

# INTERGENERATIONAL TRANSMISSION OF INTIMATE PARTNER VIOLENCE

## A Behavioral Genetic Perspective

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*Because intimate violence tends to run in families, social learning theory posits that children learn to be violent through watching their parents and through being reinforced for their own aggressive behaviors. This account of intimate partner violence considers only environmental influences on familial resemblance, but familial resemblance may also be due to genetic factors. A genetically sensitive design is required to examine the extent to which genetic and environmental factors contribute to individual differences in intimate violence. This article reviews evidence for the intergenerational transmission of intimate violence and discusses why a genetically sensitive design is needed. It reviews behavioral genetic research that shows that aggression is genetically influenced and discusses how this research is pertinent to the study of intimate violence from a behavioral genetic perspective. It is urged that behavioral genetic studies of intimate violence be undertaken so that we may have a better understanding of this behavior.*

**Key words:** *behavioral genetics, intimate partner violence, domestic violence, wife abuse, social learning theory*

VIOLENCE IN INTIMATE RELATIONSHIPS is a widespread problem in the United States. Findings from the last nationally representative survey of family violence show that more than 16% of married American couples experienced an incident of physical assault in the previous year, which translates into approximately 8.7 million couples nationwide. Most of these physical assaults were relatively minor, in that the couples slapped, pushed, or shoved each other; however, this study further showed that approximately 3.4 million couples nationwide experienced an incident of severe violence within the previous year. This severe violence was defined as violence, such as beating up, kicking,

punching, or using a knife or gun, that had a high risk of causing an injury (Straus & Gelles, 1990).

Several studies have also shown that there is no difference in the amount of violence in a married relationship versus the amount of violence in a dating relationship, and cohabitating couples have the highest rate of violence (e.g., Stets & Straus, 1990 **1990a OR 1990b?**). Therefore, it is not just spousal abuse that we should be concerned about; violence tends to occur without discrimination in all types of intimate relationships. Moreover, when violence is considered over the course of a lifetime rather than in the course of just 1 year, it is estimated that at least

### KEY POINTS OF THE RESEARCH REVIEW

- Intimate partner violence passes through the generations, in that children who are exposed to violence in their families of origin are more likely to become involved in violent relationships as adults.
- Social learning theory has been the primary theory to explain the intergenerational transmission of intimate partner violence.
- Because the transmission of violence is not 100%, a social learning theory approach may be overly simplistic.
- One explanation for the intergenerational transmission of intimate partner violence that has never been tested is a behavioral genetic explanation.
- Because families share both genes and environments, the transmission of intimate partner violence could be due to genetic as well as environmental causes.
- Social learning theory takes into account only environmental causes, but without a genetically sensitive design, we cannot be sure if the causes are due only to environments and not genes.
- In a related area, it has consistently been found that aggression in adults is genetically influenced; therefore, aggression in intimate relationships may also be genetically influenced.
- Behavioral genetic studies are needed to better understand the intergenerational transmission of intimate partner violence.

half of all male and female Americans will be the recipients of at least one form of aggressive behavior from their partner at least once (O'Leary, 1988).

In addition, males and females are both the perpetrators and victims of this violence. Males and females commit violence at approximately the same rate within their relationships (e.g., Archer, 2000; Hines & Malley-Morrison, 2001 **2001a OR 2001b?**; O'Leary et al., 1989; Straus & Gelles, 1990), and female-perpetrated violence cannot always be dismissed as self-defense. In one study (Straus & Gelles, 1988), both males and females were equally likely to strike the first blow in cases of spousal abuse. Moreover, several studies have shown that in approximately 25% of relationships, the male is the sole perpetrator of violence; in approximately 25% of relationships, the female is the sole perpetrator of

violence; and in approximately 50% of relationships, the violence is mutual (e.g., Hines & Saudino, 2001; Morse, 1995, O'Leary et al., 1989; Stets & Straus, 1990 **1990a OR 1990b?**).

Several studies conducted since the National Family Violence Surveys support these conclusions about the incidence of intimate partner violence. Moreover, some of these studies actually find higher rates of aggression. For instance, O'Leary et al. (1989) found that between 32% and 44% of the women in their study of married couples were violent toward their husbands, whereas 25% to 31% of the men were violent toward their wives. Morse (1995) in her report of physical aggression against intimate partners obtained through the National Youth Survey found that between 27.9% and 48.0% of the women physically aggressed against their male intimate partners, whereas 20.2% to 36.7% of the men physically aggressed against their female intimate partners. Finally, in a study of dating violence on college campuses, Hines and Saudino (2001) found that 35% of the females and 29% of the males physically aggressed toward their dating partner.

These rates of intimate partner violence have also been replicated in other cultures. For instance, in New Zealand, Magdol et al. (1997) found that 37.2% of the women and 21.8% of the men in their sample physically aggressed toward an intimate partner, rates that are remarkably similar to those found in the United States. However, it has also been shown that rates of intimate partner violence vary by the country study. In a cross-cultural study of 90 non-Western societies, including Middle Eastern communities, sub-Saharan African tribes, European peasant groups, South Pacific Oceanic societies, and North and South American tribal societies, it was found that wife beating occurred in 84.5% of these societies, whereas husband beating occurred in only 20.2%. The rate of wife beating, which occurred in all or nearly all of the households in 18.8% of the societies, seemed to occur most fre-

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quently in those societies in which the men controlled the wealth and made most of the decisions within the households. Wife beating was absent in societies in which women are dominant in the home and in economic matters and in which they can amass their own personal wealth (Levinson, 1988).

The ramifications of this violence on the mental health of the millions of people each year who experience it are daunting. For instance,

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mate relationships is a widespread problem for both males and females as victims and perpetra-

several studies have shown that women who are the victims of violence in intimate relationships can experience alcoholism and drug abuse (Kilpatrick, Acierno, Resnick, Saunders, & Best, 1997), post-traumatic stress disorder and battered woman syndrome (Walker, 2000), depression, psychosomatic symptoms (Stets & Straus, 1990 1990a OR 1990b?), and self-destructive behaviors such as suicide and self-mutilation (Carmen, Ricker, & Mills, 1984) as a result of the violence. Although it is a less researched area, preliminary studies show that men who are the victims of violence in intimate relationships can experience depression, psychosomatic symptoms, psychological distress (Simonelli & Ingram, 1998; Stets & Straus, 1990 1990a OR 1990b?), and alcoholism and post-traumatic stress symptoms (Hines & Malley-Morrison, 2001 2001a OR 2001b?). Therefore, because violence in inti-

tors, we must search for the various causes of this violence. What would cause individuals to strike, and in some cases beat up or kill, the person they love? If we can answer this question, it would be a step forward in finding the means to reduce or eliminate a problem that can lead to not only physical injury but psychological injuries as well.

### **EVIDENCE FOR THE INTERGENERATIONAL TRANSMISSION OF INTIMATE PARTNER VIOLENCE**

Over the past 30 years, many researchers have sought the causes for intimate partner violence, and the most consistent and widely accepted finding in the research is that intimate partner violence passes through the generations, such that children who are exposed to violence in their families of origin, either through experiencing child abuse or witnessing interparental abuse, are more likely to use violence in their families as adults than children who are never exposed to familial violence (Egeland, 1993). Although this intergenerational transmission of intimate partner violence may not be 100%, the studies clearly show that one of the strongest predictors for violence in adult relationships is the experience of violence in the family of origin.

For example, one of the earliest studies on this issue shows that those people who experience a high degree of family violence in the form of physical punishment as children are more likely to use violence in their adult intimate relationships than those people who are never physically punished as children (Carroll, 1977). In addition, one's level of childhood victimization is significantly related to one's level of perpetration of violence in marriage (Langhinrichsen-Rohling, Neidig, & Thorn, 1995).

These studies look at only the experiencing of child abuse on later intimate partner violence. However, when assessing the risk for violence in later adult intimate relationships, the bulk of the research combines both the experiencing of and witnessing of family-of-origin violence because these two types of violence tend to co-occur in the families that experience violence

(Steinmetz, 1977). This research shows that people who experience and witness violence in their families of origin are twice as likely to perpetrate violence in their own romantic relationships than people who do not experience or witness violence in their families of origin (Bernard & Bernard, 1983). This trend has been replicated over three generations (Steinmetz, 1977). Moreover, those people who experience and witness family-of-origin violence are likely to use the same form of abuse that they had witnessed being used in their homes as children. For example, people who witnessed their parents bite each other are more likely to bite their partners than slap them (Bernard & Bernard, 1983).

Overall, for both males and females, the greatest risk for perpetrating violence in marriage is both witnessing and experiencing violence in their families of origin. For husband-to-wife and wife-to-husband violence, the witnessing of interparental violence doubles one's odds of perpetrating intimate partner violence. The experience of child abuse increases one's odds  $1\frac{1}{2}$  times. However, a combination of experiencing and witnessing violence increases one's odds exponentially. For example, Kalmuss (1984) found that for those who experienced neither form of violence, only 1% to 2% perpetrated intimate partner violence. For those who only experienced child abuse, 3% to 4% perpetrated intimate partner violence. For those who only witnessed interparental abuse, 6% to 8% perpetrated intimate partner violence; and for those who both experienced and witnessed family-of-origin violence, 12% to 17% perpetrated intimate partner violence. Kalmuss therefore concluded that both the witnessing of and experiencing of violence as a child are necessary to adequately model severe intimate partner violence.

These conclusions have been supported by subsequent studies (e.g., Choice, Lamke, & Pittman, 1995; Stith & Farley, 1993; Straus, 1992, 1994), including one meta-analysis (Stith et al., 2000), that show that those people who witnessed and/or experienced aggression in their families as children were significantly more likely to be violent toward their intimate partners as adults. In sum, violence in the family of origin is a strong predictor for later intimate

partner violence. But what accounts for this transmission? Why does the perpetration of violence run in families?

## SOCIAL LEARNING THEORY AND INTIMATE PARTNER VIOLENCE

The most widely accepted theory of the intergenerational transmission of intimate partner violence relates to the social learning theory of aggression (Herzberger, 1996). According to Eron (1997), the genesis of family aggression lies in the parents. When they are young, individuals who see violence in their family being rewarded learn to resolve frustrations and conflicts with family members through violence. In other words, people learn through observing their family members' behavior how to get what they want through violence (Eron, 1997). In addition, through the observation of repeated violence in the family, children learn to view violence in love relationships as appropriate and see the use of violence in the family to relieve stress, express anger, or control others as appropriate (Kalmuss, 1984). When children are exposed to these methods of conflict resolution, they never learn prosocial alternatives to solve family problems and, therefore, do not have strong alternative means for solving problems throughout life (Eron, 1997).

As mentioned previously, the modeling of violence in a person's family of origin can take two forms: Either the parent physically punishes the child, or the parents physically assault each other. When a parent physically abuses the child, the child has direct exposure to aggression (Kalmuss, 1984). The parent's behavior serves as a model for the use of aggression as a coping method, in which one deals with frustration/conflict by using aggression (O'Leary, 1988). In addition, if the child believes that the abuse was justified and appropriate under the circumstances, the child will be more likely to

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adopt the parent's aggressiveness (Herzberger, 1983). Furthermore, if a parent uses violence to punish a child's violence against that parent, for example, the child may not be able to make the distinctions about the circumstances in which it is permissible to be violent. In actuality, by modeling violent behavior, the parent is strengthening the child's tendency to be violent. Children

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learn that it is acceptable to retaliate with aggression if they are the victims of wrongdoing and that the degree of violence used is based on their own interpretation of how grievous the wrongdoing was. When children are repeatedly exposed to this type of familial violence, they will be reinforced for their violent behavior, and they

will develop rationalizations for that behavior (Herzberger, 1983).

The witnessing of interparental violence provides a child with a direct model of marital aggression. When children observe interparental aggression, it increases the likelihood that they will engage in spousal abuse as an adult because they can reproduce the specific modes of aggression used in the family. The intergenerational transmission of intimate partner violence is believed to involve this specific modeling more than the modeling children are exposed to when they experience child abuse. However, both types of modeling contribute to intimate partner violence because the chances for a person to engage in intimate partner violence increase exponentially if that person both experienced child abuse and witnessed interparental violence (Kalmuss, 1984; O'Leary, 1988). This fact may be because if other family members experience and use violence, it shows that violence is normal and legitimate and that certain behaviors, no matter who commits them, need to be physically punished (Herzberger, 1983).

## **MEDIATORS OF A SOCIAL LEARNING THEORY APPROACH TO INTIMATE PARTNER VIOLENCE**

The most severe weakness of a social learning theory approach to the intergenerational transmission of intimate partner violence is that it is not 100% predictive of who will perpetrate violence against a partner and who will not. Indeed, most children who experience abuse in their families of origin will not perpetrate intimate partner violence in the future, and some people who never experience abuse in their families of origin will abuse their partner (Widom, 1989). Therefore, a social learning theory approach to this problem may be overly simplistic, and many researchers have attempted to ascertain exactly what the mediating mechanisms in this transmission are.

For example, Dutton (1998) postulated that children exposed to violence in their families may learn the capacity to become violence, but that capacity does not necessarily turn into violence unless violence serves some function for them as adults. In addition, they may have some protective factors that negate the negative experiences they had growing up (Dutton, 1998). Egeland (1993) found that many protective factors break the cycle of violence, including at least one other caring adult to provide emotional support to the child; having intact, stable, satisfying relationships with an intimate partner; experiencing psychotherapy as an adolescent or young adult; and having an insightful understanding of oneself and how the early abuse has affected one and one's relationships. Egeland also found that those who dissociate from their negative childhood experiences and those who idealize the past or have difficulty recalling the past were more likely to continue the cycle of violence in their adult relationships because their abusive experiences were not memories and therefore had to be repeatedly acted out in their current relationships.

In addition, cognitive elements have been suggested as mediators for the transmission of violence. Dodge, Bates, and Pettit (1990) found that some abused children tended to develop

deficient social-processing skills in that they did not attend to relevant social cues, attributed hostile intent to others, and lacked the strategies to competently solve interpersonal problems. In other words, they could not properly cognitively evaluate and interpret others' behaviors. This deficiency in social skills was the mediator for the cycle of violence in this study. Abused children, only if they had developed these abnormal social processing skills, became perpetrators of violence.

The results from the Dodge et al. (1990) study could also be explained in terms of attachment. For instance, Egeland (1993) proposed that people with a history of childhood abuse expect others to be hostile, rejecting, and unavailable, and they therefore respond to others in a manner that is consistent with their expectations. This expectation is a result of that person's early attachment relationships with their abusive caregivers because the parent-child attachment relationship was a prototype for that child's later relationships. Zeanah and Zeanah (1989) found that early, ongoing experiences of abuse have worse consequences than a onetime traumatic event because the constant experience of abuse creates an internal working model of relationship expectations. Zeanah and Zeanah found that adults who were abused as children had working models of relationships that were characterized by rejection, role reversal, and fear. Apparently, these adults recreated the abusive relationships with their parents in all or most of their relationships in their lives because their working models provided them with a set of expectations of others and themselves, and they behaved in such a way as to elicit these responses in others (Bowlby, 1980). Evidence for this pattern was reported by Sroufe (1983), who found that children recreated their early attachment relationships with their current teachers.

In addition, some researchers have found that personality may mediate the transmission of intimate partner violence. For instance, O'Leary, Malone, and Tyree (1994), in a longitudinal study of 272 couples, found that for females, the observation of parental aggression affected the use of physical aggression against their hus-

bands when it was mediated by personality style. Specifically, the personality traits of impulsivity, defence, and aggression mediated the relationship between the witnessing of parental violence and the females' use of violence. For males, the relationship between witnessing parental violence and the use of violence against their wives was direct.

Other factors that have been found to mediate the intergenerational transmission of intimate partner violence include gender role attitudes (more liberal for women and more conservative for men; Alexander, Moore, & Alexander, 1991), lower socioeconomic status, more exposure to school or community violence, acceptance of violence in intimate relationships (O'Keefe, 1998), low self-esteem (O'Keefe, 1998; Stith & Farley, 1993), couple differentiation (Rosen, Bartle-Haring, & Stith, 1996), and type of coping mechanisms and conflict resolution strategies (Choice et al., 1995). This list is obviously not exhaustive but serves to show that the mechanisms through which the intergenerational transmission of intimate partner violence operate are not as simple as social learning theory would imply.

Although these explanations for the mediation of the transmission of violence are compelling, they do not explain one phenomenon that has also been found in the studies of the intergenerational transmission of intimate partner violence. The intergenerational transmission of violence actually can have two dependent variables: perpetration and victimization (Kalmuss, 1984). Indeed, Cappell and Heiner (1990) found that the intergenerational trans-

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mission of violence theory was more useful in predicting the victimization of violence for both males and females than it was in predicting the perpetration of violence by both males and females. It seems that the violence children witness and experience in their families of origin leads to a general acceptability of violence, and it increases the likelihood that these children will perpetrate violence and be victimized by it (Kalmuss, 1984).

What turns some people who were exposed to violence in their families of origin into victims and others into perpetrators? Several hypotheses have been proposed. For example, researchers have long assumed that boys became the aggressive husbands and girls became the victimized wives (Kalmuss, 1984), but the equal rates of violence by wives and husbands that have been repeatedly observed in the research (e.g., Straus & Gelles, 1990) do not support this hypothesis. In addition, several researchers have tested a sex-specific model of transmission, in which the girls later imitate their mothers' behavior and the boys imitate their fathers' behavior (e.g., Carroll, 1977); however, overall, the sex-specific model is not supported (Kalmuss, 1984). Consequently, we have no supported explanation as to why some children who were exposed to violence in the home become abusers and why some become victims of later intimate partner violence.

### A BEHAVIORAL GENETIC APPROACH

The social learning theory account of the intergenerational transmission of intimate partner violence assumes that familial patterns of violence are entirely due to environmental factors. However, the pattern of familial resemblance reported in the literature could also be due to shared genes. Several researchers have proposed looking at possible biological and genetic contributors to family violence; however, to date, possible genetic contributions have not been empirically examined. For example, Widom (1989) suggested that physiological predispositions might mediate the effects of the cycle of violence. Kaufman and Zigler (1993) recommended that we look at both environmental

and genetic factors to the cycle of violence as it relates to child abuse. They noted that an interaction of genetic and environmental factors results in the greatest risk for aggressive behavior (e.g., DiLalla & Gottesman, 1991) and believe that this research may explain why some people who are exposed to a certain environmental experience are apt to experience it negatively, whereas others do not (genotype-environment interaction). DiLalla and Gottesman (1991) stated that ignoring possible genetic factors in family violence would greatly limit our understanding of the intergenerational transmission of violence, and Herzberger (1996), in her review of social learning theory and family violence, asserted that it is important to test both the genetic and social models of the transmission of family violence. Furthermore, she stated that caution is necessary when concluding that family violence is transmitted through learning in the home environment because the parents who model aggressive behaviors have also passed along their genes to their children.

### BEHAVIORAL GENETICS

A goal of behavioral genetic research is to estimate the extent to which genetic and environmental factors contribute to behavioral variability in the population under study. This involves decomposing the phenotypic variance (i.e., observed variance) of a trait or behavior into genetic and environmental variance components. *Heritability* ( $h^2$ ) is the proportion of phenotypic variance that can be attributed to genetic factors. The remaining variance is attributed to environmental factors and includes all nonheritable influences. The environmental variance component can be further decomposed into shared and nonshared environmental influences. *Shared environmental variance* ( $c^2$ ) is familial resemblance that is not explained by genetic variance. Thus,  $c^2$  includes those environmental influences common to, or shared by, family members and act to enhance familial similarity. *Nonshared environmental variance* ( $e^2$ ) includes measurement error and environmental influences that are unique to each individual. These unique environmental influences operate

**TABLE 1: Behavioral Genetic Designs**

Design	Variance Component		
	Genetic	Shared Environmental	Nonshared Environmental
Family	Confounded	Confounded	Confounded
Twin	MZ $r > \text{DZ } r$	DZ $r > \frac{1}{2} \text{MZ } r$	MZ $r < 1.0$
Adoption			
Parent-offspring	$r \text{ Bio-Ad} > 0$	$r \text{ Ad-Ad} > 0$	Residual
Adoptive/Nonadoptive Sibling	$r \text{ Non} > r \text{ Ad}$	$r \text{ Ad} > 0$	Residual

Note: MZ = monozygotic twins;  $r$  = correlation between paired individuals; DZ = dizygotic twins; Bio-ad = biological parent-adopted away child; Ad-ad = adoptive parent-adopted child; Non = nonadoptive siblings; Ad = adoptive siblings.

to make members of the same family different from one another. Possible sources of nonshared environmental variance include differential parental treatment; differential extrafamilial relationships with friends, peers, and teachers; and nonsystematic factors such as accidents or illness (Plomin, Chipuer, & Neiderhiser, 1994).

Behavioral genetics researchers study pairs of individuals who vary systematically in their genetic and/or environmental similarity. The three basic designs in behavioral genetics research are family, twin, and adoption studies. These are summarized in Table 1. Although the three designs differ in approach, the assumption underlying them is the same: If genetic influences are important to a trait or behavior, then behavioral similarity should covary with genetic relatedness (i.e., individuals who are more genetically similar should be more behaviorally similar).

### Family Studies

Family studies explore a variety of kinship relationships to see if there is a familial resemblance for the behavior under study. If a behavior is genetically influenced, then it should "run in families." The more closely related the family members, the more similar they should be for the behavior (e.g., first-degree relatives > second-degree relatives > third-degree relatives > unrelated individuals). If there is no resemblance among family members, then the behavior is not genetically influenced.

The problem with family studies is that relatives share environments as well as genes. In fact, the more genetically related relatives are,

the more similar their environments tend to be (Plomin, 1990). Therefore, family members may resemble each other for environmental as well as genetic reasons, and family studies cannot disentangle the two. Nonetheless, family studies are an important first step in examining genetic and environmental influences on behavior. If family studies show no familial resemblance for a behavior, then the behavior must not be influenced by either genetic or familial environmental factors. On the other hand, if there is familial resemblance, family studies can provide an upper-limit estimate of genetic effects on behavior in that genetic influence usually does not exceed the degree of familial resemblance (Plomin, DeFries, McClearn, & Rutter, 1997).

### Twin Studies

Unlike family studies, twin studies allow researchers to estimate the extent to which genetic and environmental factors contribute to behavioral variability in the population under study. The twin method involves comparing genetically identical (monozygotic [MZ]) twins with fraternal (dizygotic [DZ]) twins who share approximately 50% of their segregating genes. Genetic influences are implied when twin similarity covaries with the degree of genetic relatedness. Thus, if a trait is genetically influenced, the twofold greater genetic similarity of identical twins is expected to make them more similar than fraternal twins (i.e., MZ twins should be approximately twice as similar than DZ twins). Fraternal twin resemblance that exceeds that predicted by the genetic hypothesis



(i.e., resemblance greater than one half the MZ twin resemblance) suggests the presence of shared environmental influences. Finally, because identical twins share all of their genes, differences within pairs of MZ twins can only be due to environmental influences that are unique to each individual (i.e., nonshared environmental influences).

### **Adoption Studies**

There are two basic types of adoption studies:

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the parent-offspring design and the adoptive/nonadoptive sibling design. Both examine individuals who were adopted at an early age.

*Parent-offspring design.* The parent-offspring design examines behavioral similarity between adopted children and their biological parents and between adopted children and their adoptive parents. An adopted child and its biological

parent share 50% of their genes but do not share environments. In contrast, an adopted child and its adoptive parents share environments but not genes. Therefore, resemblance between the adopted child and its biological parent is assumed to reflect genetic influences, whereas resemblance between the adopted child and the adoptive parent is assumed to reflect environmental influences.

*Adoptive/nonadoptive sibling design.* The adoptive/nonadoptive sibling design compares the similarity of adoptive and nonadoptive sibling pairs. Genetic influences are implied when nonadoptive siblings who share approximately 50% of their segregating genes are more similar than adoptive siblings who are not genetically related. Shared environmental influences are suggested when genetically unrelated adoptive siblings resemble each other.

### **INTIMATE PARTNER VIOLENCE RESEARCH FROM A BEHAVIORAL GENETIC POINT OF VIEW**

The many studies that show that violence against intimates tends to transmit through families can be viewed as family studies. As indicated above, a family study, in behavioral genetic research, is useful in showing that a behavior *may* have genetic influences. However, because family members share both genes and environments, we cannot partial out the relative contributions of each (Plomin et al., 1997). Therefore, a strict social learning theory account, which is solely environmental, cannot be fully accepted as the mechanism through which violence transmits unless a behavioral genetic study shows that the transmission is due only to environmental contributors. More specifically, the social learning theory would imply shared environmental influences in that children within the same family would be exposed to the same models. Therefore, if a genetically sensitive design, such as an adoption or twin study, shows that the familial resemblance that is observed in intimate partner violence is due solely to shared environments, then this would be consistent with a social learning account of this transmission of violence. However, if it is shown that familial transmission of violence is also due to genetic influences, then a social learning account does not sufficiently explain the transmission of violence. Moreover, if a behavioral genetic study shows that this familial transmission of violence is due only to genetic influences, then a social learning account of this transmission is not supported. Thus, behavioral genetic research methods provide a strong empirical test of the mechanisms through which violence against intimates transmits through families.

### **BEHAVIORAL GENETIC RESULTS IN AREAS RELATED TO INTIMATE PARTNER VIOLENCE**

Although no behavioral genetic research has been conducted on intimate partner violence, behavioral genetic research in related areas,

such as antisocial behaviors, aggression, and violence, can be used as a guide to whether genetic influences may explain familial resemblance in intimate partner violence. Most of the behavioral genetic studies in these areas look at the genetic and environmental contributors to antisocial behaviors, and the literature consistently shows that MZ twins are more similar than DZ twins and that adoptees are more similar to their biological relatives than their adoptive relatives for a broad range of antisocial behaviors, including convictions for felonies, symptom counts for antisocial personality disorder, self-reported delinquency, and personality scales for aggression and hostility (Carey & Goldman, 1997). Furthermore, genetic factors explain more of the variance in antisocial behaviors and criminality than do environmental factors (DiLalla & Gottesman, 1991) in that nonshared environmental influences consistently account for 40% to 50% of the variance in antisocial behaviors (Carey & Goldman, 1997), whereas heritability is consistently estimated to account for more than 50% of the variance (DiLalla & Gottesman, 1991).

However, the contributions of genes and environments can vary depending on the age group studied. In juveniles, shared environments contribute more than genes to individual differences in antisocial behavior, whereas in adults the reverse is true (Miles & Carey, 1997). This lessening influence of shared environments in adulthood is theorized as being due to an active genotype-environment correlation (Lyons et al., 1995). In other words, when a person leaves home, that person tends to choose environments that are related to, or correlated with, that person's genetically influenced characteristics, and therefore, the influence of the shared environment becomes less important (Scarr & McCartney, 1983). It is also possible that the difference in heritability across age reflects differences in the meaning of antisocial behaviors in adolescents and adults. It has been shown that most adolescents participate in some form of antisocial behavior, but the majority does not continue such behaviors into adulthood. Therefore, genetic effects for chronic antisocial behavior may be stronger than for more

transitory adolescent antisocial behaviors (Moffitt, 1993).

One of the most consistent findings in the literature on antisocial traits is that it is the combination of genetic and environmental risk factors that leads to the greatest incidence of adulthood criminality (Cadoret, Cain, & Crowe, 1983; DiLalla & Gottesman, 1991). That is, in adoption studies, those adoptees who had both genetic and environmental risk factors for antisocial traits were the most likely to engage in criminal behavior later in life. The genetic risk factors included biological mothers who were convicted of a felony such as larceny, desertion, prostitution, or assault. Environmental risk factors included broken adoptive homes and adoptive parent or sibling psychopathology (Cadoret et al., 1983). This combination of genetic and environmental influences suggests a genotype-environment interaction; genetic factors play a larger role than environmental factors, but when both are combined, they increase the risk for criminality exponentially (DiLalla & Gottesman, 1991).

The above research on criminality tends to combine both violent and nonviolent crimes. Intimate partner violence, however, is not necessarily analogous to such behaviors as larceny or desertion; therefore, we need to look at research on violent behavior. Unfortunately, this research is much less consistent than the research on criminal behaviors in general because it tends to look at only extremely violent behavior, such as homicide, rape, and assault. These crimes have a low base rate in society, and there-

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fore the behavioral genetic studies on violence suffer from low statistical power (Carey & Goldman, 1997). Moreover, crimes such as homicide, rape, and assault are also not necessarily analogous to violence that is perpetrated between intimate couples because these crimes are much more severe than the minor violence that usually occurs between spouses who experience violence.

Three large-scale adoption studies have failed to show heritability for violence (Bohman, Cloninger, Sigvardsson, & von Knoring, 1982; Mednick, Gabrielli, & Hutchings, 1984; Sigvardsson, Cloninger, Bohman, & von Knoring, 1982). These studies, however, suffer from methodological problems that may limit the generalizability of their results. First, they fail to provide a specific definition of violence. Second, they are all Scandinavian samples, and conviction for violent offenses is rare in these countries. Therefore, these studies have base-rate problems in that they may not have enough power to detect significant heritability. Finally, they all rely on official records and convictions for violent offenses.

Therefore, although they did not specify their definition of violence, they probably had a very narrow definition and included only those people who were arrested. In other words, it is likely that many violent people were not labeled as violent simply because they did not commit or get caught for a violent offense (Carey, 1996; Rowe, 1983).

One twin study, however, did find significant heritability for violent crime. Cloninger and Gottesman (1987), in a reanalysis of the data from Christiansen's (1977) Danish twin study, separated criminal activity into crimes against property and crimes against persons. Although crimes against property had a higher estimate of heritability (.76), heritability for crimes against persons was also statistically significant, explaining 50% of the variability. This study, however, suffers from

the same methodological problems that the Scandinavian adoption studies did (i.e., no specific definition of violence, not enough power to detect genetic influences, reliance on official records and convictions for violent offenses), and therefore, the generalizability of the results may be limited.

The literature that is most relevant to intimate partner violence uses self-report measures of aggression. This method of measuring aggression avoids the problems of relying solely on criminal records in that researchers can examine a large sample of the population who may exhibit aggressive behaviors but not be arrested for them (Rowe, 1983). Moreover, intimate partner violence is most often measured by self-report, specifically the Conflict Tactics Scale, on which people report how often they used each of the aggressive tactics listed to resolve arguments in their intimate relationships. Similarly, behavioral genetic studies of self-reported aggression use measures that ask participants to report how often they use specific physically aggressive acts. Those studies that have assessed physical aggression in this manner have found significant genetic influences with heritabilities in the range of .40 to .53 (Miles & Carey, 1997).

Overall, the behavioral genetic studies on antisocial behavior and aggression support the notion that individual differences in these characteristics are genetically influenced. Although the research on extremely violent criminal behavior has led to equivocal results, the research on aggressive behavior, as measured by self-report, may be most relevant to the issue of intimate partner violence. Moreover, there are many similarities between aggression in intimate relationships and aggression in the community. Specifically, aggression in intimate relationships and aggression in the community have many of the same predictors, correlates, and consequences. For instance, violence in the family of origin, low socioeconomic status, low educational attainment, employment status, youth, and alcohol abuse are associated with aggression in both of these arenas (e.g., Rosen, 1998; Widom, 1989). In addition, people who are violent within the community have a greater likelihood of being violent in the home and vice versa (e.g., Fagan, Stewart, & Hansen, 1983;

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Straus, 1985). Finally, victims of violence in the community and violence in the home suffer similar mental health consequences, including post-traumatic stress disorder, anxiety, depression, and substance abuse (e.g., Garbarino & Kostelny, 1997; Walker, 2000). Therefore, it is reasonable to theorize that intimate partner violence may be genetically influenced based on the results from behavioral genetic studies showing that aggression and antisocial behavior are heritable.

### **WHY THE ABSENCE OF BEHAVIORAL GENETIC STUDIES ON INTIMATE PARTNER VIOLENCE?**

Because it has been repeatedly found that intimate partner violence runs in families, one might wonder why no researchers have ever considered and/or tested a genetic explanation for this transmission. Two questions that should be asked are the following: (a) Why have family violence researchers never considered a genetic explanation? (b) Why have behavioral geneticists never applied their methods to the area of family violence? Obviously, answers to these questions are purely speculative, but exploring the history of these two fields briefly might lead to the answers.

To answer the first question, one must consider that the issue of family violence, and in particular spousal abuse, was first given research attention in the 1970s in response to the women's movement concerns about the violence that many wives were receiving at the hands of their husbands. Therefore, the issue of spousal abuse was very much a political issue studied by feminists who viewed the problem as being a result of the patriarchal social structure. Sociologists and other social scientists also studied the problem, but the view taken was always that environmental influences were to blame for spousal abuse. If the environment was the cause of this social problem, it was probably reasoned, then we could take steps to improve the environment so that we can slowly eliminate spousal abuse. Moreover, it might have been viewed as "dangerous" to consider a genetic perspective because if spousal abuse was influenced by one's genetic makeup, we cannot

change a person's genes. However, one point that must be kept in mind is that genes are *probabilistic*, not *deterministic*. That is, the expression of one's genes (phenotype) is a result of the interaction between the genotype and the environment. Therefore, even if it is found that intimate partner violence is genetically influenced, it does not mean that we cannot change, ameliorate, or eliminate this problem.

To answer the second question, we must consider the history of behavioral genetic research. Traditionally, behavioral geneticists have studied individual characteristics that have empirically validated measures, such as intelligence and personality. These two traits have been found to be genetically influenced and not a function of shared environments. Therefore, the field has moved into finding the specific nonshared environments that influence these traits and finding the specific genes involved. Only recently have behavioral geneticists moved into the field of social psychology. For instance, they have found genetic influences on divorce and attitudes. And therefore, looking for genetic influences on family violence seems to be the next step.

### **CONCLUSIONS AND RECOMMENDATIONS**

In sum, applying behavioral genetic methods to the study of intimate partner violence can provide an explicit test of the social learning theory as it relates to the intergenerational transmission of violence in intimate relationships. Currently, the assumption is that violence transmits through the generations because children learn violence from their parents. However, without a behavioral genetic analysis of the familial resemblance for intimate partner violence, it cannot be assumed that this familial resemblance is due solely to environmental influences, as social learning theory would imply.

It is important to understand, however, that if a behavioral genetic study shows that shared genes (and not shared environments) are responsible for the familial resemblance in intimate partner violence, it does not mean that the environment is not an important mechanism in intimate partner violence. Nonshared environ-

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shared environments. A finding of no shared environmental influences in intimate partner violence would suggest that the kinds of environments that are contributing to intimate partner violence are nonshared, and this finding would therefore lead to a new direction in the study of environments that are important to intimate partner violence.

Because research has shown that aggression is genetically influenced, there is further reason to believe that violence in intimate relationships may be genetically influenced. If this is the case, then current thinking about intimate partner violence and the impact of families on this behavior will need to be revised. Behavioral genetic studies of intimate partner violence are therefore needed so that the mechanisms through which violence transmits can be better understood. When these mechanisms are better understood, it will be a step forward in preventing intimate partner violence, a behavior that can lead to much physical and psychological pain.

mental influences will likely contribute to intimate partner violence, but these environmental influences will serve to make members of the same family different in this behavior. In other words, it is not that the environment will not be important; it is just that we will need to study environments other than the ones that have previously been considered. Most explanations of the family environment implied by social learning theory are

Future research, therefore, should be done to investigate if intimate partner violence is genetically influenced. For instance, a twin study could be conducted to see if identical twins are more similar than fraternal twins in their perpetration and/or victimization of intimate partner violence. Alternatively, an adoption study could be undertaken to see if adopted children are more similar to their biological or adoptive parents in their perpetration and/or victimization of intimate partner violence. If genetic influences are found, the next step would be to explore for possible genetic mediators for this behavior, such as personality, intelligence, attachment, or substance use. That is, are the genetic influences on intimate partner violence due to genetic influences on some other individual differences characteristic? If shared environmental influences are found, the next step would be to identify specific shared environments involved. For example, in a twin study, the following questions could be investigated: (a) Did the twins both experience the same amount of violence in the families and/or communities? (b) Are there other shared environmental influences that might be operating to influence this familial resemblance in intimate partner violence? Finally, the exact nature of nonshared environments should be investigated. For instance, even though the twins have grown up in the same home, they might have experienced and/or witnessed different levels of violence in the home. They may have also been exposed to different levels of violence in the communities. In other words, we would need to look at those environmental influences that have served to make the twins different in their perpetration and victimization of intimate partner violence.

## IMPLICATIONS FOR PRACTICE, POLICY, AND RESEARCH

### Research

- A genetically sensitive design needs to be undertaken in this area so that it is known whether genes are influential in the transmission of intimate partner violence or whether the social learning theory account of the intergenerational transmission of intimate partner violence is supported.
- If genetic influences are found, possible genetic mediators, such as personality, also need to be assessed so that the mechanisms through which the violence is transmitted are better understood.
- If genetic influences are found, it is also imperative that the environmental influences that affect this phenotype also be studied so that people who are ex-

posed to violence as a child can be helped through altering their environments.

### Practice

- If genetic influences are implicated, it is important that a therapist who is treating a violent couple understands that genes do not equal destiny. Environments are also very influential in the expression of a person's genotype (phenotype), and therefore, abusive couples can be helped through altering their environments.
- If shared environments do not influence intimate partner violence, then therapy will have to focus on environments that lie within, not between, families.

Possible within-family environmental factors include differential parental treatment; differential extrafamilial relationships with friends, peers, and teachers; and differential exposure to violence in the media and community.

### Policy

- It is important for policy makers to understand that genes do not equal destiny. Therefore, if genetic influences are found, it should not be concluded that people in violent relationships cannot be helped. It will be important to educate policy makers about the implications of behavioral genetic studies.

## REFERENCES

- Archer, J. (2000). Sex differences in aggression between heterosexual partners: A meta-analytic review. *Psychological Bulletin*, *126*, 651-680.
- Alexander, P. C., Moore, S., & Alexander, E. R. (1991). What is transmitted in the intergenerational transmission of violence? *Journal of Marriage and the Family*, *53*, 657-668.
- Bernard, M. L., & Bernard, J. L. (1983). Violent intimacy: The family as a model for love relationships. *Family Relations*, *32*, 283-286.
- Bohman, M., Cloninger, R., Sigvardsson, S., & von Knorring, A. L. (1982). Predisposition to petty criminality in Swedish adoptees. I. Genetic and environmental heterogeneity. *Archives of General Psychiatry*, *39*, 1233-1241.
- Bowlby, J. (1980). *Attachment and loss: Vol. 3. Loss, sadness, and depression*. New York: Basic Books.
- Cadoret, R. J., Cain, C. A., & Crowe, R. R. (1983). Evidence for gene-environment interaction in the development of adolescent antisocial behavior. *Behavior Genetics*, *13*, 301-310.
- Cappell, C., & Heiner, R. B. (1990). The intergenerational transmission of family aggression. *Journal of Family Violence*, *5*, 135-152.
- Carey, G. (1996). Family and genetic epidemiology of aggressive and antisocial behavior. In D. M. Stoff & R. B. Cairns (Eds.), *Aggression and violence: Genetic, neurobiological, and biosocial perspectives* (pp. 3-21). Mahwah, NJ: Lawrence Erlbaum.
- Carey, G., & Goldman, D. (1997). The genetics of antisocial behavior. In D. M. Stoff, J. Breiling, & J. D. Maser (Eds.), *Handbook of antisocial behavior* (pp. 243-254). New York: John Wiley.
- Carmen, E. H., Ricker, P. P., & Mills, T. (1984). Victims of violence and psychiatric illness. *American Journal of Psychiatry*, *141*, 378-383.
- Carroll, J. C. (1977). The intergenerational transmission of family violence: The long-term effects of aggressive behavior. *Aggressive Behavior*, *3*, 289-299.
- Choice, P., Lamke, L. K., & Pittman, J. F. (1995). Conflict resolution strategies and marital distress and mediating factors in the link between witnessing interparental violence and wife battering. *Violence and Victims*, *10*, 107-131.
- Christiansen, K. O. (1977). A preliminary study of criminality among twins. In S. A. Mednick & K. O. Christiansen (Eds.), *Biosocial bases of criminal behavior* (pp. 89-108). New York: Gardner.
- Cloninger, C. R., & Gottesman, I. I. (1987). Genetic and environmental factors in antisocial behavior disorders. In S. A. Mednick, T. E. Moffitt, & S. A. Stack (Eds.), *The causes of crime: New biological approaches* (pp. 92-109). Cambridge, UK: Cambridge University Press.
- DiLalla, L. F., & Gottesman, I. I. (1991). Biological and genetic contributors to violence—Widom's untold tale. *Psychological Bulletin*, *109*, 125-129.
- Dodge, K. A., Bates, J. E., & Pettit, G. S. (1990). Mechanisms in the cycle of violence. *Science*, *250*, 1678-1683.
- Dutton, D. G. (1998). *The abusive personality: Violence and control in intimate relationships*. New York: Guilford.
- Egeland, B. (1993). A history of abuse is a major risk factor for abusing the next generation. In R. J. Gelles & D. R. Loseke (Eds.), *Current controversies on family violence* (pp. 197-208). Newbury Park, CA: Sage.
- Eron, L. D. (1997). The development of antisocial behavior from a learning perspective. In D. M. Stoff, J. Breiling, & J. D. Maser (Eds.), *Handbook of antisocial behavior* (pp. 140-147). New York: John Wiley.
- Fagan, J. A., Stewart, D. K., & Hansen, K. V. (1983). Violent men or violent husbands? Background factors and situational correlates. In D. Finkelhor, R. J. Gelles, G. T. Hotaling, & M. A. Straus (Eds.), *The dark side of families: Current family violence research* (pp. 49-67). Beverly Hills, CA: Sage.
- Garbarino, J., & Kostelny, K. (1997). Coping with the consequences of community violence. In A. P. Goldstein & J. C. Conoley (Eds.), *School violence intervention: A practical handbook* (pp. 366-387). New York: Guilford.
- Herzberger, S. D. (1983). Social cognition and the transmission of abuse. In D. Finkelhor, R. J. Gelles, G. T. Hotaling, & M. A. Straus (Eds.), *The dark side of families: Current family violence research* (pp. 317-329). Beverly Hills, CA: Sage.
- Herzberger, S. D. (1996). *Violence within the family: Social psychological perspectives*. Boulder, CO: Westview.

- Hines, D. A., & Malley-Morrison, K. (2001a, August). *Effects of emotional abuse against men in intimate relationships*. Paper presented at the annual convention of the American Psychological Association, San Francisco.
- Hines, D. A., & Malley-Morrison, K. (2001b). Psychological effects of partner abuse against men: A neglected research area. *Psychology of Men and Masculinity, 2*, 75-85.
- Hines, D. A., & Saudino, K. J. (2001). *Gender differences in psychological, physical, and sexual aggression among college students using the Revised Conflict Tactics Scale*. Manuscript submitted for publication.
- Kalmuss, D. (1984). The intergenerational transmission of marital aggression. *Journal of Marriage and the Family, 46*, 11-19.
- Kaufman, J., & Zigler, E. (1993). The intergenerational transmission of abuse is overstated. In R. J. Gelles & D. R. Loseke (Eds.), *Current controversies on family violence* (pp. 209-221). Newbury Park, CA: Sage.
- Kilpatrick, D. G., Acierno, R., Resnick, H. S., Saunders, B. E., & Best, C. L. (1997). A 2-year longitudinal analysis of the relationships between violent assault and substance use in women. *Journal of Consulting & Clinical Psychology, 65*, 834-847.
- Langhinrichsen-Rohling, J., Neidig, P., & Thorn, G. (1995). Violent marriages: Gender differences in levels of current violence and past abuse. *Journal of Family Violence, 10*, 159-176.
- Levinson, D. (1988). Family violence in cross-cultural perspective. In V. B. VanHasselt, R. L. Morrison, A. S. Bellack, & M. Hersen (Eds.), *Handbook of family violence* (pp. 435-455). New York: Plenum.
- Lyons, M. J., True, W. R., Eisen, S. A., Goldberg, J., Meyer, J. M., Faraone, S. V., Eaves, L. J., & Tsuang, M. T. (1995). Differential heritability of adult and juvenile antisocial traits. *Archives of General Psychiatry, 52*, 906-915.
- Magdol, L., Moffitt, T. E., Caspi, A., Newman, D. L., Fagan, J., & Silva, P. A. (1997). Gender differences in partner violence in a birth cohort of 21-year-olds: Bridging the gap between clinical and epidemiological approaches. *Journal of Consulting and Clinical Psychology, 65*, 68-78.
- Mednick, S. A., Gabrielli, W. H., & Hutchings, B. (1984). Genetic influences on criminal convictions: Evidence from an adoption cohort. *Science, 224*, 891-894.
- Miles, D. R., & Carey, G. (1997). Genetic and environmental architecture of human aggression. *Journal of Personality and Social Psychology, 72*, 207-217.
- Moffitt, T. E. (1993). Adolescent-limited and life-course-persistent antisocial behavior: A developmental taxonomy. *Psychological Review, 100*, 674-701.
- Morse, B. J. (1995). Beyond the conflict tactics scale: Assessing gender differences in partner violence. *Violence and Victims, 10*, 251-272.
- O'Keefe, M. (1998). Factors mediating the link between witnessing interparental violence and dating violence. *Journal of Family Violence, 13*, 39-57.
- O'Leary, K. D. (1988). Physical aggression between spouses: A social learning theory perspective. In V. B. VanHasselt, R. L. Morrison, A. S. Bellack, & M. Hersen (Eds.), *Handbook of family violence* (pp. 31-55). New York: Plenum.
- O'Leary, K. D., Barling, J., Arias, I., Rosenbaum, A., Malone, J., & Tyree, A. (1989). Prevalence and stability of physical aggression between spouses: A longitudinal analysis. *Journal of Consulting and Clinical Psychology, 57*, 263-268.
- O'Leary, K. D., Malone, J., & Tyree, A. (1994). Physical aggression in early marriage: Prerelationship and relationship effects. *Journal of Consulting and Clinical Psychology, 62*, 594-602.
- Plomin, R. (1990). *Nature and nurture: An introduction to human behavioral genetics*. Pacific Grove, CA: Brooks/Cole.
- Plomin, R., Chipuer, H. M., & Neiderhiser, J. M. (1994). Behavioral genetic evidence for the importance of nonshared environment. In E. M. Hetherington, D. Reiss, & R. Plomin (Eds.), *Separate social worlds of siblings: Importance of nonshared environment on development*. Hillsdale, NJ: Lawrence Erlbaum.
- Plomin, R., DeFries, J. C., McClearn, G. E., & Rutter, M. (1997). *Behavioral genetics* (3rd ed.). New York: Freeman.
- Rosen, K. H. (1998). The family roots of aggression and violence: A life span perspective. In L. L'Abate (Ed.), *Family psychopathology: The relational roots of dysfunctional behavior* (pp. 333-357). New York: Guilford.
- Rosen, K. H., Bartle-Haring, S. B., & Stith, S. M. (1996, November). *The relationship among partner violence, family of origin violence, and differentiation of self*. Paper presented at the annual meeting of the National Council on Family Relations, Kansas City, KS.
- Rowe, D. C. (1983). Biometrical genetic models of self-reported delinquent behavior: A twin study. *Behavior Genetics, 13*, 473-489.
- Scarr, S., & McCartney, K. (1983). How people make their own environments: A theory of genotype-environment effects. *Child Development, 54*, 424-435.
- Sigvardsson, S., Cloninger, R., Bohman, M., & von Knorring, A. L. (1982). Predisposition to petty criminality in Swedish adoptees. III. Sex differences and validation of the male typology. *Archives of General Psychiatry, 39*, 1248-1253.
- Simonelli, C. J., & Ingram, K. M. (1998). Psychological distress among men experiencing physical and emotional abuse in heterosexual dating relationships. *Journal of Interpersonal Violence, 13*, 667-681.
- Sroufe, L. A. (1983). Infant-caregiver attachment and adaptation to preschool: The roots of competence and maladaptation. In M. Perlmutter (Ed.), *Development of cognition, affect, and social relations* (pp. 41-81). Hillsdale, NJ: Lawrence Erlbaum.
- Steinmetz, S. K. (1977). *The cycle of violence: Assertive, aggressive, and abusive family interactions*. New York: Praeger.
- Stets, J. E., & Straus, M. A. (1990a). Gender differences in reporting marital violence and its medical and psychological consequences. In M. A. Straus & R. J. Gelles (Eds.), *Physical violence in American families: Risk factors and adaptations to violence in 8,145 families* (pp. 151-166). New Brunswick, NJ: Transaction Publishers.

- Stets, J. E., & Straus, M. A. (1990b). The marriage license as a hitting license: A comparison of assaults in dating, cohabitating and married couples. In M. A. Straus & R. J. Gelles (Eds.), *Physical violence in American families: Risk factors and adaptations to violence in 8,145 families* (pp. 227-244). New Brunswick, NJ: Transaction Publishers.
- Stith, S. M., & Farley, S. C. (1993). A predictive model of male spousal violence. *Journal of Family Violence, 8*, 183-201.
- Stith, S. M., Rosen, K. H., Middleton, K. A., Busch, A. L., Lundeberg, K., & Carlton, R. P. (2000). The intergenerational transmission of spouse abuse: A meta-analysis. *Journal of Marriage and the Family, 62*, 640-654.
- Straus, M. A. (1985). Family training in crime and violence. In A. J. Lincoln & M. A. Straus (Eds.), *Crime and the family* (pp. 164-185). Springfield, IL: Charles C Thomas.
- Straus, M. A. (1992). Children as witnesses to marital violence: A risk factor for lifelong problems among a nationally representative sample of American men and women. In D. F. Schwarz (Ed.), *Children and violence* (pp. 98-109). Columbus, OH: Ross Laboratories.
- Straus, M. A. (1994). *Beating the devil out of them: Corporal punishment in American families*. New York: Lexington.
- Straus, M. A., & Gelles, R. J. (1988). How violent are American families? Estimate from the national family violence resurvey and other studies. In G. T. Hotaling, D. Finkelhor, J. T. Kirkpatrick, & M. A. Straus (Eds.), *Family abuse and its consequences: New directions in research*. Newbury Park, CA: Sage.
- Straus, M. A., & Gelles, R. J. (1990). Societal change and change in family violence from 1975 to 1985 as revealed by two national surveys. In M. A. Straus & R. J. Gelles (Eds.), *Physical violence in American families: Risk factors and adaptations to violence in 8,145 families* (pp. 113-132). New Brunswick, NJ: Transaction Publishers.
- Walker, L.E. (1993). The battered woman syndrome is a psychological consequence of abuse. In R. J. Gelles & D. R. Loseke (Eds.), *Current controversies on family violence* (pp. 133-153). Newbury Park, CA: Sage. **NOT IN TEXT. DELETE?**
- Walker, L. E. (2000). *The battered woman syndrome* (2nd ed.). New York: Springer.
- Widom, C. S. (1989). Does violence beget violence? A critical examination of the literature. *Psychological Bulletin, 106*, 3-28.

- Zeanah, C. H., & Zeanah, P. D. (1989). Intergenerational transmission of maltreatment: Insights from attachment theory and research. *Psychiatry, 52*, 177-196.

## SUGGESTIONS FOR FUTURE READINGS

- Kalmuss, D. (1984). The intergenerational transmission of marital aggression. *Journal of Marriage and the Family, 46*, 11-19.
- Miles, D. R., & Carey, G. (1997). Genetic and environmental architecture of human aggression. *Journal of Personality and Social Psychology, 72*, 207-217.
- O'Leary, K. D. (1988). Physical aggression between spouses: A social learning theory perspective. In V. B. VanHasselt, R. L. Morrison, A. S. Bellack, & M. Hersen (Eds.), *Handbook of family violence* (pp. 31-55). New York: Plenum.
- Plomin, R., DeFries, J. C., McClearn, G. E., & Rutter, M. (1997). *Behavioral genetics* (3rd ed.). New York: Freeman.
- Scarr, S., & McCartney, K. (1983). How people make their own environments: A theory of genotype-environment effects. *Child Development, 54*, 424-435.



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