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Abstract

Historically, crime groups rarely included women, but debates continue over whether women today are more violent, or have greater involvement in mixed-sex or all-female crime partnerships. We analyze variability in sex stratification of violent crime groups over time, and across situational offense characteristics, utilizing co-offending data from *Supplementary Homicide Reports* (SHR; 1980-2007) for homicide and *National Incident-Based Reporting System* (NIBRS; 1995-2007) for robbery, felony, and simple assault. Descriptive and multivariate results show crime groups remain highly sex-stratified and male-dominated, particularly when the offense is serious, instrumental, and involves strangers and/or access to weapons. Opposite-sex partners are more likely for expressive violence victimizing family/intimates.

Keywords

female offenders, sex differences, trends, violence, group composition, gender stratification

Sex stratification has long been a prominent feature of violent crime. Historically, women have had much lower participation in co-offending, or the commission of crime in partnerships or groups. Low female participation is especially pervasive among professional groups, those engaged in street violence, and groups organized for illicit gain (Steffensmeier, Schwartz, & Roche, 2013). Some scholars have posited that

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women are not conditioned toward or rewarded for their violence; therefore, few engage in such co-offending (Campbell, 2013; Gilligan, 1982; Steffensmeier & Allan, 1996). Male in-group preferences and stereotypes of women as less aggressive and less capable crime partners also serve to exclude women from crime groups. Such institutionalized sexism limits and marginalizes females' co-offending involvement (Steffensmeier, 1983; Steffensmeier & Terry, 1986).

Although empirical literature shows prominent gender segregation in violent crime partnerships and groups, few studies to date have examined *variability* in its extent, and no studies track *changes or continuity over time* in sex segregation among co-offenders. We draw on theoretical developments in feminist criminology, including the gendered paradigm and pathways perspective, to investigate how situational features of the crime shape sex segregation in violent crime groups. We also explore competing expectations about stability versus change in sex segregation in violent crime groups over time. A change in co-offending toward greater inclusion of women would signal a shift in the nature of female offending and gender relations in the criminal underworld. So too would evidence that women now are more prone to co-offend exclusively with other women. Empirical evidence in this regard would be useful to evaluate the popular view and anecdotal accounts fueling a moral panic that women's violence is worsening (see review in Steffensmeier, Schwartz, Zhong, & Ackerman, 2005). It also provides further evidence for the criminological discussion around whether or not women are increasingly playing more equivalent or violent roles in crime (e.g., Heimer, Lauritsen, & Lynch, 2009; Schwartz, Steffensmeier, Zhong, & Ackerman, 2009).

Identifying and understanding change in the composition of crime groups are valuable to criminology. First, half or more of violent crimes occur in groups (McGloin, Sullivan, Piquero, & Bacon, 2008; Short & Strodbeck, 1965) and more serious and injurious violence is likely when there are multiple offenders (Alarid, Burton, Marquart, Cullen, & Cuvelier, 1996; Carrington, 2002). This is particularly true for women who tend to participate in more serious violence when at least one male co-offender is involved (Becker & McCorkel, 2011; Koons-Witt & Schram, 2003). Second, our trend study of historically sex-homogeneous crime groups informs about the changing (or unchanging) nature of gender stratification processes generally (Sarnecki, 2001; Warr, 1996). Although the few generalizable, large-scale studies of co-offending patterns by gender, age, and race have identified a strong tendency toward homogenous co-offenders (Carrington, 2002; Sarnecki, 2001; see review in van Mastrigt & Farrington, 2009), a significant question is whether this tendency is relatively stable, or whether it varies over time or by nature of the violent offense.

Therefore, in the current study, we ask the following: What situational elements of a violent offense are associated with greater or lesser sex stratification within crime groups? Are the conditions under which one co-offends with same- versus opposite-sex partners similar for females and males? Has sex stratification in co-offending declined over time? To address these questions, we draw on two well-known, though underutilized, longitudinal data sources that offer rich contextual detail on co-offenders and crime incidents: the *Supplementary Homicide Reports* (SHR) and the *National Incident-Based Reporting System* (NIBRS).

The Context for Female and Male Violent Co-Offending

Violent crime is useful for exploring gender differences and similarities in co-offending patterns because violence, especially serious violence, has tended to be more gender-differentiated than minor property or substance abuse crimes. Moreover, much violence is committed in concert with others, and most victims can readily identify the sex of their attackers, unlike crimes without face to face interaction, such as burglary. In this section, we provide an overview of the reasons and ways in which females and males tend to engage in violent crime in collaboration with others; this gives context for how offenders select partners and provides background for our quantitative results.

Reasons underlying involvement in violence are similar for females and males, but feminist theories, such as Steffensmeier and Schwartz's *gendered focal concerns, risk preferences, and opportunities* framework, suggest there also is a need to consider important gender differences in willingness and ability (Schwartz & Steffensmeier, in press; Steffensmeier & Allan, 1996; Steffensmeier et al., 2013; see also, Belknap & Holsinger, 2006; Chesney-Lind & Shelden, 2004; Gilfus, 1992; E. Miller, 1987). This framework distinguishes core female focal concerns and risk preferences (e.g., maintaining relationships; cooperative, communal goals) that structure female offending away from violence and toward family or romantic partners as both victims and co-offenders. Friendship networks, of both sexes, tend to include more same-sex than opposite-sex friends. Thus, female social networks reinforce female focal concerns that minimize their violence and direct it against intimates, whereas male friendship networks tend to reinforce aggression, risk taking, and independence (Haynie, Steffensmeier, & Bell, 2007).

Gender also shapes opportunities for how women and men carry out their offenses. In the case of street robbery, for example, J. Miller's (1998) qualitative study of the motives and tactics of 14 female and 23 comparable male active offenders demonstrated that men robbed in ways that drew on and demonstrated their masculinity, with all-male groups almost exclusively utilizing guns and/or strong arm tactics. In contrast, females sometimes relied on their sexuality for opportunities to rob naive males, used confrontational tactics (though no firearm) to rob other women, or played secondary roles in predominantly male robbery groups. Although a few women enacted masculine scripts, more commonly, femininity was a flexible resource to accomplish robbery. Females may self-select out or be more marginalized from groups when the offense is more serious, the aim instrumental, and the environment riskier. Crime groups that inflict greater violence, then, are more likely to be all-male than mixed-sex or all-female.

The feminist pathways perspective is also useful for understanding how unique life experiences of women contribute to their violent offending patterns, motives, and co-offending relationships. Feminist criminologists have highlighted the importance of both past and present victimization and the role that current romantic partners play in women's victimization and offending patterns (Belknap & Holsinger, 2006). Whereas for men, participation in violent offending is often for the performance of masculinity or for instrumental purposes such as monetary gain, for women, participation in

violence (assault, robbery) may be more expressive, in response to victimization, or linked to other coping and survival strategies such as drug use or sex work.

Entry into violent crime co-offending relationships may also vary by gender. Romantic partnerships provide “opportunities” for girls’ and women’s violence, such as through co-offending with a partner, or self-defensive violence in response to family or intimate victimization (Chesney-Lind & Shelden, 2004; Gilfus, 1992). As pathways research has well demonstrated, male partners and relatives are often females’ entry into criminal violence (Gilfus, 1992; Jones, 2008; Salisbury & Van Voorhis, 2009; Simpson, Yahner, & Dugan, 2009). As peers and partners, males tend to provide females entry into deviant networks. In addition, girls get into more trouble around boys, and both boys and girls are more likely to follow a male instigator (Giordano, Cernkovich, & Pugh, 1986; van Mastrigt & Farrington, 2009; Warr, 1996). We turn now to the gendered nature of crime partner selection.

Crime Partners and the Exclusion of Women

Choosing a Co-Offender

Many offenders are initiated into crime through co-offending (Gilfus, 1992; Warr, 1996), and most at least occasionally work with others (Reiss, 1988). Yet, co-offending relationships tend to be dynamic and transitory such that few repeat offenders have consistent partners (McGloin et al., 2008; Weerman, 2003). Co-offender selection may be casual, based on those who are around when the opportunity arises, or more purposive, based on those who possess the required skills and criminal capital (reputation, tools, information, and knowledge; Loughran, Nguyen, Piquero, & Fagan, 2013; McCarthy & Hagan, 1995).

In casual selections, offenders are likely to work with crime partners who are easily accessible, due to geographic proximity, families, and social groups; in these situations, accomplices tend to be family or friends who interact regularly (Alarid, Burton, & Hochstetler, 2009) or are intimately connected to the accomplice (J. Miller, 1998; Weerman, 2003). Crime partners are culled from those in one’s social network judged to be willing and able to commit the given offense at the given time (Steffensmeier & Terry, 1986).

In more purposive selections, trust and criminal capital are key. Both are acquired through interactions with others, so acquisition depends on the degree to which one is embedded in networks of (potential) offenders (McCarthy, Hagan, & Cohen, 1998). As with situational selection, one’s social networks provide opportunities for co-offending, allowing offenders to cooperate and/or capitalize on knowledge, information, and resources of others in an otherwise uncertain environment (Kleemans, 1999). The tendency to choose partners from one’s environment makes the sex composition of crime groups an interesting marker of sex segregation in criminal enterprise (Acker, 1990; Becker & McCorkel, 2011; Reskin, 1993). Because partner selection relies on trust and criminal capital built through social networks, *the sex composition of co-offending groups reflects the extent and shape of sex stratification among criminal associates.*

Crime partners, although rotational and temporary, have a greater tendency to be same-sex when social groups and networks are more sex-segregated, and where females do not possess the necessary criminal capital to engage in group crime. This tendency toward sex-segregated crime groups will be stronger when partners are drawn from friendship ties rather than from kin-based ties, which tend to be more sex-heterogeneous (McPherson, Smith-Lovin, & Cook, 2001). Thus, to the extent that women's crime partners are more often relatives and romantic partners, and men's crime partners are drawn from friendship networks, *women's co-offending partners will include more males than male co-offending partners will include females.*

Sex Segregation in Crime Groups

Steffensmeier's (1983) theory of *sex segregation in crime groups*, which draws from sociological literature in gendered work organizations as well as criminology, theorizes that several forces coincide to both systematically *exclude women* from co-offending partnerships with male offenders and *marginalize their participation* toward minor crimes and/or sex-specific roles, particularly under certain conditions:

1. *Sex Typing in the Underworld*: Male offenders tend to view women as less capable or trustworthy partners, stereotyping women as timid and lacking the necessary skills and capacity for violence. Exceptions are trusted romantic partners or when women are of utility (e.g., feminine traits are an asset to committing the crime).
2. *Task Environment of Crime*: To the extent that the criminal enterprise is high risk and relies on physical strength and the capacity for violence, the greater the tendency toward sex typing and homosocial reproduction.
3. *Homosocial Reproduction*: The tendency toward in-group preferences of men to favor working with other men intensifies when the task environment of crime involves greater risk.

This perspective anticipates marked and enduring sex segregation in criminal enterprise. However, an underappreciated and virtually untested aspect of Steffensmeier's (1983) theory on sex segregation in criminal enterprise is the expectation that sex segregation will *vary predictably across the spectrum of organized criminal activities* (J. Miller, 2010). Steffensmeier predicts that the task environment of crime and other organizational factors will influence the level of sex segregation among crime groups. Increased risk or threat leads to greater preference for in-group characteristics, activities, and strengths. That is, sex segregation will be more pronounced in crime groups whose (a) modus operandi requires threat of or actual violence, (b) motivations are rational/instrumental, and (c) environment is more uncertain. Greater (d) complexity and (e) professionalization of the crime group also decrease the likelihood of female involvement. We assess the extent of variability in an outcome of homosocial reproduction—reduced odds of female inclusion (i.e., stronger sex segregation) in more violent, profit-oriented groups targeting strangers or engaging in other high-risk endeavors.

Extent, Variability, and Change in Women's Crime Group Participation: Empirical Evidence on Women's Co-Offending

Males have long dominated “the street,” and the illicit economy has a gendered division of labor (Connell, 1987; Maher & Daly, 1996; E. Miller, 1987; Steffensmeier & Ulmer, 2005). Male-dominated social networks have historically excluded and restricted female access to criminal opportunities for violence (Becker & McCorkel, 2011; Daly, 1989; J. Miller, 1998; Steffensmeier & Terry, 1986). Yet, scant initial quantitative evidence suggests some change in women's inclusion in mixed-sex and all-female crime groups (Lauritsen, Heimer, & Lynch, 2009; but see Schwartz, Steffensmeier, Zhong, & Ackerman, 2009). We review what is known about the extent of sex segregation, the nature of its variability, or changes over time (if any) in female involvement in violent crime groups.

Extent of Women's Crime Group Participation

Empirical evidence, largely qualitative, vividly depicts gender stratification in violent street crime perpetrated by groups. Like many other areas of life, street crime is a masculine enterprise organized and controlled by men. Women have not been numerous as co-offenders, accounting for roughly 5% of partners to 399 male offenders in the longitudinal Cambridge Study in Delinquent Development (Reiss & Farrington, 1991) and 4% of regular partners to 49 male hustlers, burglars, and robbers interviewed by Steffensmeier and Terry (1986). Women were only sporadic partners with male offenders because females were perceived by male criminals as lacking necessary qualities of a good crime partner, including trustworthiness, strength, emotional stability, and daringness to commit the crime (see also Mullins & Cherbonneau, 2011). Stereotypes of women as less-than-ideal crime partners disadvantage all women in terms of being recruited into male-dominated crime groups and in forming female-led crime groups, should they desire.

J. Miller's (1998) gendered analysis of active street robbers (discussed earlier) showed substantially more women worked with men than vice versa. Males predominantly offended in all-male groups, but half the women reported robbing male victims with a boyfriend, male friend(s), or male relative(s). Some reported this to be their exclusive offending pattern, and many described their roles as marginal or secondary to the men. Gender conditions access to crime networks and females' co-offenders often derive from a close relationship, reflecting gendered focal concerns such as maintaining personal relationships. Reiss and Farrington's (1991) longitudinal Cambridge Study of about 400 males found that more than 40% of the men's female co-offenders were mothers, wives, or sisters whereas only 8% of male co-offenders were fathers or brothers. Of note, most of the men's co-offenders (90%) were male friends. Jones' (2008) study of 50 incarcerated female offenders identified the majority as co-offending with men (typically in drug-related property crime) and only 10% routinely offending with other women. Some 40% engaged in their most recent offense because they felt it was expected or to preserve their relationship. A substantial

minority (10%) were coerced into participating by their partner with threats and/or physical violence. However, one third of women were willing participants with their male co-defendants.

In sum, the limited quantitative evidence shows ample sex stratification in co-offending and that gender is an important structure that shapes the extent and nature of women's involvement in criminal groups.

Variability in Women's Co-Offending Patterns for Violence

There may be marked variability in the conditions under which women are involved in co-offending with males, including by type of offense and amount of violence or criminal capital involved (Steffensmeier, 1983; Steffensmeier et al., 2013). Quantitative evidence about gender and variability in co-offending is limited but suggests generally low female involvement with some variability based on offense characteristics (Becker & McCorkel, 2011; Koons-Witt & Schram, 2003). Becker and McCorkel (2011) analyzed a broad range of offense categories using 2002-2008 NIBRS data and reported that males comprised the majority of all (co-)offenders. In addition to showing ample sex stratification, this study also demonstrated that women's co-offending varied by type of offense. Specifically, women were represented across a broader array of crimes when they co-offended with at least one male compared with alone or with other women. Similarly, Koons-Witt and Schram's (2003) 1998 analysis of NIBRS data showed that when females co-offended with males in violent incidents (vs. women alone or with other women), a gun was more likely to be involved (compared with personal weapons or knives). Such evidence suggests male partners provide opportunities for women to commit more serious or risky crimes. However, not all crime is the same, and how specific contextual aspects of the task environment of crime (e.g., instrumental vs. expressive, stranger vs. known victim) influence sex-segregation patterns remains unknown.

Changes in Female Co-Offending and Sex Stratification Among Crime Groups

Two opposing perspectives exist on whether women's participation in crime groups has changed over time. One view is that as women gain equality and independence, these changes will be mirrored in crime groups. As sex-role distinctions diminish and as women assimilate into public life, patterns of women's violence may increasingly resemble those of men (Adler, 1975; for review, see Steffensmeier et al., 2005). If social barriers to female involvement in group-perpetrated violent crime are fewer, and women are now viewed as more capable and willing partners with whom to commit violent crime, more women ought to be involved in mixed-sex crime groups. Or females may increasingly form their own crime partnerships and groups.

One recent study of offender networks found that although most males were misogynistic in judging potential female crime partners (see also Steffensmeier, 1983; Steffensmeier & Terry, 1986), a minority based their judgments on skill-set, rather

than rely on gender stereotypes of females as poor crime partners. The authors concluded based on their analysis of 35 in-depth interviews with current male auto thieves that “attitudes toward female offenders [as crime partners] may be changing” (Mullins & Cherbonneau, 2011, p. 297).

Quantitative evidence on changes in women’s co-offending involvement is rare; however, one recent study is informative. Lauritsen et al. (2009) analyzed National Crime Victimization Survey (NCVS) victim reports between 1976 and 2005 to identify any changes in women’s involvement in violence. Although not a focus, supplemental analyses of incident-level data showed a narrowing gender gap for group-perpetrated (and solo) violent incidents; between 1976 and 1992, about 19% of violent group incidents involved one or more women, whereas by 2005, the percentage had increased to 26 (Figure 1). Potentially contributing to the narrowing gender gap in group crime, all-female and mixed-sex incidents rose over time whereas all-male incidents declined somewhat. The authors acknowledged their index failed to account for changes in the composition of violent crimes or size of crime groups, and no disaggregated analyses were presented because co-offending was not the article’s focus.

Pertaining to their broader inquiry into gender gap trends in violence, the authors concluded “the change in gender-specific offending is real and not an artifact” (p. 391), which “can be interpreted as consistent with . . . the liberation argument”¹ (p. 389). We extend their observation to note that if female opportunities for violence are indeed increasing, this dynamic should play out (though perhaps to a lesser extent) across offense types and in typically male-dominated offending environments (e.g., against strangers, using a gun, profit-oriented motives).

We are more skeptical that crime group sex segregation has lessened over time or shifted so that more women are now involved in what have been male-dominated group offenses. Reanalyses of NCVS data indicated that the conclusion of female increases in (group) violence was (a) sensitive to how one corrected for effects of the major survey redesign in 1992 and (b) valid only at the incident-level of analysis (i.e., counting “female” incidents as those that involved one or more female co-offenders, even if outnumbered by male co-offenders; Schwartz et al., 2009).

Even if male criminals were more willing to include women, gendered expectations of self and others have not changed much over time. Women continue to be socialized in ways antithetical to violence that structure female offending away from violence, and toward family or romantic partners as both victims and co-offenders. Empirical research on female offending trends more generally casts doubt that females’ offending patterns have changed much (Steffensmeier et al., 2005). Until female focal concerns change, gendered interactions alter, and gendered structural barriers lessen, we anticipate enduring sex stratification within crime groups, both because of “preference” as well as “opportunity” in the male-dominated underworld.

Hypotheses

In summary, our empirical analysis aims to (a) assess the extent to which women are included in crime groups, (b) identify whether sex segregation in crime groups has

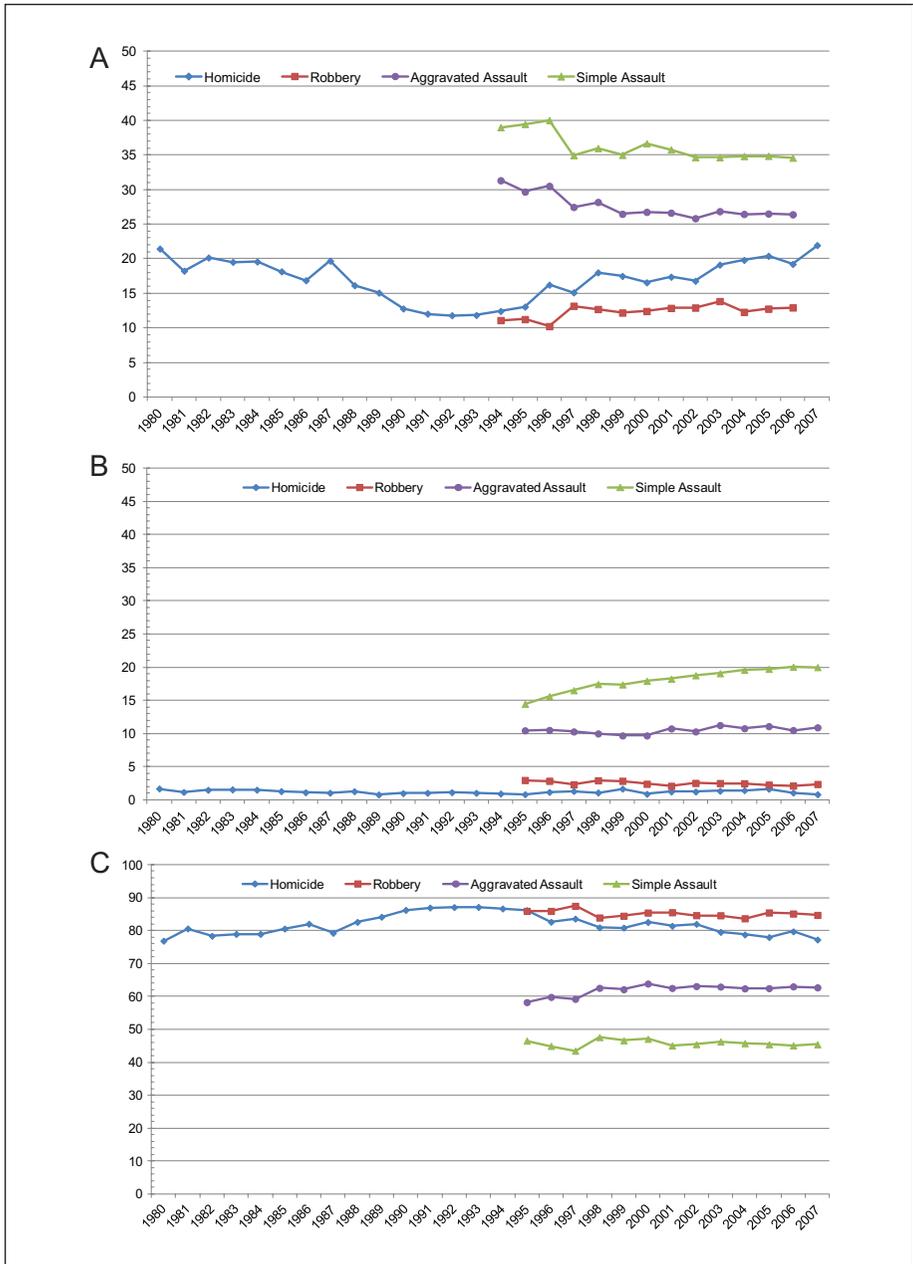


Figure 1. Sex composition of crime groups involved in a violent offense, 1980/1995-2007. (A) Percentage of Crime Groups that are Mixed-Sex, by Violent Offense. (B) Percentage of Crime Groups that are All-Female, by Violent Offense. (C) Percentage of Crime Groups that are All-Male, by Violent Offense.

changed over time toward lesser homogeneity (i.e., fewer all-male crime groups), and (c) estimate the influence of important crime attributes, such as circumstances/motivations, relationship to victim, and gun use, on the likelihood of female inclusion with males. Based on prior research, we hypothesize as follows:

Sex-Segregation Hypothesis (Hypothesis 1): Violent crime groups will be strongly sex-segregated, with women excluded from the majority of co-offending groups (Hypothesis 1a). However, female offenders will be more likely than males to co-offend with an opposite-sex partner (Hypothesis 1b).

The Task Environment of Crime and Sex-Segregation (Hypothesis 2): Male co-offenders are more likely when (a) greater force or aggression is required, (b) ends are rational-instrumental rather than expressive, (c) outcome is more uncertain (e.g., against strangers vs. known or intimate victims), and (d) skill, knowledge, or access to weapons such as guns is required.

Consistent Sex-Stratification Hypothesis (Hypothesis 3): Sex stratification in violent crime groups has not lessened over time. Men still tend to work with other men, and women today are no more likely to form all-female crime groups; thus, the overall female share of co-offenders has not increased.

Data and Method

Data

To address the lack of large-scale, longitudinal, and sex-disaggregated studies of co-offending patterns and trends (van Mastrigt & Farrington, 2009), we utilize in a unique way two popular databases, the SHR and the NIBRS. Both sources include co-offender details, but researchers have not fully capitalized on this information. Using these data, we examine group incidents and conduct analyses at the offender level.

The SHR enables an examination of co-offending for murder and non-negligent homicide over the past 30 years. Specifically, we use the Fox and Swatt (2008) Cumulative File with Multiple Imputations (MI) to elicit information on each multiple-offender homicide incident known to police between 1980 and 2007. The data set contains number and characteristics of co-offenders (sex, race, age), and features of the incident, such as victim-offender relationship, weapon, and circumstances. Although the SHR and other official data sources face many well-known limitations (see Mosher, Miethe, & Phillips, 2011), homicide data are one of the most dependable sections of the Uniform Crime Report (UCR). In addition, the Fox and Swatt data set addresses important limitations with the raw SHR data, namely incomplete data for a sub-set of homicides. Fox and Swatt used advanced MI methods developed by Rubin (1987) to fill in missing offender and victim-offender relationship information. For missing observations, known covariates, such as victim and offender demographics, incident characteristics (e.g., weapon), as well as year and location were used to generate five sets of probable values. The resulting data set was analyzed in STATA using the MI command, accounting for uncertainty in the imputations and correcting

standard errors (for a thorough explanation of the multiple imputation method, see Fox & Swatt, 2008, 2009).

To provide co-offending information for violent offenses ranging in seriousness, we also used NIBRS, another form of official statistics reported to the FBI, for data on simple assault,² aggravated assault,³ and robbery⁴ for 1995-2007. NIBRS was developed to expand and improve on the longstanding data collected in the UCR. Important for our purposes, like the SHR, NIBRS provides details on co-offender and incident characteristics. We selected 1995 as the year when NIBRS was widely and systematically implemented to consider the data reliable (Rantala, 2000). NIBRS is a work in progress, and as with the UCR, statistics are reported on a voluntary basis. As of 2007, there were 6,444 participating law enforcement agencies, representing about 25% of the U.S. population and the crime (U.S. Department of Justice, Federal Bureau of Investigation, 2010).⁵

We examine face-to-face violent offenses because offender/group characteristics are more readily identified, and violent offenses, particularly homicide and robbery, have high reporting rates (Mosher et al., 2011). As such, serious violent offenses likely offer a more unbiased portrait of co-offending than less serious crimes. We examine all offenses involving multiple offenders: 25% of all homicides, 66% of robberies, 37% of aggravated assaults, and 29% of simple assaults involved groups.

Co-offending, or group crime, is defined as an offense committed by two or more persons in concert. Crime groups are best viewed on a broad continuum from small, informal, or impromptu workgroups to larger, semi-permanent organizations with more formal divisions of labor. Official data probably underrepresent long-term partnerships characterizing more professional crime groups, but the majority of co-offending groups tend to be dynamic, transitory, and short-lived (McGloin et al., 2008; Reiss, 1988; Reiss & Farrington, 1991; Warr, 1996). Therefore, our population of offending groups known to police may be viewed as an accurate snapshot of typical co-offending patterns.

Although it is unknown whether mixed-sex, all-male, or all-female crime incidents result in different victim-reporting patterns or policing, it is possible that sex composition of a group is related to likelihood of police attention. If this tendency is unchanged over time, our analysis should be unbiased. However, if female offenders or all-female groups increasingly garner police attention (e.g., due to increased victim reporting or proactive police behavior), our analysis will overestimate increases in female group-crime involvement. For instance, if police increasingly subscribe to net-widening justice philosophies, where marginal actors in accessory roles are now defined as part of the crime group, female increases will be overestimated because these are types of criminal roles women are likely to occupy (Steffensmeier et al., 2005). Still, it is likely that some co-offenders will be undercounted. Because women tend to play more marginal roles in crime groups, their activities may be less likely to lead to detection or arrest. There are more women co-offending than we are able to capture with this study, even with the net-widening practices identified for simple assault, and to a lesser extent, robbery (Chesney-Lind & Paramore, 2001; Schwartz, Steffensmeier, & Feldmeyer, 2009; Schwartz et al., 2009; Steffensmeier et al., 2005).

We hope to minimize this limitation with a focus on more serious, violent crimes with higher reporting rates.

Measures

The main dependent variable for the current study was crime group *sex composition*: *single-sex* (all-male or all-female = 0) or *mixed-sex* (=1). To predict changes in the likelihood of a female being included in an opposite-sex crime group, the primary independent variable for the study was *offender sex*. In the SHR, sex was recorded for each co-offender. Not all homicides were solved (e.g., sex was missing in about one quarter of cases), but we were able to retain a maximum number of cases using offender characteristics imputed based on what was the most probable (for a full description of imputation methodology, see Fox & Swatt, 2008, 2009). A low number of cases (less than 1%) were dropped from NIBRS due to missing sex data.

To better understand offense attributes that may affect the likelihood of males co-offending with females (and vice versa), we included a set of independent variables reflecting contextual characteristics of offenses shown in the reviewed prior literature to be associated with gendered aspects of crime: victim/offender relationship, motive, and weapon.

Victim/offender relationship. Female offenders tend to have closer relationships to their victims than men (Jurik & Winn, 1990; Schwartz, 2007). In the SHR imputed data set, victim–offender relationship was recorded based on first victim/offender combination listed, as necessitated by elevated missing data for subsequent victim/offender combinations (Fox & Swatt, 2009). In NIBRS, we followed a similar practice; law enforcement coded distinct relationships for up to 10 co-offenders, so we utilized a hierarchy rule (intimate or family, acquaintance, then stranger). Therefore, if any co-offender had an intimate or family relationship with any victim, it was coded as intimate/family. Otherwise, the incident was coded as an acquaintance incident if applicable, or a stranger incident if no intimates or acquaintances were involved. For SHR and NIBRS, *intimate* includes spouses, common-law spouses, ex-spouses, boyfriends/girlfriends, and homosexual relationships. *Family* includes all other familial relationships, including parents, children, in-laws, stepparents/children, and anyone coded under “other family.” The *acquaintance* category includes friend, neighbor, acquaintance, child being babysat, child of boyfriend or girlfriend, employee, employer, and “other known.” *Stranger* implies offenders not known to victims (Fox & Swatt, 2008, 2009; U.S. Department of Justice, Federal Bureau of Investigation, 2010).

Motive/circumstances. Based on circumstances surrounding the offense, we categorized the incident as *instrumental*, *expressive*, or *other*. Instrumental offenses are those carried out in the course of a felony (e.g., drug felony). Expressive offenses are “heat of passion” crimes, such as those due to an argument or a lovers’ triangle. *Other* circumstances are neither instrumental nor expressive. It is plausible that police may be biased toward categorizing female-involved violence as expressive and/or toward

characterizing male violence as instrumental. Germane here are any systematic changes, such as viewing women as less expressive/emotional and more capable of instrumental offending. Although no evidence on the topic exists, if true, our findings would be biased toward change rather than stability.

Weapon. Women's access to firearms is likely circumscribed, so we include the type of weapon involved in the crime, if any. Weapons are categorized as gun, knife, and other (Fox & Swatt, 2008). "Other" weapons include motor vehicles, blunt objects, personal weapons such as hands/feet/teeth, poison, pushing out of a window, explosives, fire, drugs, drowning, strangulation, and asphyxiation or anything else coded as "other" (U.S. Department of Justice, Federal Bureau of Investigation, 2010). In the SHR, only one weapon is recorded per offense, with the most deadly weapon recoded if multiple weapons were involved (firearms, followed by knives, blunt objects, and personal weapons). Weapon was unknown in only about 4% of the cases and categorized as "other" because it was unlikely to be a knife or gun based on injuries (Fox & Swatt, 2009). NIBRS records up to three weapons per incident; we recoded using a hierarchy of gun, knife, other, and none (e.g., if any weapon was a gun, incident was coded as "gun," etc.).

Control Variables

To control for effects of other demographic characteristics on co-offending patterns and larger size of co-offending group, which increases female chances of selection, we include the following:

Offender age. Adolescents are more likely to co-offend whereas adults are more likely to work alone (Carrington, 2002; Reiss, 1988; Stolzenberg & D'Alessio, 2008). In the imputed SHR data (Fox & Swatt, 2008), *age* was grouped into seven categories (under 14, 14-17, 18-24, 25-34, 35-49, 50-64, and 65+). We reproduced the same seven categories with NIBRS.

Race. Whites are somewhat less likely than Blacks to have co-offenders, and co-offenders are very likely to be of the same race (Reiss, 1988). For violent crimes, particularly robbery, race plays an important role in shaping co-offender and victim selections, as well as other contextual crime characteristics (Koons-Witt & Schram, 2006). For both data sources, we dichotomized race into White and non-White.

Number of offenders. It was possible to count number of offenders in each incident. In the SHR, groups ranged from 2 to 11 members. NIBRS collects data on up to 99 offenders; however, less than 1% of the incidents recorded more than 11 offenders.

Analytic Plan

First, we performed detailed descriptive analyses of co-offending patterns and trends for group incidents and co-offenders. We examined the sex composition of groups involved in violent incidents over time to assess whether the relative share of

mixed-sex, or all-female groups, has changed (Table 1 and Figure 1). To investigate whether the *nature* of women's co-offending involvement has shifted (e.g., greater use of guns, increased targeting of strangers), we profiled motive/circumstance, victim-offender relationship, and weapon use across groups of various sex compositions at 5-year intervals, 1995 to 2005 (Table 2). We charted whether women's and men's co-offenders tended to be same- or opposite sex over 10 years (Figure 2). We also assessed whether the share of female co-offenders grew over time (Figure 3).

Second, we executed multivariate analyses, running logistic regression models to predict the likelihood of an offender co-offending with at least one opposite-sex partner versus with same-sex partners, controlling for relevant characteristics. We use clustered robust standard errors that account for correlated error structures across offenders in the same group. The relatively short time series available from NIBRS precludes more advanced time-series models.

We chose logistic regression to accommodate our binary dependent variable (mixed-sex partners = 1; same-sex partners = 0) and present odds ratios and predicted probabilities for ease of interpretation. Odds ratios for sex, the main predictor of interest, are interpreted as the female-to-male odds of offending in a mixed-sex group. Because female = 1, odds ratios greater than 1 indicate females' greater likelihood than males of offending with at least one opposite-sex partner, net controls (Table 3). From regression results, we generated predicted probabilities of co-offending in a mixed-sex group, given certain offender and offense characteristics (Table 4).

Results

Our main goals are to identify patterns of variability and characterize change versus continuity over time in the extent of sex stratification in crime groups. To address whether crime groups have become more prone to include women, we first examine the sex composition of violent crime *incidents*. We then describe how female and male *offenders* have been distributed across crime groups over time.

Descriptive Analyses: Sex Composition of Violent Group Incidents, Over Time

Table 1 describes the prevalence of violent crime incidents perpetrated by single-sex (all-male, all-female) versus mixed-sex crime groups, in 5-year intervals. The results demonstrate substantial levels of sex stratification that are virtually unchanged over time, supporting our *sex-segregation* and *consistent sex stratification* hypotheses.⁶ All-male crime groups are clearly the predominant form, committing approximately 80% to 90% of all group-perpetrated homicides and robberies during the period under study. The majority of aggravated assault incidents (about 65%) were committed by all-male offender groups. Our results also show the unchanged rarity of all-female crime groups for homicide and robbery (between 1% and 3%). The highest percentage of all-female groups was for simple assault (16%-20% of all groups), but

Table 1. Distribution of Single-Sex (All-Male, All-Female) and Mixed-Sex Crime Groups Involved in Violent Incidents (1995, 2000, 2005).

Crime group	Homicide			Robbery			Aggravated assault			Simple assault		
	1995	2000	2005	1995	2000	2005	1995	2000	2005	1995	2000	2005
All male	85	82	79	89	85	85	66	63	69	45	46	45
Mixed sex	14	17	20	8	12	13	23	27	28	39	36	35
All female	1	1	1	3	2	2	11	11	11	16	18	20
<i>n</i> (group incidents)	2,355	1,637	1,896	3,861	10,056	23,895	9,600	15,979	27,147	26,626	52,569	90,934

Note. Population coverage in NIBRS increased from 5% of the U.S. population in 1995 to 15% in 2000 to 29% presently. Crime reports generally kept pace with population increases. To smooth annual fluctuations, percentages in Table 1 are based on 3-year averages: 1995 (1995-1997), 2000 (1999-2001), 2005 (2005-2007). NIBRS = National Incident-Based Reporting System.

these occurrences were still rare in comparison with mixed-sex or all-male group incidents.

The involvement of women in group-perpetrated violent crime incidents is uncommon across offense types, but male dominance increased with offense seriousness, supporting the *task environment of crime hypothesis*. For example, in 2005, mixed-sex violent crime incidents comprised only 13% of robberies and 20% of homicides, but 28% of aggravated assaults and 35% of simple assaults. Indeed, historically and today, more than half of all group-perpetrated simple assault incidents included at least one woman (i.e., in a mixed-sex or all-female crime group). For felonious violence (aggravated assaults, robberies, homicides) in the past and present, far fewer than half of the incidents involved even one woman.

Figure 1 visually depicts any changes in sex stratification and male dominance of group-crime incidents since 1980 for homicide or over the past decade for the other violent offenses. Inspecting Figure 1, Panel A, it is evident that the prevalence of violent incidents by mixed-sex groups did not increase. Consistently between 1995 and 2007, 12% to 13% of the robberies were by mixed-sex groups. The share of aggravated and simple assaults by mixed-sex groups declined incrementally, by about 5% in the late 1990s, but then remained stable at approximately 25% and 35%, respectively. These declines in female involvement were *not* offset by any increases in all-female aggravated assault groups (Panel B); rather, the proportion of all-male crime groups increased by 5% (Panel C). For simple assault, declines in the percentage of mixed-sex groups were offset by a 5% increase over 13 years in all-female groups. All-male simple-assault involvement did not change (Panel C).

The longer homicide data series show that prior to and after the early 1990s crime boom, about 20% of the homicides were committed by mixed-sex groups. During the early 1990s crime boom, however, a larger share of multiple-offender homicides was committed by all-male groups (Panel C) and a smaller proportion by mixed-sex groups (10%). Sex-segregation and male dominance of group-crime incidents were even greater during times when the crime rate was relatively high and “opportunities for co-offending” greater.

Panel B supports the conclusion that females are not increasingly prone to forming their own crime groups, backing the *consistent sex-stratification hypothesis*. The percent of homicides, robberies, and felony assaults perpetrated by all-female groups has been stable and low (1%, 2%-3%, and 11%, respectively). Throughout this period, there were no net increases (or decreases) in the percent of all-female violent incidents. The only notable change was a small but steady 5% cumulative increase over 13 years in the share of all-female simple assault incidents (15%-20%). Further data inspection is necessary, but such changes coincide with implementation of mandatory and pro-arrest policies for minor violence in which women typically have engaged (see S. Miller, 2005; Steffensmeier et al., 2005). These would include fights/disputes among women that are now more prone to police involvement. Even if the small shift toward all-female simple assault incidents were “real” and not an artifact of policy changes, sex *stratification* in crime groups does not seem to have lessened over time and the share of all-female simple assaults remains less common than all-male or mixed-sex groups.

Descriptive Analyses: Variability Over Time in the Sex Composition of Violent Crime Groups, by Offense Characteristics

Table 2 profiles motive, victim–offender relationship, and weapon for violent incidents by all-male, mixed-sex, and all-female crime groups (i.e., columns sum to 100%). To identify differences in the *nature* of crime perpetrated by groups of various sex compositions and assess the *task environment of crime hypothesis*, we compare profile percentages across columns, treating differences greater than 5% as notable.⁷ Our strategy is to compare all-female with all-male groups for identification of any sex differences. We also compare mixed-sex with single-sex groups to assess similarities and differences.

Motive. All-male violent incidents were more heavily composed of instrumental homicides and felony assaults whereas all-female incidents were more heavily weighted toward violence for expressive reasons (Table 2, Panel A). For example, 37% of all-male group homicide incidents were for profit-oriented, instrumental reasons, but only 23% of all-female homicide incidents were characterized as instrumental (2005). In contrast, fully half of all-female homicides were motivated by expressive ends, whereas 34% of all-male homicides were for emotionally driven reasons. Even for felony assault, an offense mainly motivated by expressive reasons, there is a notable sex difference. About three of every five assaults by all-female groups were expressive (60%) whereas 42% (18% fewer) assaults perpetrated by all males were “crimes of passion.” Mixed-sex homicide groups tended to have motives more similar to all-male groups whereas mixed-sex aggravated assaults more closely resembled all-female assaults.

Table 2. Distribution of Motives, Closest Victim–Offender Relationship, and Weapon Use in Single-Sex (All-Male, All-Female) and Mixed-Sex Crime Groups (1995, 2000, 2005).

Panel A. Motives/circumstances ^a									
Motive	All male			All female			Mixed sex		
	1995	2000	2005	1995	2000	2005	1995	2000	2005
Homicide									
Instrumental	40	39	37	28	24	23	38	35	34
Expressive	31	36	34	51	46	51	31	34	34
Other	29	25	29	21	30	26	31	32	31
Aggravated assault									
Instrumental	3	2	2	1	0	1	1	1	2
Expressive	49	44	42	63	61	60	62	54	52
Other	48	54	56	36	39	39	37	45	47
Panel B. Closest victim/offender relationship									
Relationship	All male			All female			Mixed sex		
	1995	2000	2005	1995	2000	2005	1995	2000	2005
Homicide									
Intimate/family	4	5	6	25	33	34	28	28	24
Acquaintance	54	54	51	51	47	50	49	50	52
Stranger	42	41	43	24	20	17	23	23	24
Robbery									
Intimate/family	1	1	1	2	2	3	4	3	5
Acquaintance	20	22	20	39	43	44	35	31	36
Stranger	79	77	79	60	55	53	61	66	60
Aggravated assault									
Intimate/family	15	16	15	22	27	26	57	55	50
Acquaintance	53	56	56	65	63	64	32	35	38
Stranger	31	28	30	13	10	11	10	11	12
Simple assault									
Intimate/family	39	32	30	29	30	29	68	71	68
Acquaintance	44	52	54	62	62	63	25	24	27
Stranger	17	16	16	9	8	7	7	5	5
Panel C. Weapon ^b									
Weapon	All male			All female			Mixed sex		
	1995	2000	2005	1995	2000	2005	1995	2000	2005
Homicide									
Gun	80	74	77	47	37	36	47	44	49
Knife	8	9	9	27	18	32	15	13	12
Other	12	17	14	26	45	32	38	43	39

(continued)

Table 2. (continued)

Panel C. Weapon ^b									
Weapon	All male			All female			Mixed sex		
	1995	2000	2005	1995	2000	2005	1995	2000	2005
Robbery									
Gun	41	50	55	8	16	15	32	35	37
Knife	8	7	6	9	10	9	10	11	11
Other	51	43	39	83	74	77	58	54	52
Aggravated assault									
Gun	23	23	29	6	6	6	11	12	15
Knife	15	14	14	27	24	23	26	22	20
Other	63	62	58	67	70	71	63	66	65
No. of group incidents									
Homicide (n)	2,008	1,336	1,494	23	21	26	324	280	375
Robbery (n) ^c	3,424	8,571	20,279	111	238	543	326	1,247	3,073
Aggravated assault (n) ^c	6,305	9,968	17,003	1,072	1,691	2,926	2,223	4,320	7,218
Simple assault (n) ^c	15,269	21,221	35,079	3,897	8,575	16,115	5,398	17,533	28,844

Note. NIBRS = National Incident-Based Reporting System.

^aMotive is available in the data only for homicide and aggravated assault.

^bSimple Assault does not involve a weapon, by definition of the offense.

^cThe population covered by police agencies reporting to NIBRS increased over time whereas rates of crime did not necessarily increase. Note that percentages in Table 2 are based on 3-year averages: 1995 (1995-1997), 2000 (1999-2001), 2005 (2005-2007).

Victim-offender relationship. Sex differences in victim-offender relationship in violent incidents were a higher share of intimate/family victims among all-female groups and a relatively higher percent of stranger victims among all-male groups (Table 2, Panel B). All-female group homicides were much more likely than all-male homicides to be directed against an intimate or family member (34% vs. 6%). In contrast, 43% of all-male homicides targeted a stranger compared with only 17% of all-female homicides. Mixed-sex homicide groups fell in between these extremes (24% victimized intimates and especially family members, 24% victimized strangers). Similar across groups of various sex compositions, half of all homicides targeted acquaintances.

Similar patterns emerged for other types of violence: A vast majority (79%) of robberies by all-male groups targeted strangers, whereas just half of all-female groups followed suit (53% in 2005); mixed-sex groups fell in between (60%). For assault offenses, all-female groups had relatively higher percentages of intimate/family victims than all-male groups (felony assault: 26% vs. 15%; simple assault: no difference) whereas the reverse was true for stranger victims of assault (felony assault: all-females

11% vs. all-males 30%; simple assault: 7% vs. 16%). Of note, a particularly high percentage of assaults by mixed-sex groups were directed against intimates/family (50% of aggravated assaults and 68% of simple assaults), proportions much higher than among either male or female single-sex offender groups.

Weapons. Although guns are thought to be a great “equalizer” of physical strength differences among men and women, a much larger share of all-male than all-female groups used guns to perpetrate acts of violence (Table 2, Panel C). The majority—more than three quarters of all-male homicide groups and 55% of all-male robbery groups—used a gun, whereas a minority of all-female homicides (36%) or robberies (15%) involved a gun. In only 6% of all-female felony assaults, but in 29% of all-male felony assaults, a gun was present. Mixed-sex groups fell in between these extremes (Note: By definition, simple assaults do not involve deadly weapons).

In sum, motives, victim, and weapon are clearly linked to sex stratification among crime groups. Although similarities exist, it is apparent that all-male crime groups were most likely to engage in violent crimes with instrumental motives, target strangers, and utilize guns. In comparison, all-female groups had a tendency toward expressive motives and family/intimate victims and against gun use. Mixed-sex groups fell between these extremes. One notable exception was that mixed-sex groups, compared with single-sex groups, had a stronger tendency to target intimate/family victims.

As a whole, these findings suggest systematic variability in the conditions under which people work with same- or opposite-sex partners. Our findings support the *task environment of crime hypothesis*, based on Steffensmeier’s (1983) perspective on sex segregation in crime groups, which anticipated greater male dominance among crime groups when the offense was more dangerous or physical. Moreover, sex stratification in these co-offending patterns was more persistent than changed.

Incident-based analyses strongly suggest persistent sex segregation in group-offending patterns. However, the incident level of analysis does not take into account any variation over time in the size or sex composition of crime groups (e.g., a mixed-sex group of five offenders may include only one or as many as four females). An incident-based approach risks over- or underestimating the extent of women’s involvement in group crimes and may confound changes in the size or sex configuration of crime groups with changes in “female offending” patterns. Subsequent analyses therefore utilize offenders as the unit of analysis to examine the distribution of female and male offenders across crime groups of various sex compositions.

Descriptive Analyses: Same- and Opposite-Sex Co-Offenders of Females and Males Over Time

Bar charts in Figure 2 depict the tendency of female and male offenders to engage in a violent offense with same-sex versus opposite-sex co-offenders at three 5-year intervals (1995, 2000, 2005). There is a strong and unchanging tendency of males to co-offend only with other males, whereas women are at least as likely, and often more

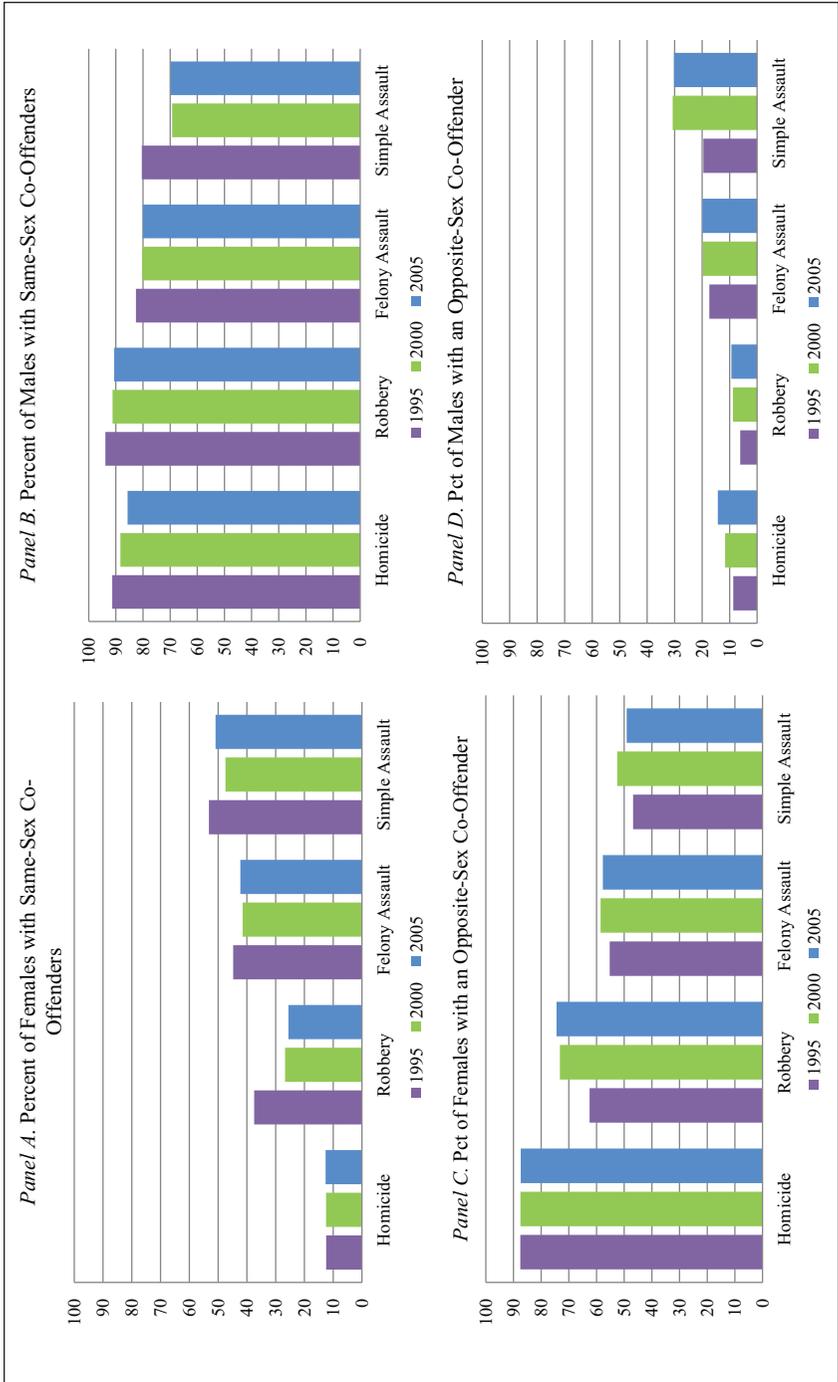


Figure 2. Percent of female and male offenders with same-sex versus opposite-sex partners in violent crimes (1995, 2000, 2005).

likely, to offend with at least one male co-offender. About 90% of men who committed homicide or robbery had only male co-offenders (Figure 2, Panel B). In contrast, nearly 90% of female homicide offenders and three quarters of female robbers had at least one male partner (Panel C). This sex segregation (males co-offending only with other males) is present, and nearly as strong, for aggravated and simple assault. About 70% to 80% of male assault offenders had only male co-offenders (Panel B). In contrast, the majority (around 60%) of female aggravated assault offenders had at least one opposite-sex co-offender (Panel C). Females in simple assaults were about as likely to offend with other women as they were to offend with men (Panels A and C). In all, these figures show the strong tendency of both men and women to have male partners, especially for more serious violence.

Descriptive Analyses: Changes in the Share of Female Co-Offenders

It is also important to inspect whether the pool of female co-offenders has increased over time, regardless of whether those women co-offended with same-sex or opposite-sex partners and independent of crime group size. Figure 3 presents trends in the female percentage among all co-offenders. These findings support our earlier conclusion; women as co-offenders have been, and continue to be, in the minority. Less than 1 in 10 homicide or robbery co-offenders is female, and less than one third of felony assault co-offenders are female. These percentages remain unchanged over time. Essentially, there has been no growth in the number of women, relative to men, who have been co-offenders in violent crime, congruent with the *consistent sex-stratification* hypothesis. Female co-offenders are most prevalent among those who engage in simple assault but are still underrepresented based on their share of the population. Females comprised 35% to 39% of all co-offenders who engaged in simple assault; this percentage has increased nominally over 13 years (by less than 5%). In summary, the female share of co-offenders is low, particularly for the more serious violent offenses, and has remained relatively unchanged over time.

Multivariate Analyses: Female-to-Male Odds of Co-Offending With Opposite-Sex Crime Partner(s) Over Time

In the final stage of our analysis, we utilized multivariate logistic regression techniques with clustered robust standard errors to examine the odds of an individual co-offending with at least one opposite-sex partner, controlling for offender and offense characteristics (Table 3). The sex coefficient quantifies the female/male difference in odds of opposite- versus same-sex partners for each violent offense type. We also assess whether women or men became more likely to offend with at least one opposite-sex co-offender. Sex-differentiated change over time is assessed with an interaction between time and offender sex (Models 2, 4, 6, and 8 in Table 3).

Perhaps the most remarkable finding from the regression analysis is the size of the sex difference in the likelihood of offending with opposite-sex versus same-sex

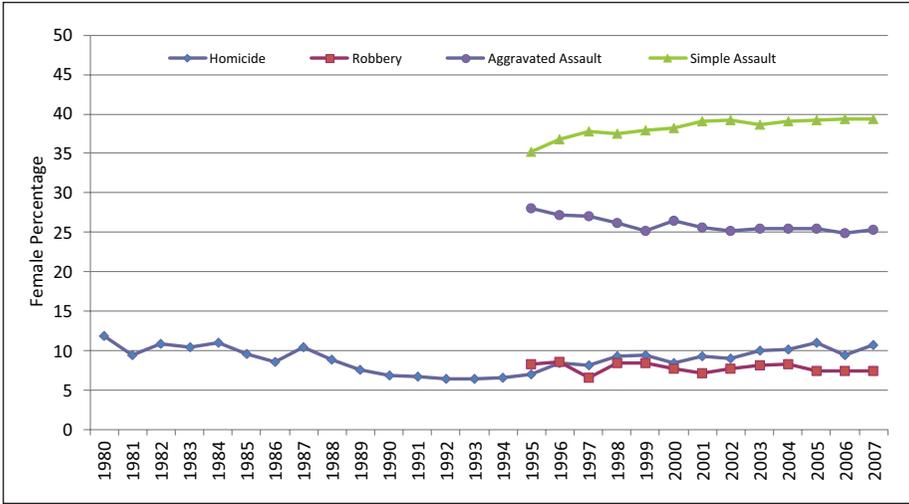


Figure 3. Female percentage among all offenders in group-perpetrated violence, by offense type, 1980/1995-2007.

partners. For example, for homicide, the odds of a female being in a mixed-sex group are more than 50 times those of a male offender. Female tendencies to offend with at least one opposite-sex partner are stronger for more serious offenses (e.g., homicide, robbery) and weaker for less serious offenses (e.g., simple assault). Female odds of engaging in robbery with opposite-sex co-offenders are 24 times greater than male odds. However, for aggravated and simple assault, female odds of co-offending with opposite-sex crime partners are only three to five times greater than male odds.

In terms of change over time, the prevalence of mixed-sex groups grew minutely, as indicated by the small but significant time coefficient. The odds of any offender being in a mixed-sex group grew by 1.01 times per year for homicide, 1.03 for robbery and felony assault, and 1.07 times for misdemeanor assault. Models 2, 4, 6, and 8 (Table 3) included an interaction term to test whether sex composition of females’ or males’ co-offending groups changed systematically over time. Results indicated stability rather than significant change. The interaction coefficient was non-significant or undifferentiated from 1 across offense types. Thus, a second key finding is no change in female versus male odds of co-offending with opposite-sex partners.

Controls for contextual features of the incident show offenders are less likely to co-offend with the opposite sex when victim–offender relationship is stranger or a gun is used. Opposite-sex partners are somewhat more likely when the victim is a family or intimate. The likelihood of an opposite-sex partner increases with offender age and is stronger for White than minority offenders, with all else equal.

To more clearly demonstrate the meaning of logistic regression results (Table 3; Models 1, 3, 5, and 7), we calculated female and male probabilities of co-offending in a mixed-sex rather than a single-sex group, given certain offense characteristics

Table 3. Logistic Regression Results: Odds Ratios of an Individual Co-Offending With at Least One Opposite-Sex Partner Versus With Only Single-Sex Partner(s).

	Homicide		Robbery			Aggravated assault			Simple assault ^a	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8		
Year (1980/1995 = 0)	1.01	1.01	1.03	1.03	1.03	1.03	1.07	1.08		
Female	51.6	57.5	24.3	24.0	5.16	5.88	2.60	3.74		
Motivation ^b (omitted: other)										
Instrumental motive	1.32	1.32	—	—	1.02	1.02	—	—		
Expressive motive	0.90	0.90	—	—	0.93	0.93	—	—		
Weapon (omitted: other)										
Gun	0.49	0.49	0.92	0.92	0.94	0.94	—	—		
Knife	0.67	0.67	1.32	1.32	1.13	1.12	—	—		
Victim-offender relationship (omitted: acquaintance)										
Family/intimate	3.77	3.77	3.07	3.07	4.41	4.41	4.94	4.96		
Stranger	0.68	0.68	0.82	0.82	0.79	0.79	1.14	1.16		
Offender demographics										
Number of offenders	1.37	1.37	1.39	1.39	1.23	1.23	1.19	1.19		
Offender age	1.42	1.42	1.49	1.49	1.29	1.29	1.34	1.34		
White	1.42	1.43	1.81	1.81	1.17	1.17	1.04	1.04		
Interaction										
Female x Year	—	0.99 (ns)	—	1.00 (ns)	—	0.99	—	0.97 (ns)		
Log pseudo-likelihood	-214,041.73	-214,028.50	-169,533.11	-169,533.03	-344,361.78	-344,326.58	-976,304.99	-975,601.85		
n	681,085		560,658		716,438		1,760,455			

Note. All coefficients are significant at $p < .001$ unless otherwise noted.

^aSimple assault does not involve a weapon, by definition of the offense.

^bMotive is available in the data only for homicide and aggravated assault.

Table 4. Female and Male Predicted Probabilities of Co-Offending With at Least One Opposite-Sex Partner (Compared With Only Single-Sex Partners).

	Homicide		Robbery		Aggravated assault		Simple assault ^a	
	Female	Male	Female	Male	Female	Male	Female	Male
Sex	0.87	0.11	0.70	0.08	0.57	0.21	0.53	0.35
Motivation ^b								
Instrumental motive	0.85	0.10	—	—	0.54	0.17	—	—
Expressive motive	0.86	0.11	—	—	0.60	0.24	—	—
Weapon								
Gun	0.85	0.08	0.70	0.07	0.53	0.17	—	—
Knife	0.87	0.12	0.76	0.11	0.61	0.24	—	—
Victim-offender relationship								
Family/intimate	0.94	0.26	0.88	0.23	0.77	0.40	0.72	0.50
Acquaintance	0.80	0.08	0.72	0.09	0.43	0.13	0.32	0.16
Stranger	0.77	0.06	0.66	0.07	0.39	0.11	0.38	0.18

Note. Probabilities were calculated based on the regression equations (Models 1, 3, 5, and 7) in Table 3.

^aSimple assaults cannot by definition involve a deadly weapon, so unique probabilities for weapon are not estimated.

^bProbabilities for motive are not estimated for robbery or simple assault because motive is reported only for homicide and aggravated assault.

(control values set at 0). The first row of Table 4 shows the average sex effect: For a female offender, it is highly likely she will co-offend with one or more males when committing homicide (87% probability), but for simple assault, the probability is near-equal of co-offending only with other females compared with at least one male. For males, there is only a 10% chance of co-offending with a female in a homicide or robbery, but the probability is two times as great for aggravated assault and three times higher for simple assault. For every offense, males' probability of co-offending with the opposite sex is considerably lower than females' probability of having an opposite-sex partner.

Probabilities of co-offending with the opposite sex increase for both females and males when the victim is a family/intimate (vs. stranger), when a knife (vs. gun) is involved, and when the motives are expressive (vs. instrumental). This patterning shows the tendency toward exclusively same-sex partners is greater when offenses are riskier, reliant on use of force and/or weapons, and ends are instrumental. However, females remain far more likely than males to have at least one opposite-sex partner, regardless of offense characteristics. For example, whereas it is near certain that a female who kills an intimate/family member in concert with others will have one or more male partners (94%), the chance that a male will have one or more female partners is slimmer (26%). Similarly, for stranger homicide victims, whereas it was highly unlikely that a male co-offended with a female (6% chance), chances were high (77%) that a female co-offended with a male.

We explored a series of interactions (not shown) between offender sex and key offense characteristics that likely increase homophily among co-offenders: stranger

relationship, instrumental motive, and gun use. Results indicated that these offense characteristics are associated with significantly higher male odds of co-offending with other males to the exclusion of female partners (i.e., *reduced* odds of mixed-sex offending). Yet, female odds of an opposite-sex partner are *increased* when the violent crime: Victim was a stranger, involved a gun or knife, or erupted from an argument. In other words, the necessity or desirability of male crime partners is greater among both women and men when the offense involves more risk or danger, access to weapons, and so forth. When the task environment of carrying out the offense is riskier (e.g., more serious, against strangers, involving lethal weapons, etc.), the tendency to co-offend with same-sex partners is greater, *primarily among men*.

Discussion and Conclusion

Our purpose was to analyze patterns and trends in co-offending and the extent of sex stratification in crime groups over time. Shifts in the sex composition of crime groups can reflect important changes in gender stratification in criminal enterprise or changes in the nature of female offending itself. We charted the extent of sex segregation in group offending, variability across situational elements of the offense, and any changes over time in female and male group offending for homicide, robbery, felony, and misdemeanor assault. Descriptive and multivariate analyses of co-offending from about 30 years of SHR data and more than 10 years of NIBRS data offer qualified support of our hypotheses derived from feminist theories of offending.

First, sex stratification in crime groups was substantial. Consistent with our *Sex-Segregation Hypothesis*, we found all-male crime groups were the predominant form, comprising almost all homicides and robberies, and the majority of felony assaults. Whereas nearly every male homicide or robbery offender had same-sex (male) partners, the large majority of females in group-perpetrated serious violence had at least one opposite-sex partner. This tendency toward male partners held stronger for homicide and robbery, riskier and more harmful crimes, than for misdemeanor assault. All-female crime groups were very rare for serious violent incidents and still a minority in misdemeanor assault. Our theoretical orientation and prior quantitative research show men to be significant for women's more serious co-offending (Becker & McCorkel, 2011). Female opportunities for more serious group offending may be mediated in large part through men. Consistent with qualitative research on robbery (J. Miller, 1998), street-level drug trade (Maher & Daly, 1996), and other offenses (Steffensmeier et al., 2013), women's involvement tends to be marginalized toward less serious offenses; men predominantly offend with other men, whereas women are as apt to offend with men as with women (see also, Mullins & Wright, 2003; Reiss & Farrington, 1991; Steffensmeier & Terry, 1986).

Second, in support of our *Task Environment of Crime Hypothesis*, sex segregation was greater when the offense (a) was more serious (e.g., homicide/robbery compared with assault), (b) was riskier (e.g., against strangers), (c) was instrumental rather than reactive-expressive, and (d) involved gun use. Descriptive statistics showed that all-male crime groups were more likely to have instrumental motives,

target strangers, and use guns, compared with mixed-sex and all-female crime groups. In contrast, all-female groups had a relatively higher prevalence of expressive motivations and of targeting family/intimates and a lower frequency of gun use. Profiles of mixed-sex groups generally fell in between the extremes of single-sex groups. Multivariate results demonstrated that offenders were more likely to co-offend with opposite-sex partners when the victim was a family/intimate, motives were expressive, and no gun was involved. In contrast, males were highly likely to co-offend with other males for more risky, serious offenses involving guns and targeting strangers for instrumental purposes. This pattern of results is consistent with the concept of homosocial reproduction; males' in-group tendencies to work with other males are greater when the task environment to accomplish the crime is riskier (J. Miller, 2010; Steffensmeier, 1983). However, such partner selection processes, demonstrated in qualitative work on gender and crime (J. Miller, 1998; Mullins & Cherbonneau, 2011; Steffensmeier et al., 2013; Steffensmeier & Terry, 1986), unfortunately cannot be tested in quantitative research such as the present study and is a suggestion for potential future research.

Examining the third, and perhaps the most important, finding, sex segregation among crime groups has not changed much, if at all, over time. Numerous pieces of evidence support our *Consistent Sex-Stratification Hypothesis*: Figures showed (a) little change in group-perpetrated incidents toward all-female or mixed-sex group configurations; (b) an unchanged tendency of males to co-offend only with other males (i.e., in same-sex groups) whereas women remained as likely to offend with at least one male co-offender (i.e., in a mixed-sex group); and (c) no growth in women's share among all co-offenders. Women continued to be minority co-offenders. Multivariate results also documented little substantive shift away from sex segregation among violent offending groups. These findings offer important evidence in the debate regarding changes in female offending and the gender gap in violence. There would be important implications of changes in crime partnerships and groups toward greater inclusion of women, yet little research to date has addressed changes in sex segregation in co-offending. One of the only investigations to date of sex composition and trends in group-perpetrated violence identified overall growth in the female share of involvement in group incidents and relative increases in mixed-sex and all-female violent incidents, based on incident-level descriptive analyses of NCVS data (Lauritsen et al., 2009). Our incident- and offender-level descriptive and multivariate analyses do not reveal similar shifts but instead comport with the view that the underworld's gender system remains stolid in its exclusion of women (Schwartz & Steffensmeier, in press; Steffensmeier & Allan, 1996; Steffensmeier et al., 2013). As well as limited opportunities for group-perpetrated violence in a male-dominated underworld, women's preferences, risk orientations, and rewards for violence may not have altered much (Campbell, 2013; Gilligan, 1982; Steffensmeier et al., 2013). Given significant changes in the daily lives of many American women, the overall stability of sex segregation among crime groups is rather remarkable.

The current quantitative study is an important complement to the informative body of qualitative studies on gender dynamics in co-offending, but like any study has its

limitations to be addressed in future research. First, our theoretical and multivariate models specify offense characteristics as influencing partner selection and resultant sex composition of offending groups. However, we cannot rule out the possibility of reverse causality, that male involvement in any group would increase the level of threat/violence beyond what females in the group would perpetrate, absent males. Even if the latter were true, however, it would not change the crux of our conclusion that offense characteristics and sex composition of crime groups are related in systematic ways where women self-select out or are excluded from groups involved in more serious forms of violence. This underscores the important point that our reliance on official data precludes understanding the *process* of partner selection and whether the offense or the co-offenders come first or even co-evolve. We cannot measure an important theorized mechanism behind sex segregation—homosocial reproduction. Implicit in our theoretical framework is that increased risk will be associated with men's greater preference to work with other men to the exclusion of women; yet the current research cannot measure offender decision making in partner selection but only the outcome. Future research should seek to understand how women's and men's broader co-offending opportunities and decision making differ. Qualitative evidence remains important for specifying how and why crime partners are chosen among various female and male alternatives. Vignette studies or other quasi-experiments may also help to illuminate the process of partner selection.

A second important limitation related to official data, offenders in these police-identified groups represent some sub-sample of the larger (unknown) universe of co-offenders in crime groups. Moreover, for many offenders, the crime group whose characteristics are reflected in official data may be only one of a number of co-offending groups in which she or he has been involved. Given our interest in sex differences in co-offending patterns over time, biases in official data can be present if one sex is systematically counted as part of the offending group more often than the other sex or if groups involving females are more or less likely to be acted on by victims and/or police, either because of overt gender bias or because the types of offending groups women tend to be part of are less detected/reported (Schwartz et al., 2009). It is logical to assume that female co-offenders are underestimated to some extent, due primarily to their more tangential involvement. More concerning for our study would be systematic changes *over time* in these sex-related biases. Because little information exists on changes in sex-related biases in police-based co-offending data, we must extrapolate from available research on gender and criminal punishment trends. Some female increases might be expected only due to increased victim reporting of and police action against marginally involved actors in lesser forms of violence, where the gender gap has always been narrower (Chesney-Lind & Paramore, 2001; Schwartz et al., 2009; Steffensmeier et al., 2005). The negligible change in sex stratification identified in our study is therefore even more remarkable.

Our study was conducted nearly 30 years after Steffensmeier's (1983) theoretical statement on organizational sex segregation, yet his conclusions about women's involvement in crime groups still apply. Our findings, based on descriptive and multivariate analyses of all recorded co-offenders in violent crime groups between

1980/1995 and 2007, attest that the self-perpetuating cycle of male dominance has not been interrupted, and a massive gulf between the criminal worlds of females and males remains. Violent crime groups are highly sex-segregated and all-female crime groups are rare. Whereas women often have male partners, males rarely co-offend with females. Offenses that were more lethal, instrumentally motivated by financial gain, targeted a stranger, or involved a gun increased male dominance of group offending and the exclusion of women. However, the male/female gulf is narrower and gender similarities are greater for common offenses such as simple assault. In all, it seems that sex segregation and the tendency of criminal men to work with other men has not shifted; rather, gender dynamics in co-offending mostly have resisted change.

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Notes

1. A different dynamic, the sizable decline in male violence may mean fewer all-male groups or potentially fewer male partners from whom to select; females may be substituted as partners when males are unavailable (Maher & Daly, 1996; Steffensmeier & Terry, 1986).
2. Simple assault is defined as “an unlawful physical attack by one person upon another where neither the offender displays a weapon, nor the victim suffers obvious severe or aggravated bodily injury involving apparent broken bones, loss of teeth, possible internal injury, severe laceration, or loss of consciousness” (Rantala, 2000, p. 13).
3. Aggravated Assault is defined as “an unlawful attack by one person upon another wherein the offender uses a weapon or displays it in a threatening manner, or the victim suffers obvious severe or aggravated bodily injury involving apparent broken bones, loss of teeth, possible internal injury, severe laceration, or loss of consciousness. This also includes assault with disease . . .” (Rantala, 2000, p. 13).
4. Robbery is defined as “the taking, or attempting to take, anything of value under confrontational circumstances from the control, custody, or care of another person by force or threat of force or violence and/or by putting the victim in fear of immediate harm” (Rantala, 2000, p. 12).
5. The population covered by law enforcement agencies reporting to National Incident-Based Reporting System (NIBRS) increased as more states and agencies adopted incident-based reporting (e.g., from 10 states with 1,550 reporting agencies covering 6% of the population in 1996 to 32 certified states covering 27% of all known crime by 29% of the current U.S. population). Importantly, as NIBRS coverage grew, crime increases remained proportionate to population changes, suggesting no significant shift in the composition of reporting agencies.
6. Additional years of NIBRS data recently have become available. Initial explorations of the more recent data suggest substantively similar findings as those we report. However,

further examination of the full files is required to fully support this assertion.

7. Tests for significant mean differences across groups are not very useful because our data represent a population of known crime and our n is large, so even very small differences are significant.

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