson, & Daly, 1995) have found that women's risk for uxoricide decreases with age. Just as a woman's age may play a role in uxoricide, so might the age of the perpetrator. The occurrence of violence and the rates of homicide are higher for younger men than for older men (Wilson & Daly, 1985). The "slip-up" theory of uxoricide may explain these findings, but it is not the only plausible explanation.

Shackelford and colleagues (2000) compared three theories of uxoricide in an investigation of uxoricide as a function of age. The "slip-up" theory proposes that uxoricide is a byproduct of the conflict between mated men and women (Daly & Wilson, 1988). Evolved Homicide Module Theory (Duntley & Buss, 2005) proposes that men may have evolved modules for killing others, including their spouses, when the circumstances rendered these actions reproductively beneficial for ancestral men. Shackelford et al. also investigated routine activities theory, which suggests that younger women are at a higher risk for uxoricide as a byproduct of being mated to younger men, who are more violent than older men (Wilson & Daly, 1985). Shackelford et al. found that,

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regardless of the husband's age, the uxoricide rate for reproductive age women is higher than for post-reproductive age women, refuting routine activities theory. These findings provide support for both of the other theories, suggesting that men may kill their spouses as an outcome of intense jealousy and attempted mate control, or when it may have been beneficial for ancestral men to eliminate a lost mate from the mating pool.

Daly and Wilson (1988) found that feelings of proprietariness and male sexual jealousy are characteristic of homicides of intimate partners by men. When a husband's sexual jealousy leads to uxoricide, the intensity of his jealousy may be reflected in the method of homicide. In cases in which the man's jealousy is more intense, such as when a woman is younger and of greater reproductive value, or in cases in which the intensity or occurrence of partner abuse is higher (i.e., in cases involving younger perpetrators), it may be expected that the husband will kill his partner in a more violent and more personal or "hands-on" manner than he might use when killing a partner of lower reproductive value or a stranger (see Mize, Shackelford, & Shackelford, 2009).

Shooting is the most frequently used method of killing across all homicides perpetrated in the United States (Block & Christakos, 1995; Frye, Wilt, & Schomburg, 1999; Mercy & Saltzman, 1989). This can be partly explained by the availability of guns in the United States and the lethality of gunshot wounds. Specific to intimate partner homicides in which guns are not the weapon used, men tend to use methods that require them to be in close proximity to their victims. For example, Dobash, Dobash, Cavanagh, and Lewis (2004) reported stabbing and strangling as frequent methods of uxoricide, and Frye and colleagues (1999) reported stabbing, along with bludgeoning, as frequent methods used by men to kill their intimates. In addition, researchers outside of the United States—where guns may be less readily available—have found that stabbing is a frequent method used in intimate partner homicides (e.g., Aldridge & Browne, 2003; and see Adinkrah, 1999a, 1999b, for a review). Because death by sharp cutting instrument is one of the most frequent methods of close-proximity, hands-on killing and because it is used frequently in homicides of women by their intimate partners, this is the primary homicide method of interest in the current research.

The purpose of the current research is to extend the research of Shackelford et al. (2000), which found that younger, reproductive age women incur excess risk of uxoricide regardless of the age of the husband. Specifically, we examine differences in the proportions of uxoricides (killing of women by their husband) by cutting instruments (referred to as stabbing hereafter) as a function of a woman's reproductive status, as indicated by her age. Researchers have suggested that stabbing, beating, and strangulation are more intimate methods of killing than is shooting (Silverman & Mukherjee, 1987; Van Patten & Delhauer, 2007). In the current research, we focus on stabbing specifically because it follows shooting in frequency of homicide method in intimate partner homicides.

We test two hypotheses in the current research. We derive the first hypothesis (following Shackelford et al., 2000) from the proposal that women's mate value varies with their reproductive status, as indicated by their age. The slip-up theory suggests that younger women may elicit more intense jealousy which in the current research would be indicated by the use of a hands-on and relatively more violent method of killing. The Evolved Homicide Module theory suggests that uxoricides are intentionally designed (Duntley & Buss, 2005) and given that evolved modules are contextually specific, mate value is likely to influence the design of the killing. (1) We hypothesize that the percentage of uxoricides by a hands-on method varies as a function of the wife's reproductive status. More specifically, we predict that uxoricide victims who are of younger, reproductive age will be at a greater risk of homicide by stabbing than will uxoricide victims of older, post-reproductive age.

We derive the second hypothesis from previous research (e.g., Shackelford et al., 2000) documenting that the greater risk of uxoricide for younger women relative to older women is not solely attributable to younger women being mated to younger men. Extending this research, this hypothesis serves to evaluate whether the use of a hands-on homicide method may be related to the greater violence of younger men relative to older men. (2) We hypothesize that the increased risk of uxoricide by stabbing for younger women relative to older women will not be attributable to mateship of younger women to younger men.

2. Method

2.1. Database

The United States Federal Bureau of Investigation (FBI) collects information from each state on homicides. Incident-level information is provided in the FBI's Supplementary Homicide Reports (SHR). For the current research, the SHR database was analyzed for the years 1976–2001 (Fox, 2004). The rates of uxoricides committed by stabbing were calculated using population estimates of married women and men from the United States Census.

2.2. Procedures

The SHR database was screened to include only those cases involving offenders and victims within the range of puberty (16 and older) and with known homicide methods. There were 17,457 cases of uxoricide in the SHR database meeting these criteria and we restricted all analyses to these cases. Stabbings constituted 12.9% of the homicides (see Table 1). The average age of victims was 39.9 years (SD = 15.5 years), ranging from 16 to at least 95. The average age of the perpetrators was 43.7 years (SD = 15.7 years), ranging from 16 to at least 98 years.

3. Results

Table 1 shows that, consistent with previous research, stabbing follows shooting as the most frequent method of uxoricide. We conducted a chi-square analysis on the percentages of stabbings for the two age groups of uxoricide victims. The percentage (14.7%) of uxoricides by stabbing for reproductive age women (younger than 45 years) is greater than the percentage (8.7%) of uxoricides by stabbing for post-reproductive age women (45 years and older), χ^2 (1, N = 17,457) = 117.57, p < .001, providing support for Hypothesis 1 that uxoricide victims who are of younger, repro-

Table 1
Frequency and percent of total uxoricides by weapon.

Weapon	Frequency	Percent of total
Firearm: type not stated	328	1.9
Handgun: pistol, revolver, etc.	8,986	49.8
Rifle	1,354	7.8
Shotgun	2,033	11.6
Other gun	21	0.1
Knife/cutting instrument: ax, screwdriver, etc.	2,256	12.9
Blunt object: hammer, club, etc.	810	4.6
Personal weapon: hands, feet, teeth, etc.	1,194	6.8
Poison	35	0.2
Pushed or thrown out window	10	0.1
Explosives	8	0.0
Fire	107	0.6
Narcotics and drugs	42	0.2
Drowning	34	0.2
Strangulation, choking, hanging, etc.	406	2.3
Asphyxiation	133	0.8
Total	17,457	100

ductive age are at a greater risk of homicide by stabbing than are uxoricide victims of older, post-reproductive age. (The results do not change substantively if we use slightly different age groupings to define men's age; analyses are available from the first author upon request). To test Hypothesis 1 further, the rates of uxoricide by stabbing per million married women per annum as a function of age were calculated using the relevant population estimates from the United States Census. Fig. 1 shows a clear trend for the rate of uxoricide by stabbing to decrease with the decline of the women's reproductive value indicated by her age.

Although the difference was in the hypothesized direction for Hypothesis 2, the percentage of uxoricides by stabbing for reproductive-age women (15.5%) is not significantly higher than the percentage of uxoricides by stabbing for post-reproductive age women (10.9%) for marriages to younger men (younger than 45 years), χ^2 (1, N = 10,502) = 3.54, p = .06. However, the percentage of uxoricides by stabbing for reproductive-age women (11.9%) is higher than the percentage of uxoricides by stabbing for non-reproductive-age women (8.4%) for marriages to older men (45 years and older), χ^2 (1, N = 6955) = 10.54, p < .01. (The results do not change substantively if we use slightly different age groupings to define men's age; analyses are available from the first author upon request).

A reviewer of this article suggested that age be tested as a continuous variable and that additional hands-on killing methods be examined. Two logistic regression analyses were performed to examine the data in these manners. Prior to entering the husbands' and wives' ages into the analyses, the ages were centered to reduce multicollinearity. For the first regression analysis, the dependent variable was weapon type (stabbing versus all other killing methods). In the first step, wife and husband centered ages were entered and in the second step the ages and the product of the ages were entered. Table 2 displays the results of the logistic regression analysis. Fig. 2 shows that the husband's age uniquely predicts the probability of the wife being killed by stabbing and an overall trend toward a decrease in the probability for uxoricide by stabbing as the wife ages.

We conducted a second logistic regression analysis to identify if reproductive age women were more likely to be killed by hands-on killing methods. Table 1 shows that 27.6% of uxoricides were a result of the use of hands-on killing methods (cutting instrument, blunt object, personal weapon, drowning, strangulation, and asphyxiation). Using these hands-on killing methods versus all other killing methods as the dependent variable, we entered the wife's and husband's centered ages in the first step and entered the ages and their product in the second step. Table 3 displays the results of the logistic regression analysis. The results show that
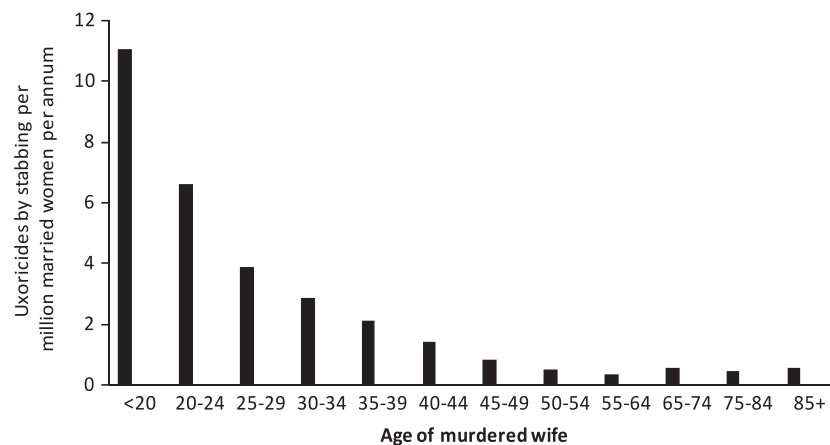
Table 2
Results of logistic regression of uxoricide method (Stabbing versus other) on wife's age and husband's age.

Predictor	B	SE	Wald
Step 1			
Wife's age	−0.001	0.003	0.36
Husband's age	−0.021	0.003	36.60*
Step 2			
Wife's age	0.000	0.004	0.01
Husband's age	−0.021	0.003	36.97*
Wife's age x Husband's age	0.000	0.000	1.71

Note. Total N = 17,457. Wife's age and husband's age were centered prior to entry in the analysis. Method of killing was coded 1 for stabbing and 0 for all other killing methods. Model summary for Step 1: X^2(2, N = 17,457) = 186.12, p < .001, Model summary for Step 2: X^2(3, N = 17,457) = 187.87, p < .001.
* p < .001.

both the wife's age and the husband's age uniquely predict the probability of the wife being killed by a hands-on killing method (see Fig. 3). The interaction of wife's and husband's age did not uniquely predict the probability of uxoricide by hands-on killing methods.

4. Discussion

We examined over 17,000 uxoricide case records from the United States Federal Bureau of Investigation Supplementary Homicide Reports (SHR) database to test the hypothesis that a greater percentage of younger, reproductive age women are killed by stabbing than are older, post-reproductive age women. The Chi-square results support this hypothesis. Additional support for Hypothesis 1 was found in that the rates of uxoricide by stabbing per million married women per annum decreased as women aged. The results of the regression analysis demonstrated that as wives aged, they were less likely to be killed by hands-on killing methods (cutting instrument, blunt object, personal weapon, drowning, strangulation, and asphyxiation). The latter finding strengthens the argument that reproductive age wives are at special risk of being killed in an arguably more personal and violent manner relative to the older wives.

The Chi-square results provided some support for Hypothesis 2: The increased risk of uxoricide by stabbing for younger women relative to older women was documented statistically for women married to older men but not for women married to younger men. The findings for Hypothesis 2 contradict the routine activities theory, which would suggest that it is mateship to younger men
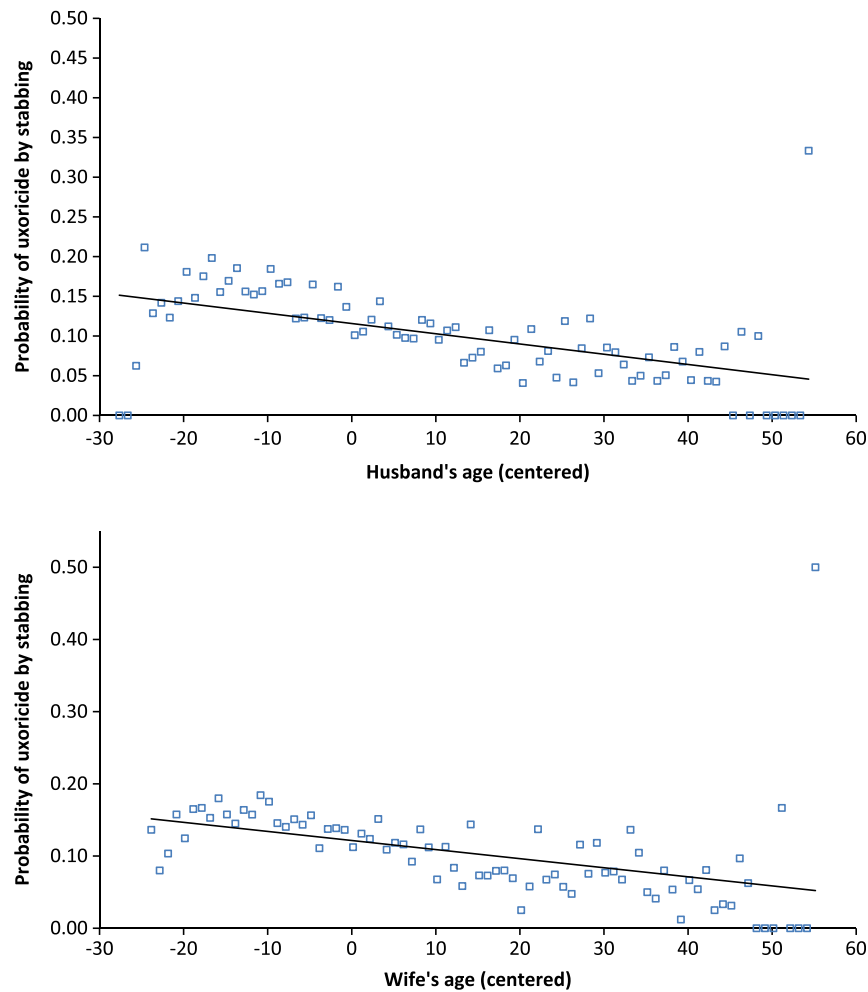

Fig. 1. Rates of uxoricide by stabbing per million married women per annum as a function of age of the murdered wife.

Fig. 2. Probability of uxoricide by stabbing as a function of age (centered; see text).

Table 3
Results of logistic regression of uxoricide method (hands-on weapon versus other) on wife's age and husband's age.

Predictor	B	SE	Wald
Step 1			
Wife's age	0.022	0.003	68.62*
Husband's age	−0.036	0.003	189.15*
Step 2			
Wife's age	0.022	0.003	68.27*
Husband's age	−0.036	0.003	187.92*
Wife's age x Husband's age	0.000	0.000	0.75

Note. Total $N = 17,457$. Wife's age and husband's age were centered prior to entry in the analysis. Method of killing was coded 1 for personal weapon and 0 for all other killing methods. Model summary for Step 1: $X^2(2, N = 17,457) = 289.27$, $p < .001$, Model summary for Step 2: $X^2(3, N = 17,457) = 290.02$, $p < .001$.
* $p < .001$.

who are more violent than are older men that may put reproductive age women at increased risk for being killed by stabbing (a relatively violent killing method). The results of the logistic regression analyses suggest that the age of the husband predicts the killing being a result of stabbing as well as other hands-on killing methods. Shackelford et al. (2000) found that the uxoricide rate for reproductive age women was higher relative to the rate for older wives regardless of the husbands' age. The results of the current research suggest that when the method of killing is considered in

addition to reproductive status, the husbands' age does play a role in uxoricides.

The current findings provide support for both evolutionary arguments for uxoricide. The slip-up theory suggests that uxoricide is a result of the husband's efforts to control their wife (Daly & Wilson, 1988). Because of their high reproductive value, younger women may elicit more intense efforts from their husbands to deter cuckoldry or abandonment. Dutton and Kerry (1999) found through interviews with uxoricide perpetrators that, when men used a weapon, knives were the weapon of choice because of their accessibility. The availability of a lethal weapon in conjunction with Daly and Wilson's suggestion that reproductively valuable mates elicit more intense jealousy and mate-control measures could arguably result in a slip of violence leading to the wife's death (but see Shackelford et al., 2000). The same argument could be made for the other hands-on killing methods examined in the current research, especially in the case of blunt objects. Killing using only one's hands and teeth may take more effort however, and seems to lend itself more to the Evolved Homicide Module theory.

The Evolved Homicide Module Theory proposes that uxoricide is a result of intentionally designed plans. Research has indicated that uxoricide is frequently the result of perceived infidelity or defection from a relationship (Daly & Wilson, 1988). Evolutionary psychologists suggest that mating behaviors are a result of evolved mechanisms, which are context-dependent (Buss, 1998). Men face the challenge of identifying and maintaining exclusive access to reproductively valuable women. Because ovulation is concealed
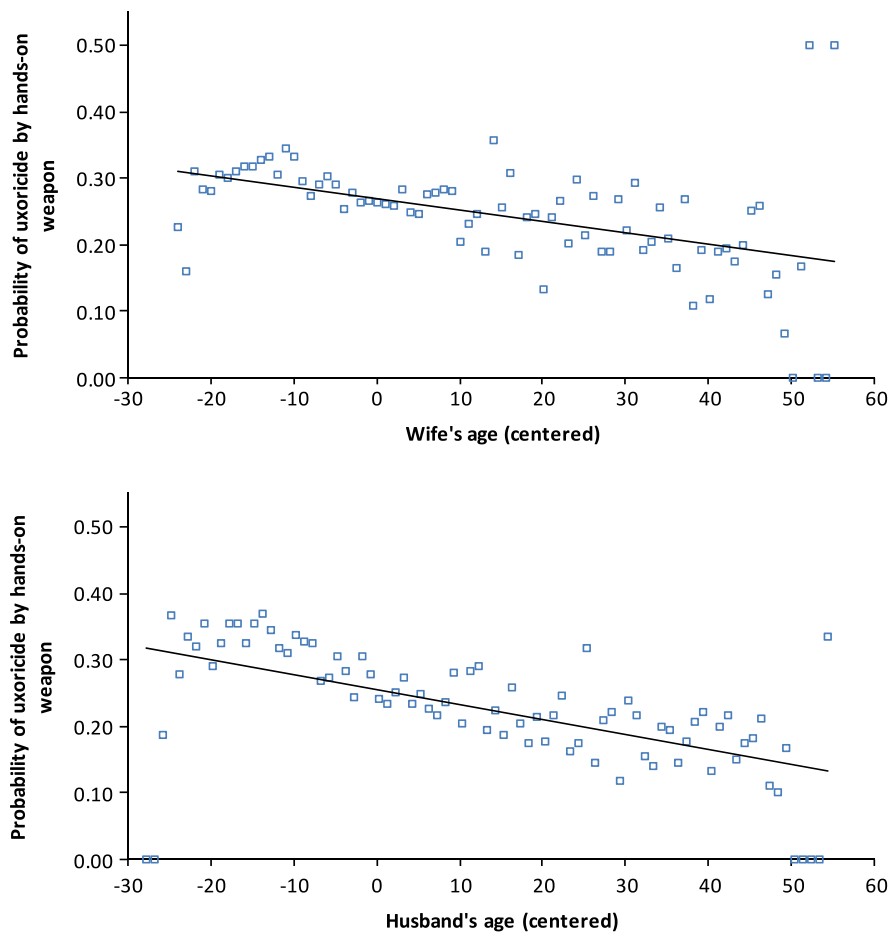
Fig. 3. Probability of uxoricide by hands-on killing method as a function of age (centered; see text).

in humans, men must rely on other indicators of fertility (Buss, 2005) and sexual infidelity (Buss et al., 1999). Women's fertility decreases with age (Buss & Schmitt, 1993; Wilson & Daly, 1996), making them less reproductively valuable and thus age may serve as a cue to mate value. In cases in which a man fears losing a higher-value partner, he may kill in a more violent, hands-on manner relative to cases involving partners of lesser reproductive value (i.e., older wives). This is exactly what the results of the current research indicate. Younger women were at an increased risk of uxoricide by a hands-on killing method.

The SHR database is limited in the information that is provided for each case. For example, homicides by a sharp cutting instrument often involve multiple wounds (Mazzolo & Desinan, 2005) and victims of beating deaths may also be a result of overkill. The number of wounds inflicted during the homicide may differ as a function of age and may be relevant to assessing the intensity of emotion motivating the homicide. The number of wounds inflicted on victims is not reported in the SHR database.

Furthermore, examining the criminal offense history of the offenders, for example, may allow comparisons between cases that are perpetrated by men who have more generally violent dispositions and those that do not. If men are prone to use hands-on homicide methods in cases that involve a perceived sense of greater loss, as we are speculating in this article, then it is important to compare perpetrators with previous histories of violence with perpetrators who are "triggered" to use violence by the potential loss of a valuable partner. Criminal offense history is not reported in the SHR database.

Information on the mental health status of the offender and suicide or attempted suicide following the homicide is not included in the SHR database. Perpetrators of uxoricide often have personality disorders (see Dutton & Kerry, 1999, for review). Between 1976 and 1982 in Edmonton, Winnipeg, and Calgary, homicide-suicides was more frequent among homicides of intimates partners than for other types of homicide (Silverman & Mukherjee, 1987). Furthermore, the risk of homicide-suicide is greater in estranged relationships relevant to intact relationships (Marzuk, Tardiff, & Hirsch, 1992). The SHR does not report whether legally married partners were estranged at the time of the homicide or if the offender attempted or committed suicide after the homicide.

Although the database used in the current research is limited, the current findings demonstrate that beyond being at increased risk for uxoricide (Shackelford et al., 2000), younger, reproductive age women relative to older women, are at an increased risk for being killed by a cutting instrument or other hands-on killing method. In addition, the current research provides some evidence that this greater risk for younger wives of being killed by a hands-on and relatively violent manner of homicide is not wholly attributable to mateship to younger men.

References

Adinkrah, M. (1999a). Uxoricide in Fiji: The sociocultural context of husband-wife killings. *Violence Against Women, 5*, 1294–1320.
Adinkrah, M. (1999b). Spousal homicides in Fiji. *Homicide Studies, 3*, 215–240.
Aldridge, M. L., & Browne, K. D. (2003). Perpetrators of spousal homicide: A review. *Trauma, Violence, and Abuse, 4*, 265–276.
Block, C. R., & Christakos, A. (1995). Intimate partner homicide in Chicago over 29 years. *Crime and Delinquency, 41*, 496–526.
Buss, D. M. (1998). Sexual strategies theory: Historical origins and current status. *The Journal of Sex Research, 35*, 11–31.

Buss, D. M. (2005). Psychological sex differences: Origins through sexual selection. *American Psychologist, 50*, 164–168.

Buss, D. M., & Schmitt, D. P. (1993). Sexual strategies theory: An evolutionary perspective on human mating. *Psychological Review, 100*, 204–232.

Buss, D. M., Shackelford, T. K., Kirkpatrick, L. A., Choe, J. C., Lim, H. K., Hasegawa, M., et al. (1999). Jealousy and the nature of beliefs about infidelity: Tests of competing hypotheses about sex differences in the United States, Korea, and Japan. *Personal Relationships, 6*, 125–150.

Daly, M., & Wilson, M. (1988). *Homicide*. Hawthorne, NY: Aldine de Gruyter.

Dobash, R. E., Dobash, R. P., Cavanagh, K., & Lewis, R. (2004). Not an ordinary killer-just an ordinary guy: When men murder an intimate woman partner. *Violence Against Women, 10*, 577–605.

Duntley, J. D., & Buss, D. M. (2005). The plausibility of adaptations for homicide. In P. Carruthers, S. Laurence, & S. Stich (Eds.), *The innate mind: Structure and contents* (pp. 291–304). New York: Oxford University Press, Inc.

Dutton, D. G., & Kerry, G. (1999). Modus operandi and personality disorder in incarcerated spousal killers. *International Journal of Law and Psychiatry, 22*, 287–299.

Fox, J. A. (2004). Uniform Crime Reports [United States]: Supplemental Homicide Reports, 1976-2001 (Version ICSPR) [Computer software]. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [Producer and Distributor].

Frye, V., Wilt, S., & Schomburg, D. (1999). Female homicide in New York City, 1990–1997. *National Center for Health Statistics. Monthly Vital Statistics Report, 47*, 1–6.

Marzuk, P., Tardiff, K., & Hirsch, C. (1992). The epidemiology of murder-suicide. *Journal of American Medical Association, 67*, 3179–3183.

Mazzolo, G. M., & Desinan, L. (2005). Sharp force fatalities: Suicide, homicide or accident? A series of 21 cases. *Forensic Science International, 147S*, S33–S35.

Mercy, J. A., & Saltzman, L. E. (1989). Fatal violence among spouses in the United States, 1976–1985. *American Journal of Public Health, 79*, 595–599.

Mize, K. D., Shackelford, T. K., & Shackelford, V. A. (2009). Hands-on killing of intimate partners as a function of sex and relationship status/state. *Journal of Family Violence, 24*, 463–470.

Shackelford, T. K., Buss, D. M., & Peters, J. (2000). Wife killing: Risk to women as a function of age. *Violence and Victims, 15*, 273–282.

Silverman, R. A., & Mukherjee, S. K. (1987). Intimate homicide: An analysis of violent social relationships. *Behavioral Sciences & the Law, 5*, 37–47.

Van Patten, I. T., & Delhauer, P. Q. (2007). Sexual homicides: A spatial analysis of 25 years of deaths in Los Angeles. *Journal of Forensic Sciences, 52*, 1129–1141.

Wilson, M., & Daly, M. (1985). Competitiveness, risk taking, and violence. The young man syndrome. *Ethology and Sociobiology, 6*, 59–73.

Wilson, M., & Daly, M. (1993). Sexual rivalry and sexual conflict: Recurring themes in fatal conflicts. *Theoretical Criminology, 2*, 291–310.

Wilson, M., & Daly, M. (1996). Male sexual proprietariness and violence against wives. *Current Directions in Psychological Science, 5*, 2–7.

Wilson, M., Johnson, H., & Daly, M. (1995). Lethal and nonlethal violence against wives. *Canadian Journal of Criminology, 37*, 331–365.